Is It Time for Cooperative Learning to Enter American Classrooms?

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IS IT TIME FOR COOPERATIVE LEARNING TO ENTER AMERICAN CLASSROOMS?

by

Donna Sewell

A paper submitted in partial fulfillment of the requirements for the degree (Plan B Paper)

of

MASTER OF SCIENCE

in

Psychology

Approved:

UTAH STATE UNIVERSITY
Logan, Utah
2000
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Introduction

Education’s raison d’etre is to prepare students with the skills necessary for a productive and happy life within society. The fact that many educational institutions are experiencing a disconcerting number of students dropping out of school (and sometimes life itself) may be an indicator that this preparation is less than adequate in meeting their needs. In fact, the needs of a high school graduate today are so different and far-reaching than what they were 30-50 years ago, it will be easier to group them according to a change in economics, transformed demographics and changes in social situations and practices. Each of these areas will be presented as challenges that call for a change in the way we structure education in America, and this paper will evaluate the ways Cooperative Learning approaches propose to meet them.

Transformed Economy

Unfortunately, traditional, competitive, assembly-line approaches to learning that began during the industrial revolution have become so engrained in our culture that many educators are continuing to use them exclusively, believing they will best prepare our students for the world of work. They believe that the way to survive in the world is still to be good at competing and winning. The truth may very well be that an overload of competition has become a very integral part of the problem. Where there is competition there are winners and losers. Where there are 2-5 winners of A’s in a typical classroom, there are 25 losers of varying degrees. Is it any wonder that whereas most children enter kindergarten full of wonder and hopeful expectations, by second or third grade, they are beginning to say, “School is just OK and it doesn’t matter anyway.” If the competition is a game that’s been agreed upon for fun, then it is fun. If it means you’re going to be
judged and probably lose, it is only a matter of time before it is no longer very adaptive to believe that winning or losing (good grades) really matters.

The industrial age, where competition was at its best, has very quickly transformed into the information age, moving us at an accelerating rate into a constantly changing high-technology and interdependent economy. In 1950, only 17% of the nation worked in information-related jobs, but by 1970, the information management-service sector of the economy accounted for more than half of the GNP (Gross National Product) and earned income. The nation’s work force grew 18% in the 1970s but the number of managers and administrators grew 60%. In the seven-year period ending 1976, 9 million workers were added to the work force but the work in the Fortune 1000 largest industrial concerns did not increase (Kagan, 1994).

Companies throughout the world are accepting the cooperative model because it works. In the new General Motors, cooperation in the workplace is the theme, and production, product quality, worker satisfaction and earnings are all up. Hand-held computers are being assembled in Singapore, housed in a case from India, stamped with a label “Made in Japan,” and sold in Nebraska. Modern hotels in Saudi Arabia are built with modules from Brazil, construction labor from South Korea and management from the US (Kagan, 1994).

We are seeing a global economy that was unimaginable 20 years ago and to be successful today, students must be able to work within a cooperative model in a full range of situations, social structures, human diversity and interdependence.
Transformed Demographics

Demographics are changing right along with economics, and are presently showing up in some areas of the country more than others. We can no longer assume that classrooms will be homogeneous as to language, race or social standing and we must also take a look at what sociologists have been saying about another demographic issue - the effects of urbanization.

In addressing the issue of language differences, a traditional classroom offers the foreign student little of the necessary time and opportunity to converse in order to become proficient in the new language. Experts have made it clear for many years that immersion into a new language is by far the best way to learn it and eventually own it. This is quite impossible when the objective in the classroom is to be quiet and listen.

Many cultures (i.e., Asian and South American) migrating to the US are not oriented to competition and don’t learn well under its pressure. In a comparative study, it has been shown that blacks made great improvements in cooperative learning situations and at the same time even the whites, who are used to competition, did better than their control groups.

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<th>Achievement Gains in Cooperative v. Traditional Classrooms</th>
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<td>(Slavin &amp; Oickle, 1981)</td>
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<td><img src="image" alt="Graph showing achievement gains in cooperative vs. traditional classrooms" /></td>
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(Kagan, 1994 p 2:8)
It is hard to say why it would work out this way, but could it be that with the opportunity to teach their peers, Caucasians are more motivated to really master the material? Could it also be that in teaching it they begin to own the new information or skill on a much deeper level?

The leaders of this country understand the importance of desegregation or they wouldn’t have mandated it, but time has shown it doesn’t happen on its own. What has occurred when schools have been desegregated is that the students have segregated themselves within racial boundaries. Like attracts like, and if there is no compelling reason to become acquainted with people who look and act differently, the students who are the future citizens of America may not learn to celebrate the wonderful diversity of this world. This could have disastrous effects over time, because the world is shrinking very quickly due to the speed of transportation, television and the internet.

Sociologists have been warning Americans since before the turn of the century about the effects of urbanization. When people who have no emotional ties to one another nor economic interdependence, yet live and work in close proximity to each other, a spirit of competition, self aggrandizement, and mutual exploitation is fostered. (Kagan 1994) Many studies have been done on this subject using animals in crowded cages as well as people in big cities. They neither reach out and help one another nor show signs of caring under crowded conditions, but rather display behaviors of disinterest, use and abuse. Such studies have shown that children growing up in an urban environment put less value on prosocial behaviors such as caring, sharing, helping and cooperating. If one were to project these kinds of perceptual attitudes and demographics into the future it would be easy to see that it could be spelling disaster for humankind. The fact is that the world is
becoming more and more urban, so the teaching of cooperation and caring under these crowded circumstances needs to become more and more of a priority.

Transformed Social Situations and Practices

Competition and selfish individualism have permeated themselves as social mores everywhere—home, school and the workplace. The changes in family structure and lifestyle and the effect of such things as television and computers has created many challenges that may not be met unless at least some of it is done in the schools. Education starts in the home and ends in the workplace, so the schools are right in the middle of it. By influencing students in the schools, it should be possible to positively affect life at home as well as in the workplace.

The family structure has gone from two-parent families where one parent is generally at home to the point where by some time this year we could be hitting statistics indicating that one third of all children in America are from one-parent families. The threat to the family structure is very real, and creates many social challenges. Families are small, so children don’t have the opportunity to learn social skills from siblings. Extended family members such as grandparents often live too far away to have a substantial impact. Latch key kids are on the rise as well, so their training isn’t very well monitored during the time after school.

The question is, if the parents and other family members aren’t teaching and practicing good social skills with children, then who is? One of the greatest intrusions into the social structure of American life has been the advent of television. “Counting summer viewing hours, children now spend more time viewing television than they do in school or any other single daily activity” (Kagan 1994). Although it fills the void when
there’s nothing to do, there are many things it does that may be harmful and probably
crowds out much good that could be done. Most people who eliminate TV viewing or
severely restrict it, find resistance at first, but soon notice that family members begin
talking to each other. Communication and social skills are once again utilized. Does TV
cause people to not communicate? Even if viewing is restricted to uplifting and
educational programs or interactive game shows, one might consider the possibilities of
the effects of sitting/lying around for hours with no true human interaction. And if true
human interaction can’t be found at home or school, where will that need be met? In the
streets?

Until families learn how to cooperate and practice good social skills in the home,
one thing that can be done is to have well-trained day care personnel and schools that will
pick up that responsibility. On the bright side, if children can learn to communicate and
cooperate in school, perhaps they will be able to teach their parents how to do it.

Until changes are made somewhere, there will continue to be many students
gracing the American classroom with less than adequate social skills.

Dozens of studies have demonstrated that students often do not recognize the
cooperative solution to problems when presented. Even though these students are
placed in situations in which they can maximize their own gains only by working
together, they tend to adopt a competitive strategy which produces fewer positive
outcomes for both themselves and their peers. The nonadaptive competitiveness
of our students has been documented throughout almost the whole range of
development. It begins a few years after students enter school and continues
throughout college years. In other words, after only a few years of traditional,
competitive schooling, 7-9 year old students repeatedly fail to employ the
adaptive cooperative strategies which 4-5 year old children (who have not yet
been subject to years of competitive classroom structures) easily adopt (Kagan &
Madsen, 1971).
By fourth grade, the indicators are that increasing numbers of students don’t/can’t succeed in school so they begin to look for other sources of hope for confidence, feelings of belonging and self-esteem, even if they’re self-defeating in the long run, like gang membership and drugs.

**Conclusion**

As time goes by, the ever-increasing need is to teach thinking, communication and social skills. Most of the jobs young people are presently working at require good communication skills on a telephone, a computer, over a microphone or in person. In addition, for the first time in recorded history we have the challenge of preparing students to participate in a world where much of the content we teach may very well become obsolete by the time they graduate.

Among the personal skills that students should develop are sensitivity to the needs, problems and aspirations of others and understanding of people as individuals rather than as stereotypical members of a particular group; and the ability to adjust one’s behavior to work effectively with others. (California State Board of Education, 1987, p.24).

Traditional structures that foster competition and self-centered individualism ignore the consequences of the social void they create, model an autocratic system, give no reason to celebrate diversity, and expect passive obedience. These outcomes will hardly prepare students to thrive in a democratic society surrounded by the social and economic challenges the world is now experiencing. What American education needs is structures that motivate students to become cooperative and interdependent, caring about one another and the world at large. Cooperative Learning structures show ways to accomplish this and at the same time learn just as much or more of the ‘basics’ than in the past.
Now that the background of social circumstances has been clarified, the intent of this paper will be to focus on Cooperative Learning as a solution. The first priority will be to explain as clearly as possible what is meant by "Cooperative Learning." It will begin with a description of elements shared by most of the well-known Cooperative Learning programs, with the underlying assumption that the whole (using all of the basic elements together) creates a synergy that is even greater than the parts. It will then take a look at some of the differences by going into more detail for programs such as those authored by Kagan, Slavin, D.W. Johnson and R. Johnson, and Sharan and colleagues. Once the elements and programs are adequately presented, evidence will be given to demonstrate their efficacy in the classrooms of American schools.

The intent will be to determine just how (and if) the elements and structures of Cooperative Learning contribute to the refinement of American education in the domains of development of social skills, academic achievement, motivation to learn, mainstreaming, race relations, psychological health, and assessment of achievement. A few of these studies may focus on outcomes from standardized Cooperative Learning programs, but many will focus on its core elements. The paper will then wind up with a quick look at problems Cooperative Learning programs face in implementation, and conclude with a short summary.
What are the Elements of Cooperative Learning?

Cooperation implies that there is more than one person involved in achieving a goal or an intent, so in a Cooperative Learning setting, new information is discovered, explored, or in some way learned within the framework of a group. In traditional classrooms, the teacher takes the information to be taught and pours it into the empty heads of his/her students. In Cooperative Learning, the teacher guides or facilitates students into their own learning, providing the structure, environment, space, tools and expertise as needed. There are a number of elements essential to Cooperative Learning programs which will now be presented.

Teams

A team is a group of any size, but it does not necessarily have an identity nor is it always designed to endure over time. Cooperative Learning teams are composed of 3-6 members with a strong, positive sense of identity which generally endure over time. This basic team should be heterogeneous, but there may be reason from time to time to create homogeneous teams for short periods of time. A heterogeneous group with one high level, two middle and one low level student (including an even distribution of minorities, and genders) has the advantage of facilitating more cooperative social skills, maximizing peer tutoring, overcoming stereotyping and celebrating diversity.

In most cases, it works better for the teacher to assign students to teams by using students’ past scores in conjunction with a sociometric scale. According to Kagan, 1994, it also facilitates the transference of skills to re-structure the groups every 5-6 weeks, but this may not be as feasible in systems designed for specific content material.
Inherent in the concept of working in teams is the willingness to do so. When students are accustomed to competitive structures and want to always be with their best friend and/or avoid their enemies, there needs to be some kind of structure available to discourage this attitude. Such structures are called team-building and class-building structures, and there are a number of them available in Cooperative Learning. They may seem frivolous and non-academic, but without it teamwork can’t run as efficiently and effectively as it should.

It may be good to note that occasionally the need arises to allow a student to work away from the team for most of the time, and that’s OK. According to one teacher’s experience, over time such a student will most likely join the team’s physical space on his/her own. Until then, it is good to let this student feel it out by giving him/her freedom to go back and forth at will and as encouraged to do so by his teammates.

**Group Goals**

When a group has a goal, the door to cooperation is opened. For this reason, it must be considered an integral part of Cooperative Learning. In certain situations, such as when the goal is a project, different skills and mini-projects may be needed to complete the whole project. One way this can work is by using what is referred to as a Jig-Saw structure. Each member of the base team takes responsibility for part of the unit and regroups with those who have the same part in other teams. This regrouped group is called the team of experts. When the expert teams have fulfilled their responsibilities, they all return to their home base team, and teach each other what they learned, sometimes even synthesizing it into something new. It is also possible that the new creation could be presented to the whole class.
Another way to fulfill the need for a group goal/reward is to have the Improvement Scores of each student fed into a total for team points. In this case, the goal becomes the attainment of more points for the team, which will then be rewarded according to plan.

**Scoring and Recognition**

One of the key elements in Cooperative Learning that make it what it is, is the fact that when assessment is done, the scoring is done in such a way as to embarrass no one, and empowers every individual in their ability to contribute to the team reward. In some situations, the team will be working for points toward a special team treat or recognition. In other cases, it will be to join with other teams' points to gain a class reward. The way a student earns points for his team is often by something called an Improvement Score. This is a score which is based on the average of his past two scores. The slow student is rewarded for improvement, but the smart student doesn’t get to carry an overload of points because the rule is that you can’t get more than three points and it only takes a 95% to qualify for three. The class may choose what the reward is going to be when they have enough points, but only with teacher approval. In addition, when quizzes are given they are often practiced in pairs ahead of time so that everyone succeeds.

**Structures (Rules of the game)**

A structure is a set of conditions and/or rules that gives boundaries for a learning activity. In traditional, competitive classrooms, the structure is that the teacher talks and asks questions while the students listen and answer questions one at a time. In independent structures, the teacher is replaced by the written word, and there is little or no social contact. In Cooperative Learning, structures are such that everyone supports and
helps each other as they are accomplishing their individual goals. Jig-Saw is an example of a structure in Cooperative Learning. In a sense, they may seem more like a learning game, but they are designed for very specific, educational outcomes. Kagan (1986) is a great proponent of generally applied structures and for the benefit of the reader who wants to know more about them, please see the chart in the appendix or read his book, *Cooperative Learning*. He divides them according to their most useful intent so that a teacher might pick and choose them according to his/her presenting objective(s). He lists 13 different structures under the heading of teambuilding, 17 under classbuilding, 23 for thinking skills, 18 for mastery skills, 28 for communication skills and 20 for information-sharing - a total of 119. It may seem like a veritable swarm of structures, but they can be pulled out and used independently of one another, so each one can be learned and used before going on to the next. Each activity can be used as part of the process of teaching any content material, but obviously some are more conducive than others for specific objectives.

A structure offered by Slavin (1978) is called Student-Teams Achievement Division, or STAD. Its emphasis is on integrating individualized study with Cooperative Learning. The teacher begins by presenting a lesson to the class. Then students, in their four-member groups work to master the material in different ways, depending on the material. At the end of the brief study period, students take individual quizzes on the material. The teacher then calculates the students’ Improvement Scores and presents them to the class. When a team’s total reaches a certain point a reward is obtained.

Sharan and Sharan (1992) expand Cooperative Learning structures to include engaging students according to their interests, thus giving them even more control over
their learning. This structure, called Group Investigation, starts with the stage of identifying the topic to be investigated and organizing students into research groups according to what they want to learn (within the framework of the topic). In stage two, the groups plan their investigation mini-topics. In stage three, they carry out their investigation and in stage four they prepare a final report. There is also a fifth stage where they present their report and a sixth where they evaluate. This is a very collaborative structure.

Structures vary according to the need, with the idea that the teacher might take her/his students through a progressive sort of training from the more tightly structured structures onward and upward to the more collaborative ones.

Positive Interdependence

Positive interdependence is the direct opposite of negative interdependence. In a traditional classroom student grades are often graded on a curve. This creates a negative interdependence because as one person succeeds or raises his/her scores, the rest are lowered. One of the best ways to turn this around is by using structures like the one called Numbered Heads Together. After the class is grouped into teams, the teacher introduces a topic and gives them instructions to learn something. The team members number off, so they each have a number (1, 2, 3 or 4) and when the allotted time is up, the teacher tells a number to stand up. For example, she might say, “All the number 4s stand up.” Each number 4 will then be required to represent the group in answering questions about what they learned. If the number 4 on your team, for example, knew the answer, he/she would give your team a point. With this kind of a structure, it is in the best interests of all the
team members to make sure everybody knows the answers, so it is considered a positive interdependence.

Spencer Kagan (1994) has a list of qualifiers for positive interdependence which includes rules for the goal, the rewards, the task, the resources and the roles. The goal needs to be the same - a team mural, essay, model or report. The team recognition needs to be based on the contributions made by all and the task is structured so it cannot be done alone.

**Individual Accountability**

This means simply that each individual’s contribution must contribute in a fair way to the group goal. If the goal is achievement some choices might be to color code the individual contributions, base team points on individual improvement scores, assign and grade mini-topics, or use structures like Numbered Heads Together. For participation skills, one might monitor the specific behaviors, have students summarize their participation, or have students take time to reflect and evaluate their own participation.

All proponents of Cooperative Learning agree that this is one of the key ingredients that makes the whole thing work. Without it, surely the smartest student would end up doing the biggest share of the work while the others would hold back, being unable to keep up.

**Simultaneous Interaction**

In the traditional, competitive classroom simultaneous interaction such as choral response is the exception rather than the rule. In individualized instruction, there is a great deal of simultaneous work going on, but little in the way of interaction. Cooperative Learning borrows from both, such as choral responses and the use of individual
chalkboards (students write their answers and hold them up for the teacher to see) and adds many more. There is a high demand for simultaneous interaction in Cooperative Learning no matter what structure is being used. When the teacher is talking and there are 30 students in the class, the ratio is 1:30. When the structure is Pair Share, Flash cards and other structures, the ratio is 1:2. In the structure called Round Robin, the ratio is 1:4.

Whereas many traditional processes are done sequentially, such as passing out papers, asking questions, giving assistance and assigning students to their groups, in Cooperative Learning settings, monitors take care of papers and materials, students ask students for assistance, and students find out about their new team assignments by looking for their names on the tables or desks. This has the obvious potential of accomplishing more in considerably less time.

Equal Participation

One thing people object to about group learning is that the students who are willing usually do most of the work. When students sit back and let this happen in Cooperative Learning, they call it hitchhiking. This is not allowed. If there is not equal participation, most wouldn’t even call it Cooperative Learning. To create equal participation, two of the adjustments that are made include turn allocation and division of labor. A simple pair discussion, for example, has neither, but if you allocate a certain amount of time for one person to talk and the same for the other, it becomes a structure in Cooperative Learning called Timed Pair-Share. When there is a project to complete and everyone has their share of the responsibility as in Division of Labor, there is an accountability to partners, teammates, or classmates for following through.
Aside from these sorts of structures, Improvement Scores also contribute to equal participation in Cooperative Learning.

**Social Skills and Clear Communication**

Social skills and good communication are a must when it comes to cooperating with others, and Johnson, Johnson and Holubec (authors of the program called Learning Together) believe they are vital enough to make them part of the formal curriculum. They believe skills such as staying with the group, using quiet voices, giving direction to the group’s work, encouraging participation, explaining answers, relating present learning to past learning, criticizing ideas without criticizing people, asking probing questions and requesting further rationale are targets for mastery.

The process they suggest is to first explain to students what the skill is, and why they need it, through conversation and posters. Next, they need to be taught what it looks like and how it sounds in context and alone. Third, it must be practiced in pairs and role-playing. Fourth, students must process how well and how often they are using the skill, reflecting, discussing and describing their use of the skill. Fifth, they must continue to practice and receive feedback until the skill is fully internalized.

Kagan (1994) takes a less rigid approach to social skills by using structures that draw them out of his students. He doesn’t object to more formal training, but suggests using the structures first and then evaluating what more needs to be taught as a specific skill. His way of doing it is with structures such as Pairs Check, Flashcard Games, Inside-Outside Circles, and Numbered Heads Together. He also uses what he calls Gambit Chips for communication. Gambit chips are used as a ticket to talk. When students are working on a particular communication skill, they will receive gambit chips with specific sentence
starters on them. For example, if the skill were paraphrasing, the gambit chip could read “You believe...” or “If I hear you right...”. In this case, if a student wanted to say something, and he had a gambit chip, he/she would have to follow its directions (paraphrase what the person who just spoke said) before he/she could say what she/he wanted to say to the team or partner. (See Kagan, 1994)

Whatever process is chosen, social skills are even more important for students when they leave school. In 1982 the Center for Public Resources published a nation-wide survey of businesses, labor unions and educational institutions called “Basic Skills in the Workforce”. The Center found that 90 percent of the respondents who had been fired from their jobs were fired for poor attitudes, poor interpersonal relationships and inappropriate behavior. In the real world of work, the heart of most jobs--especially the higher-paying, more interesting jobs--is getting others to cooperate, leading others, coping with complex problems of power and influence and helping people solve problems in working together. More and more, employees are expected to motivate others, negotiate and mediate, get decisions implemented, exercise authority, and develop credibility--all tasks that require interpersonal and small group skills. (Johnson and Johnson, 1989-1990 pp 29-30)

Peer Support

Inherent in the Cooperative Learning system is peer support. Acceptance in one’s group, and confidence in one’s best friend, can go a long way toward building a sense of competence. Webster’s dictionary defines a peer as one of equal status. In school it seems to have taken on a specific reference to children of the same age, but the equal status concept works well.

When participating on a team, healthy support should be the ideal, the intent and the outcome. To permit sleeping on the job (hitchhiking) is not what Cooperative Learning is about. The first step toward achieving this end may be done before anyone arrives, by proper seating arrangement. When this is provided for (assuming the arrangement is four in a square) a low-achieving student may be placed next to two
middle-achievers and a high achiever may be next to the two middle-achievers but not by the low achiever. There are several benefits to this arrangement, one of which is that when a low achiever needs help, there will be two people he/she can turn to and receive answers close to his/her language level. The middle-level students are also more likely to ask for the help of the low level student than a high-level student would, and that is very affirming to the low-level student. In addition, both middle students would be close to the high level student, so it would be easy for them to ask for help as well. In this context, all students are taught how to show support by asking good questions and guiding each other to their own conclusions. This arrangement keeps peers who are developmentally closest to one another within reach.

When it is time to practice and memorize, there needs to be a structure available such as the Flash card game. (Each student has a different set of flash cards created by themselves to practice with, depending on the subject. They support each other by taking turns flashing them for each other in a pair situation.

There are so many ways to utilize the concept of peer support, and in Cooperative Learning it is everywhere. In the literature available on the subject, there are a number of different programs and subheadings: peer modeling, peer counseling, peer tutoring, peer partners, peer reinforcement, special friends, peer teaching assistants, peer facilitators, peer coaching, peer moderators, peer players, task groups, peer feed-back, peer mentors, peer conferences, paired reading, reading triads, peer editing, associative play (for the younger set), internet peers (for those with access to computers), peer discussion groups, apprenticeships, volunteering, peer previewing (a reading program where students a few years older assist those learning to read by reading the material to them and then listening...
to their student do likewise), collaborative learning (perhaps the most challenging type
because it has very little structure), class meetings (open-ended discussions), and cross-
age tutoring. Part of the reason for teaching communication and social skills is to enable
students to do a good job of supporting each other within all such peer structures.

Peer Modeling

Peer modeling is also an element in Cooperative Learning, and its interesting to
note that such modeling/imitating constitutes the predominant mode of social exchange for
peers as young as 2.5 to 3 year olds (Baudonniere, 1986). At the other end of life’s
spectrum it was also a positive factor in teaching an 81-year-old victim of chronic brain
syndrome to practice sign language. The highest rate of response corresponded to the
time of the peer’s inclusion in the training. (Wisocki & Mosher, 1980)

In addition, while teaching autistic children the readiness behaviors of following
directions and attending to a task, almost from the very moment that autistic subjects saw
the peer models (normal peers), there were changes in their behavior. In many cases the
subjects began to repeat letter names after the peer model without waiting for the
examiner to say them first, and one child repeated at the same time as the model. Some
subjects also tried to take the letter cards from the examiner to give them to the peer
models (Lanquetot, 1989).

These indicators for peer influence are hard to ignore, and relative peer structures
are applied continuously in Cooperative Learning models on both overt and covert levels.

Group Processing or Reflection Time

Teachers have the responsibility to frequently provide time for students to reflect
on their successes and what they would like to improve. This could be just pondering
specific issues, questions, or roles, or it could be more formal, like the standard processing task used by Johnson and Johnson: "Name three things your group did well and one thing your group could do better next time." Such group processing will not only increase students' interpersonal skills, but it will also increase achievement (Johnson, Johnson, Stan & Garbled, in press).

**Division of Labor**

This is one of the key ways to make sure individuals are accountable, and is an important strategy in Cooperative Learning. It means that when the team has a goal and it is big enough to accommodate some division, each member has a specific role or responsibility separate from the others. A simple example would be creating a team poster. One person might have the scissors to cut with. Another might have a pencil to draw with. Another might have the glue, and yet another the paper or magazines as needed. Each one is in charge of something, yet they can all have input throughout the activity. (Decisions still have to be made as to what will be drawn and/or which pictures will be appropriate, etc.)

**Classroom Management**

The cooperative classroom is so well aligned with the needs of students, that many teachers claim that their management challenges diminish quite dramatically when they switch to Cooperative Learning. Nonetheless, there are a number of issues that still need to be addressed such as noise levels, class rules, seating arrangement, giving directions, attending to positive attention, recognition systems and individual challenges. Good teaching techniques in general cover most of these, but seating arrangements are somewhat unique. For a variety of ideas on this, see the appendix.
Since higher noise levels are required when 15 people are talking at once, it is important to teach students to recognize as many as three different levels of acceptable noise as well as to have a noise manager on each team. Giving directions and presenting new material can have an added benefit of using a group to model appropriate behavior for the rest of the class.

Positive attention coming from the students to their peers appears to be the most effective, and recognition systems are no longer focused so much on the individual as the team and/or classroom, with the individual’s contribution fully realized.

Summary of Elements

Cooperative Learning models utilize many sound educational and social elements, a few of which have just been presented. A class is divided into teams of 3-6 (usually 4) students. A goal is given, chosen, or in some way introduced. Achievement is recognized on a group basis but the individual is held responsible for his/her contribution at the same time. It includes a variety of structures so that learning is fun, friendly and fair. Positive interdependence is the underlying theme and must be supported by proper structures as well as positive instruction and intent. Structures must also provide for equal participation of all team members and provide the arena for learning good social skills. Included in social skills is the importance of peer support. In Cooperative Learning, one’s peers become the key to both learning and motivation. Division of labor is a classic part of Cooperative Learning and often offers the student the opportunity to choose a research project (within limits). Reflection time or self-assessment is also a valuable tool for improvement. The final element, classroom management, is very controlled, but because it supports developmental needs, doesn’t need to be a threat to anyone--student or teacher.
How is a Cooperative Learning Classroom Different from a Traditional One?

Probably the first difference one would notice is the arrangement of the desks or tables. They would be grouped so as to accommodate small groups and oriented so that each student could see the teacher. Walls might be covered with posters and charts celebrating teams and their projects or point systems, and in one corner or another one might see what's called a “learning center.” A learning center is usually arranged on a table and a wall. All the materials necessary for an activity or several learning activities are laid out and directions posted. Students go there at appointed times to learn the concepts in a group. The center could be subject-oriented or social, but often it is for ‘expert groups’ as they prepare material to present to their home team. From time to time, a teacher may raise his/her hand followed by the students raising their hands. This is a signal to stop talking, adopted from the Boy Scout program. A team might all raise their hands at once, which would be a signal that they have exhausted their resources and need help from the teacher. Occasionally, students may get up and regroup to become experts on a subject, or just one student in each group may be seen standing up to teach his group what he learned in his expert group.

Typically, a Cooperative Learning classroom will sound less quiet than a traditional classroom, but given a little time, the teacher will be heard giving instructions as to the noise level that is acceptable for the moment, perhaps using expressions like “a 12-inch voice, please,” or “now we need a six-inch whisper” or even “loud and clear now,” for a presentation. From time to time it might be extremely quiet as the students sit and reflect on their behavior, thinking of what they’ve done well and what needs
improvement. Normally, the voices will have a friendly and interested tone, but the words will be focused mainly on the subject matter. Since many structures require a short time frame, a soft tinkling bell or some other kind of signal that “time’s up” may be heard quite frequently. Every so often cheering voices or clapping of hands may be heard, as students celebrate the successes of their peers.

Examples of Cooperative Learning Programs

Cooperative Learning programs come in many shapes and sizes, ranging from structured tasks in pairs and triads to the more open-ended Group Investigation in groups of up to 6-7. Some programs are content-specific and very extensive in their materials, and others rely predominantly on structures, requiring very little in the way of materials. To give a sampling, what will be presented here will be a brief summary of some of the most well-known and best researched programs available at this time: STAD (Student Teams Achievement Divisions), TAI (Team Accelerated Instruction), and CIRC (Cooperative Integrated Reading and Composition) as offered by a group from John Hopkins University under the direction of Robert E. Slavin; the Structural Approach as offered by Spencer Kagan from Southern California; Learning Together, offered by David Johnson and Roger Johnson of the University of Minnesota; the Finding Out method as originated by Edward De Avila and developed in this country by Elizabeth Cohen of Stanford University; and Group Investigation as refined by Sharan and Hertz-Lazarowitz

Student Teams Achievement Divisions (STAD)

In Student Teams Achievement Divisions (Slavin, 1978, 1986) students are assigned to four-member teams, mixed by performance level, sex and ethnicity. The
teacher presents a lesson and then the students work together to make sure everyone masters the material. Finally, the students take an individual test which is scored according to their improvement level and their points contribute to their team points which in turn qualify them for pre-planned rewards. The whole process usually takes three to five class periods and can be used for a variety of mastery skills. It is most adaptive to teaching well defined objectives with single right answers such as math, spelling, language mechanics, geography, map skills, and science facts and concepts.

**Team Accelerated Instruction (TAI)**

Team Accelerated Instruction (TAI) is basically a marriage between cooperative and individualized instruction. In math, where it is utilized the most, it is usually a situation where different students need to work on quite different skills and progress at different rates. TAI offers the student the necessary structure to be able to work at his/her own rate and at the same time enjoy the benefits of team support. Details are provided by Slavin (1985), but essentially students progress at their own pace through carefully designed learning modules, and as they go, they accumulate points for their team. Unlike traditional systems, students in the base team do the routine checking and management, so it is highly recommended that teams be heterogeneous. There is some peer tutoring inasmuch as team members are instructed to turn to their teammates for assistance first, but the modules are designed to be pretty self-explanatory. There are some starred modules that are taught in groups, but those ‘pull-out’ groups are homogeneous according to math ability. This program is available for grades 2 through 8, and as remedial instruction in high school and community colleges.
Cooperative Integrated Reading and Composition (CIRC)

Cooperative Integrated Reading and Composition is another curriculum-based program utilizing Cooperative Learning designed by Robert Slavin, that focuses on reading and writing. The letters stand for Cooperative Integrated Reading and Composition (Slavin, 1986). It represents a bold attempt to teach and reinforce skills related to reading, writing, spelling and English language mechanics through the use of Cooperative Learning structures and concepts. The approach also incorporates training in the higher thinking skills of comprehension and retention.

The students are divided into two or three homogeneous groups depending on whether or not they have mastered decoding skills. If not, then they become part of the group called “code/meaning.” The others either become the “meaning” group, or the meaning group is divided into two levels, one of which is more advanced than the other. The code/meaning group receives instruction in phonics, decoding skills, vocabulary and meaning. The other group(s) receive instruction on vocabulary, comprehension and inference. Students are assigned to teams of 4-5 in such a way as to have at least one person on their same reading level to pair up with. The work of all members of the team contributes to points for the team.

Students work in their teams to produce written works and assess mastery of such things as vocabulary, decoding (if applicable) and content. Materials such as written tests, pre-tests and finals as well as an oral reading list for each story are available to accommodate the latest versions of Holt, Ginn, Houghton-Mifflin, and MacMillan basals.

An example of how other language arts are integrated into the process would be
when students are studying quotations marks. Once the concept has been presented, they might read a story with many quotation marks, write their own dialogues and peer edit them within their team (Kagan, 1994).

**Finding Out/Descubrimiento (FO/D)**

The following description of Finding Out/Descubrimiento is provided by Elizabeth Cohen (Kagan, 1994).

FO/D is an approach that addresses the specific needs of math and science, but also has a powerful impact on language acquisition through immersion. The materials were especially designed for developing thinking skills in Spanish/English dual-language settings, so all materials are in both languages. The Program for Complex Instruction at Stanford University, headed by Cohen, developed 130 activities grouped into 17 units for FO/D. The material in these units expose students from grades two to five to concepts of mathematics, physics and chemistry in the context of complex tasks utilizing intrinsically interesting manipulatives. The room is arranged in groups around centers and teams are definitely heterogeneous. The centers have all the materials needed for the task including its description which is written on a card and worksheets which must be completed by each student individually.

Each unit is based on a particular theme such as measurement, optics or electricity and includes a series of specific tasks. For example, in a unit of probability a task might be to graph the height of a bouncing ball, or measure the probability that a coin which is flipped in the air will come down heads up or tails up (Kagan, 1994). The centers have all the materials needed for the task including its description which is written on a card and worksheets which must be completed by each student individually.
Assigned roles are also a part of this program. They include such things as a facilitator (one who makes sure everyone gets the help they need), Checker, Safety Officer, Clean-up Coordinator and Reporter. The students are also trained in cooperative communication skills such as asking questions, explaining, offering assistance and making suggestions that help without doing it for them. Because of this training, they understand the nature of the task as they read it and although it might be quite challenging to children who don’t have some of the basic skills, help is readily available because of the heterogeneity of the group. A challenged student can still contribute to the group with accurate estimates, keen observations or reliable predictions. (Within the training, teachers learn special ways to work with these types of situations.)

In this approach, no individual grades are assigned, but because the basic skills of reading, writing and computation are integrated into the tasks along with higher-order thinking skills, students make broad gains in general achievement and English language proficiency.

In the state of California, this program is being adopted quite quickly, perhaps because of the impressive achievement results, especially for grades 2-4. This is a state where white Caucasians may already be a minority, so language acquisition is a priority. This and other similar methods are being disseminated from California State University campuses in Sacramento, Fresno and San Diego and more are being developed in San Bernardino and Long Beach. Curriculum materials are now available through Santillana, a commercial publisher. (See Cohen, 1994.)

Because of the tendency for the more sophisticated approaches to learning to fall by the wayside, this program calls for two weeks of training and a full year of follow-up.
The issue of teacher support is of great concern, so collegial problem-solving and evaluation are an integral part of the year-long program.

The Structural Approach

Kagan, (1994) the strongest proponent of the Structural Approach, teaches that a structure plus content equals a learning activity. The structure constitutes the rules of the game, and the content is the material to be learned. There are many structures required to cover all kinds of learning material. In essence, there are elements which combine to form structures which organize the social interaction of students over subject matter. A lesson is merely a series of activities designed to reach teacher-determined objectives. Once the teacher has determined his/her objective, there are many lesson designs to choose from. Some of the major designs include: Color-Coded Co-op Cards and STAD for Mastery; Telephone, jigsaw II and Partners for Division of Labor; and Co-op Co-op, Co-op Jigsaw, Group Investigation, and Rotation Learning Centers for Division of Labor. It is possible to change one of them and use different elements or structures if desired, or a new design may be created from scratch. According to Kagan, it should have the following elements in place:

Meta-Cognitive Elements (elements that cause the individual to think)

Anticipatory set. Anticipatory activities prepare the student to get excited about what he/she will learn. Some suggestions include surprise, active participation, direct contact with the referent and discovery. In any case, the dissonance created awakens the student’s curiosity and he/she is ready to discover and learn. Structures that could be utilized might include Roundtable, Team Interviews, Round Robin, or Team Discussion.
Closure activities that help integrate new material. Closure activities allow the student to express personal meaning as it relates to the objective or summarize it. This may wait until the end of the lesson or may occur several times during it. Possible structures that would accommodate this might be: Three-Step Interview, Roundrobin, Think-Write-Share, Individual Write, or Inside-Outside Circle.

Reflection or self-assessment time. Reflection may come early or late in a lesson while the skill is being used. Students stop and notice their own and/or their teams progress and create a plan to improve it in some way. Structures that would accommodate this would include 4-Square Brainstorming, Roundtable, Round Robin and Team Discussion.

Content Acquisition Elements

Input (where the student receives factual information). Input in this sense is often referred to as direct instruction and may be done through modeling (teacher or student), films, showing finished products, stimulating questions, older student presentations, guest speakers, or specially set-up interviews. They should be given in bite-sizes and appeal to a variety of senses, including the visual, auditory and kinesthetic. Some other good structures include Paired Reading, Partners, Jigsaw, Co-Op Co-Op, teacher talk, videos, live TV programs, guest speakers and presentations by upper classmen.

Guided practice. To help with the guiding part of this element, rather than repeating himself endlessly, the teacher might ask the students to redefine or explain what the instructions are to their partner. It should be carefully structured, with reminders as to the rules involved. Some good structures to use include Pairs Check, Numbered Heads
Together, Flash-card Game, Turn-4-Review, Inside-Outside Circle, Same-Different, Match Mind, Paraphrase Passport, or Team Test-Taking for Practice.

**Independent practice.** Independent practice is only allowed when students have shown initial mastery of the concept by demonstrating it to their teammates. Rather than working on worksheets, students make murals, conduct surveys, analyze television programs, make photo essays, perform experiments, and design mini-learning centers for their teammates. Some alternative structures might include Send-A-Problem, Independent Writing, Blackboard Share and Mini-Topic Presentations.

**Evaluation/Feedback Elements**

**Assessment.** Assessment should occur several times during the input part of the design. Errors are recognized as tools for learning, and ample opportunities are provided for correction. Some structures for achieving this include Numbered Heads Together, Choral Responses, Blackboard Share, Stand and Share, Behavior Observation, Teacher Questioning, Weekly Quizzes and Improvement Scoring.

**Feedback.** Feedback includes appreciation from not only the teacher but peers as well. It also provides the student with specific knowledge of results. It can be informal (a nod, "Nice job," a smile, etc.) or formal (class thermometer, certificate, class party, etc.)

One of the most important aspects of feedback in the Cooperative Learning model is that it is frequent during the learning process. In traditional methods, feedback is reserved for the end of the lesson or unit, and thus is merely evaluative and does not lead to better learning. For many students, feedback is also valued more when it is from a peer, which is not generally part of a traditional structure. Pairs Check is a good structure for initiating positive feedback, as are Send-a-Problem, Flatcars Game and Team Discussion.
Contextual Elements

Teambuilding. The best way to accomplish teambuilding is by using teambuilding structures to help focus on and develop subject matter. Creating team names that relate to the subject, “Guess the Fib,” 4S Brainstorming, Roundtable and content-related team projects are all excellent structures for teambuilding.

Classbuilding. Classbuilding creates feelings among students of mutual respect, a sense of belonging and security. If students know their ideas will be met with respect, they will be more willing to share them. Once again it is best to make the activity part of the content, so for example students could form a line-up based on their estimates of the cost of a war. After talking to those close to them about why they chose the number they did, you could have them bend or break the line in half and turn it around so they face someone who had a different idea than they did. They would then talk once again about why they chose as they did, only with the person facing them (who had a different idea.) Corners, Mix-Freeze-Group and Who Am I? would also be appropriate structures to use.

Social skills instruction. Having good social skills makes learning more inclusive, motivating and more efficient. Kagan (1994) describes his program as utilizing four basic tools: Roles and Gambits; Structures and Structuring; Modeling and Reinforcement; Reflection and Planning. Roles and Gambits are an outgrowth of the selection of a social skill that is chosen to work on. If the skill is equalizing participation, for example, the role would be Gatekeeper. The Gambit would be words and body language that would encourage equal participation such as, “That’s interesting, John. What do you think, Susan?” In the beginning, there would be one role per week that everyone would work on at the same time. Most of the Kagan structures can be used to carry out the learning
experiences needed to learn social skills. Modeling and reinforcement is also quite self-explanatory but novel when a well-trained group is used to do the modeling. Reinforcement is particularly social in the sense that the teacher makes comments about the good social behavior he/she sees. Reflection and planning is also self-explanatory, since it is just a time set aside to consider how often one has used the good social skill-of-the-week and how one might better use it in the future. He also maintains that social skills need to be taught in the context of an academic pursuit in order to make the transition from knowledge to application efficiently.

Transitions. Transitions refer to how time is spent between the elements of a lesson design. An important part of this is to prepare what are sometimes referred to as sponge activities (specially designed activities for those students who finish early). Sponges should be simple, interesting activities that can be entered into and executed easily and should be related to the learning objective. Using roles such as the Quiet Captain and Materials Monitor are also useful to help with transitions. In addition, it would work to use Modeling, Structured Role Plays and Simultaneous Response Modes such as Choral Responses to teach students how to make transitions.

Conclusion

Once all the elements are in place, implementation is all that's left. The challenge is deciding which structures to use, in which order and for which objectives. To take a closer look at some standard lesson designs, see the appendix. For more in depth information and details about this program and the structures involved, see Kagan, 1994, or look up Kagan on the internet.
Learning Together

This is a program-design developed by David Johnson and Roger Johnson with the intent of using it to apply Cooperative Learning in any subject area and any grade level. The following outline is taken from Kagan (1994). It contains five principles: positive interdependence, face-to-face interaction, individual accountability, interpersonal skills, and group processing. When using this design, teachers follow 18 steps, divided into the following categories: specifying objectives; making decisions; communicating the task, structure and learning activity; monitoring and intervening; and evaluating and processing.

Specifying Objectives

There must be two objectives for each lesson: the academic one that would normally be specified in any design, and a Cooperative Learning/social skill objective.

Making Decisions

Decide on group size. Appropriate group size may range from two to six, depending on the nature of the learning task.

Assign students to groups. Student input may or may not be allowed as assignments are made. Some possibilities include homogeneous or heterogeneous grouping according to task orientation, ability, gender and race. The length of time the groups will last before reassignment is another decision that needs to be made at this time.

Arrange the room. Members must sit in a tight enough circle so as not to disturb other groups.

Plan materials. Distribution of materials is done in a carefully planned manner so as to reflect the cooperative nature of the assignment.
Assign roles. Leadership and social roles need to be assigned and can foster interdependence by assigning complementary and/or interconnecting roles to group members. An example of this would be to assign one student the role of praiser and another the checker.

Communicating the Task, Goal, Structure and Learning Activity

Explain the academic task. The responsibility for explaining any task is totally on the teacher who must explain the objectives, relate and define the concepts, explain procedures, give examples and check the student’s understanding of all of the above.

Structure positive goal interdependence. Whatever structure is utilized, it must require students to work collaboratively to reach the group goal.

Structure for individual accountability. In order for students to help one another, performance assessments are done in many different ways during a lesson. This way, group members know who needs help and encouragement.

Structure intergroup cooperation. It is important to apply the principles used to structure cooperation within the group to the whole class for intergroup cooperation.

Explain criteria for success. At the beginning of the lesson, the teacher explains the criteria by which the student’s academic success will be evaluated.

Specify desired behaviors. Teachers also define the kinds of behaviors that will be appropriate and/or desirable within the learning group.

Monitoring and Intervening

Monitor student behaviors. Once group work has begun, the teacher’s task is to observe in order to determine what problems are being encountered as students complete the assignment and work collaboratively.
Provide task assistance. This is once again the teacher's responsibility to do such things as clarify, review, answer questions and teach as necessary.

Teach collaborative skills. Teachers intervene as needed to suggest more effective ways to work together.

Provide closure. This means to summarize the lesson, ask some post-test questions and answer any questions.

Evaluating and Processing

Evaluate student learning. Instructors should give two evaluations after each lesson. One is the product of the academic instruction and the other is feedback on how well each group member collaborated.

Assess how well the group is functioning. Even if the time is limited, it is important to spend just a few minutes reflecting on what the students did well and what still needs improvement.

The rest of this section will be an overview of an article by Johnson and Johnson (1989-90).

The theme of Learning Together is that interpersonal and small-group skills are vital to the success of cooperative learning. It is a given that it requires interpersonal skills to work in a group, and Johnson and Johnson believe that students involved in cooperative learning situations must be directly taught and motivated to use such skills. They even offer a series of steps they recommend using in order to accomplish this objective.

First, students must discover the value in such learned behavior, and this can be encouraged by the teacher when she/he explains or demonstrates why it is important, displays in some manner how it sounds and looks (perhaps on a bulletin board) and
informs students that they will be rewarded for using it.

Second, students need to understand the skill itself and when it would be appropriate to use it. They suggest making a chart listing what the skill looks like (i.e., smiles, eye contact, thumbs up, a pat on the back) and what the skill sounds like (i.e., “What is your idea?” “Awesome!” “Good idea!” or “That’s interesting...”) The foregoing examples are suggestions for the skill of encouraging participation.

Third, immediately after learning about the skill, it is time to practice it through structured role play and then as a role in a group project. At the end of each cooperative lesson, the teacher should announce how many times she/he observed the behavior, staying with it relentlessly until it becomes a common occurrence.

Fourth, students need to reflect, discuss and describe how well they’re utilizing the skill and what they would like to do to improve. Because this processing step is so important, teachers should include it in their lesson plan each time they do a Learning Together lesson.

Fifth, in order to fully internalize these skills, it is best to use a bonus point system where teams receive points each time their members use them. Points are never taken away, and need to be visibly displayed on a chart. It is usually necessary to create an observation system, setting aside the same amount of time for each group and the rewards can be either social (positive remarks from the teacher) or tangible.

According to Johnson and Johnson, if this plan is followed and the skills are internalized, teachers will not only increase student achievement, but their future employability, career success, quality of relationships, and psychological health.
Group Investigation

In Group Investigation, students take an active part in planning what they will study and do. They form cooperative groups according to common interest in a topic. All group members help plan how to research their topic. Then they divide the work among themselves, and each group member carries out his or her part of the investigation. Finally, the group synthesizes and summarizes its work, and presents these findings to the class. (Sharan & Sharan, 1992). The process is outlined in six stages.

Stage One: Identifying the Topic to be Investigated and Forming Groups

Step one. This is an exploratory step that may take 2-3 periods. The teacher should introduce his/her general topic by posing a multifaceted question such as, “What can we learn from the Arizona Indians?” At this point, the issue is not what the students already know about the subject, but what they want to know. However, until they’ve had some contact with the referent, they might not know what that might be. For this reason, the focus of step one is to stimulate their interest and acquaint them with the subject in any and every way possible. It often takes the form of sources such as films, videos, texts, picture books, magazines, a visit to a particular site and/or a lecture on the subject.

Step two. Cooperative planning is now used to select various subtopics for inquiry. The teacher first writes students’ suggestions (questions) on the board. The students then meet in buzz groups, record their ideas and present them to the class. To complete this step, student write their questions, discuss and refine their list with a partner, and then repeat the process in groups of four, and then eight. The final list represents the interests of all participants.
Step three. The teacher makes a list of all the suggested questions to all of the students by posting them or distributing copies of them.

Step four. Everyone’s questions are classified into several categories in the same manner as step two. The categories are then presented as the subtopics for separate groups to investigate.

Step five. Students choose which subtopic they want to investigate and sign up for that group. The teacher may limit the most popular ones, or divide the interested students into two groups investigating the same subject.

Stage Two: Planning the Investigation in Groups

Once the subtopic is clear and in the format of a researchable problem, it is time for group members to each determine what aspects of it they are interested in investigating further. As a group, they need to discuss and clarify the scope of their questions as well as determine just what resources are available.

The first time a class undertakes this approach, the procedure may be quite schematic. If there are four members there may be eight questions. The teacher may give the groups a worksheet to follow with headings like research topic, group member, roles (coordinator, resource persons, steering committee, recorder), what to find out, and resources.

Most groups find it helpful to choose a recorder to fill out the worksheet, organize the materials, and to remind members what their roles are and when the deadlines are coming up. Copies of the worksheets should be posted for the whole class to see as a reminder of the bigger goal and to show how the class members are working together to contribute to the whole class.
Stage Three: Carrying Out the Investigation

**Step one.** At this stage, each day begins with the teacher reviewing what the groups are planning by way of investigation for that day. Some might be going to the library, interviewing someone, viewing a video or analyzing some material. This is the time for gathering information, evaluating it, reaching conclusions and perhaps re-directing the focus.

**Step two.** In the lower grades, groups may simply have each member present a short summary or answer to the question he/she investigated. With greater experience, this step becomes a problem-solving discussion. The students continue to share and compare information, searching for ways to apply it to the research question. At this point students will often discover a new problem evolving.

Stage Four: Preparing a Final Report

**Step one.** Students prepare a presentation of the most significant results of their investigation. It might come in the form of an exhibit, a skit, a written report, a guided tour, a video, or a learning center to name a few. It can be decided at any time along the way or changed up until the end of this step.

**Step two.** The steering committee (one member from each group) meets with the teacher to coordinate materials and schedules for presentations. The teacher continues in the role of adviser, helping the committee as needed and reminding them that each group’s plan should involve all its members.

Stage Five: Presenting the Final Report  The schedule of presentations is posted, and the class reunites for the performances. After each one, members of the audience express their reactions (either vocal or written) to what they saw and heard.
Stage Six: Evaluation

Although assessment is continuous throughout the investigation, this final evaluation focuses on students' higher level thinking about their topic. The teacher evaluates the process itself, the application of knowledge to new problems, the use of inferences and the drawing of conclusions.

Alternatively, the groups can contribute test questions about their subjects to a final exam. The teams can also correct the questions that they contributed, acting as experts on the subject.

Before it is over, time should be spent discussing how they felt about their experience or perhaps writing a summary of what they learned and experienced. It should also include some reference to what they think they could do to improve their group processing skills in the future.

The unique contribution this approach gives to Cooperative Learning is that control over what is learned is directed more by the students themselves. In addition, presentations utilizing a wide range of information and skills are ensured in part because students research questions according to their personal interests, knowledge and skills.
What Studies Have Been Done to Demonstrate Cooperative Learning’s Efficacy in the Schools?

One of the aspects of Cooperative Learning is that it includes many elements that have already been researched and used in other settings. It is not necessary or advisable to use all of the structures and elements at all times, and Kagan (1994) even advises that the structures be introduced one at a time over months and even years in order to cause the least amount of discomfort for both teacher and student. Nonetheless, there are certain effects that one can expect when all the basic elements of Cooperative Learning are properly in place. The following research is categorized according to those elements in order to better understand what it has to offer that more traditional, competitive or individualized instruction does not, and to determine if it is really worth the effort in the long run.

The effects of Cooperative Learning on the Development of Social Skills

If the potential of cooperative learning is to be realized, students must have the prerequisites of interpersonal and small-group skills and be motivated to use them. If teachers will attend to this in a serious manner, they will not only increase student achievement, but they will also increase students’ future employability, career success, quality of relationships and psychological health (Johnson & Johnson, Dec.1989-Jan.1990).

In a special group study, Gillies & Ashman (1997) describe a 12-week investigation of 192 sixth grade children working in heterogeneous groups. Some of the groups were trained in interpersonal and group skills while the others were not. The outcome was that all the students accrued the intended knowledge, but the groups who
were trained in group and interpersonal skills were consistently more cooperative and responsive to the needs of others. In the trained groups, it was also noted that the middle-ability students were quite actively involved in teaching and assisting other group members (right along with the high-ability students). This was not the case in the groups where there was no group skills training.

**The Potential Effects of Cooperative Learning on Motivation and Academic Achievement of Students**

Cooperative Learning focuses on peer interaction, and as Glasser (1998) and others have shown, students have strong needs to affiliate with their peers. Often, the main reason they go to school is to be with their peers, so to be involved with them can be a great motivation for learning, if properly channeled.

One of the steps in Cooperative Learning is for the students to process their experiences through discussion, description or reflection. As shown in a 1985 study by Yager, D.W. Johnson, R. Johnson & Snider, group processing will not only increase students’ interpersonal and small-group skills, but it will also increase achievement. This group maintains that to achieve mutual goals, students must communicate accurately and resolve conflicts constructively. Perhaps in doing so, their thinking also becomes more accurate and clear, hence the increase in individual achievement. Group processing is, of course, at the heart of Cooperative Learning, especially in the Learning Together program designed by Johnson & Johnson.

Literacy learning is influenced not only by cognition but also by social aspects. In teaching literacy, educators can capitalize on students’ intense interest in themselves and in social interaction, their emotional states and their budding capacity for analytical thought. Educators can do this using such methods as cooperative learning, peer editing
and paired readings (Irvin, 1997).

In a college situation, an attempt to enhance oral presentation skills found that presentations were better when peer review was used with feedback (Mitchell et al, 1995).

Quoting from Kagan (1994) we read that Cooperative Learning promotes higher achievement than competitive and individualistic learning structures across all age levels, subject areas and almost all tasks. This conclusion is based on a number of major literature reviews including those of Johnson & Johnson (1981) who conducted a meta-analysis on 122 achievement-related studies and Slavin (1983) who analyzed 46 controlled research studies which were conducted for an extended time in elementary and secondary school classrooms. Among the studies examined by Slavin, 63% showed superior outcomes for cooperative learning, 33% showed no differences, and only 4% showed higher achievement for the traditional comparison groups. Achievement gains were found in almost all (89%) of the studies which used group rewards for individual achievement.

When individual accountability was absent, achievement overall was about the same as in comparison classrooms. The lowest achieving students and minority students benefit the most, but the benefit obtained for the lower achievers is not bought at the expense of the higher achievers; the higher achieving students generally perform as well or better in cooperative classrooms than they do in traditional classrooms.

Kagan teaches workshops on cooperative learning, and his observations are many and varied.

In 60% of the cases, tutees out-performed students from control classrooms. Tutors moved in achievement an equivalent of from the 50th to the 63rd percentiles and their increases in positive attitudes toward the subject matter exceeded that of the tutees. There is evidence that cooperative learning groups involve more frequent helping, tutoring, and practice than do competitive or individualistic class structures. Students spend more time on task. The natural
inclination students have to talk is channeled instead of suppressed... and...Peer support reduces performance anxiety. (Kagan, 1994 p3:3)

Sometimes teachers or parents worry that cooperative learning strategies will hold back high achieving students. The research provides no support for this claim. High achievers gain as much as low achievers and definitely more than those in traditional settings (Slavin, 1991a).

The Effects of Cooperative Learning Strategies on ‘At Risk’ Students and Mainstreaming

More studies on this subject of the “at risk” are needed, but one study found that lower socioeconomic students who participated in cooperative learning groups in sixth grade had better attendance, fewer contacts with the police, and higher behavioral ratings by their teachers in grades 7-11 than did control students (Hartley, 1976).

Another study followed a group of kindergartners through fourth grade. In this study, the students who had been taught cooperatively were significantly higher than control students on measures of supportive, friendly and prosocial behavior; were better at resolving conflicts; and expressed more support for democratic values (Solomon, Watson, Schaps, Battistich, & Solomon, 1990).

Mainstreaming of mentally handicapped students has created numerous practical problems for teachers and it often results in social rejection of the student. In one study, Student Teams Achievement Divisions was used to integrate students who were functioning two grade levels behind their peers. It significantly reduced the degree to which the normal-progress students rejected their mainstreamed classmates and increased the academic level and self-esteem of both groups (Madden and Slavin 1983). Similar effects have been found when using Team Accelerated Instruction (Slavin & Karweit, 1984).

Other research using cooperative teams with normal and mainstreamed students
have also had the same results. (Ballard, Corman, Gottlieb & Kauffman, 1977 and Cooper, Johnson, Johnson, & Wilderson, 1980). In addition, in a self-contained school for the emotionally handicapped, Janke (1978) found that the emotionally disturbed students were more on-task, better behaved and had better attendance in TGT classes than in control classes. (TGT is an acronym for Teams, Games, Tournament - a variation of STAD. Instead of a test, the evaluation is done with a tournament.)

The Effects of Cooperative Learning Structures on Intergroup and Race Relations

One of the earliest and strongest findings when researching Cooperative Learning was that people who cooperate learn to like each other (Slavin 1977). This event is just that much more important when students have different ethnic backgrounds. Research also supports the conclusion that without intervention, ethnic separateness in schools does not naturally diminish over time (Gerard and Miller 1975).

Contact theory (Allport, 1954) predicts that desegregation in the schools only occurs if students participate in cooperative, equal-status interaction which is sanctioned by the school. Research on Cooperative Learning has borne this out (Slavin 1985). Most of the research included asking students who were their best friends at the beginning of the project and at the end. The number of choices made outside of their ethnic group was the measure of intergroup relations.

Two studies using STAD (Slavin 1979) and Jigsaw II (Ziegler 1981) included follow-ups several months after the studies and both found that students who had been in cooperative learning groups still named more friends from other ethnic groups than did control groups. Ziegler’s study took place in Toronto, Canada where the ethnic groups were Anglo-Canadians and those of more recent European immigration. The US Studies involved black, white and in a few cases, Mexican-American children.

Two studies done of Group Investigation (Sharan et al. 1984; Sharan & Shachar
1988) observing Jewish students from Europe versus the Middle East found that students' improved attitudes toward other ethnic groups extended to classmates who had never been in Cooperative Learning groups as did a study of elementary students in Maryland which utilized TAI (Oishi 1983).

In conclusion, it would appear that Cooperative Learning has a great deal to offer in the arena of race relations and acceptance of minorities. In California, it may not be long before white Caucasians are the minority, so this is an issue that is quickly becoming very urgent.

The Effects of Cooperative Learning Experiences on Psychological Health

Cooperative Learning could not exist without the element of social interdependence. One of many studies measuring the relationship between this element and psychological health studied suburban high school seniors (Johnson & Norem Heibeisen, 1977). Results indicated (a) a strong correlation between greater psychological health in a wide range of indices, and working cooperatively with peers (b) a correlation between both positive and negative indices of psychological health, and competitiveness (c) a strong negative correlation between a wide range of indices of psychological health, and individualistic attitudes.

Cooperative experiences with peers is positively related to emotional maturity, well-adjusted social relations, strong personal identity, personal ego strength, self confidence, independence, autonomy, ability to cope with adversity, social competencies, and basic trust in and optimism about people.

Competitiveness is generally related to alienation of some individuals from others, but individualization is often related to that plus such indices of psychological pathology as emotional immaturity; social maladjustment, delinquency; self-alienation and self-rejection (Johnson and Johnson, 1998).
Building on the over 80 studies done during the 1950s on the relative impact of cooperative, competitive and individualistic learning experiences on self-esteem, Johnson and Johnson (1989) found that cooperative learning experiences compared favorably over competitive (effect size = 0.58) and over individualistic (effect size = 0.44) experiences. This research demonstrated that cooperative experiences are related to beliefs that one is intrinsically worthwhile, that others see one in positive ways, that one's attributes compare favorably with those of one's peers, and that one is capable, competent, and successful. In cooperative learning efforts, students realize that they are accurately known, accepted and liked by their peers, know that they have contributed in positive ways to the group as well as the self, and perceive themselves and others in a differentiated, non-stereotypical way. Competitive experiences tend to be related to conditional self-esteem and individualistic experiences tend to be related to basic self-rejection.

When studied in regard to perspective-taking abilities, cooperation was related to increased perspective-taking ability, while competitive and individualized experiences tended to promote egocentrism (Johnson & Johnson, 1989).

In looking at the developmental aspects of psychological health, there is also much to be said for Cooperative Learning structures. In the beginning, children attach to their parents and/or caregivers. As they grow and mature through preadolescence, they move further away from their parents and begin identifying more and more with their peers (Nelson, 1984). This suggests one reason why peer/cooperative learning may be working so well.

Developmental psychologists such as Vygotsky (1978) maintain that Cooperative Learning contributes to the interaction among children around appropriate tasks which increases their mastery of critical concepts. He defines what he calls the zone of proximal
distance as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p.86).

The importance of people operating within one another's proximal zones of development was demonstrated by Kuhn (1972), who found that a small difference in cognitive level between a child and a social model was more conducive to cognitive growth than a larger difference.

Many Piagetians (e.g., Damon, 1984; Murray, 1982; Wadsworth, 1984) have called for an increase in cooperative activities in the schools, asserting that students will learn from each other as they discuss the content. This developmental perspective claims that as they encounter cognitive conflicts, unclear reasoning will be exposed, chaos or disequilibration will ensue and higher level thinking and understanding will emerge.

Psychological health is very important, and appears to be largely based on human experiences with significant others. What better place (next to the home) to support good psychological health than in America's classrooms?

The Effects of Cooperative Learning on Assessment and Evaluation

According to Johnson and Johnson, in their article on the internet called "Cooperative Learning and Assessment" the word assessment means to collect data in preparation for an evaluation and evaluation is the judgment of those merits. Cooperative Learning offers the following advantages regarding these issues:

1. More modalities can be used.
2. More diverse outcomes may be expected.
3. Additional sources of information are available.
4. There is more opportunity for the continuous improvement process to become
an ongoing part of classroom life.

5. It offers a setting in which students may best learn (and create) the necessary rubrics used to assess and communicate about their work.

6. There is greater possibility for students to learn from the assessment and evaluation process.

7. The support system is in place to implement the improvement plan that results from the assessments.

8. There is less possibility of teacher bias.

9. The opportunity is available to assess group as well as individual outcomes.

10. The means to make assessment procedures congruent with ideal instructional methods is in place.

Many of the elements and structures used in Cooperative Learning have also been used alone and in other programs with considerable success, but when all of the basic elements of Cooperative Learning are employed simultaneously, there appears to be a synergy of success that may well be worth the effort required for implementation.
Areas of Concern

Implementing Long-Lasting Programs

Although a recent survey (Puma, Jones, Rock and Fernandez, 1993) found that 79% of elementary teachers and 62% of middle school teachers in the US are reporting making use of some form of sustained cooperative learning. In its fullest conception cooperative learning provides a radically different approach to instruction, whose possibilities have been tapped only on a limited basis (Slavin, R.E. 1996). A major question is which structures to use when, in order to make it more effective over time and another is how to expand its usefulness from the classroom to a school, to a district, a state and a nation.

Before being able to choose any new approach or program, one must first become knowledgeable on the subject. This is possible through diligent study and reading, because much has been written by several different groups. It is also possible to have special training and coaching through those who have been properly trained in a particular approach. Kagan (1994) has a user-friendly and inexpensive approach by suggesting that the teacher start out with a structure like Numbered Heads Together, just to get a feel for what will happen. After a little team-building (utilizing subject matter content as a base), the other structures can follow, one by one, until everyone has made the adjustment. As students and materials become more complex and the students have learned how to support and strengthen one another through their words and behavior, the higher level, less tightly controlled structures can replace more of the tightly structured ones. (Kagan, 1994) Other groups, such as Slavin and his associates have complete programs that don’t have the flexibility that Kagan’s have. These must be implemented as a whole, rather than in parts.
As for implementing these structures into the school, district and so forth, it could really start on any level, but to be most effective, it would appear advisable to move it gradually, modeling the concepts to people within a proximal distance of one another. In other words, if the teacher is the one to begin, then she/he could model for other teachers and the principal. If the principal is the initiator, he/she could model it for the superintendent and/or teachers in staff meetings, thereby preparing them to model it for their students. If it is a district superintendent, he/she could model it for the principals in meetings by structuring them in a Cooperative Learning style.

What May Account for the Efficacy Cooperative Learning?

To answer this, it may be advisable to look at it from three different perspectives: motivational, developmental and cognitive elaboration.

The key motivational concept here is that providing group rewards based on the sum of group members' individual learning is what makes cooperative learning work. Out of 64 studies of cooperative learning methods that provided group goals and individual accountability which were done in elementary and secondary schools, 50 (78%) found significantly positive effects on achievement, and none found negative effects (Slavin, 1995). In contrast, studies of methods that used group goals based on a single group product or provided no group rewards found few positive effects. Group goals based on the sum of individual learning performances were determined as necessary to the instructional effectiveness of the cooperative learning models.

Although developmental theorists would like to believe that pure collaboration between peers is sufficient (without extrinsic rewards), there is little evidence to substantiate this theory. However, it is likely that the cognitive processes that developmentalists describe (i.e., proximo-distal learning) are important as mediating variables to explain the effects of group goals and group tasks on student achievement.
The effectiveness of cognitive elaboration has been substantiated for a long time in the field of cognitive psychology. They hold that if information is to be retained in memory and related to information already in memory storage, the learner must engage in some kind of elaboration or cognitive restructuring of the material (Wittrock, 1986). Peer tutoring research also supports this view (Webb, 1989, 1992). Explaining material to a peer is a very effective way of doing this, and may be the reason high ability students often benefit the most from cooperative learning situations. The indicators appear to be saying that students who receive elaborated explanations learn more than those who work alone, but not as much as those who serve as explainers (O'Donnell & Dansereau, 1992).

What if it Doesn't Work?

A frequent response to this question is that it wasn't implemented properly in the first place. This sounds like a response an engineer might give to a mechanic when things don’t function as they “should,” but at times there is an element that is overlooked from the theoretical standpoint, and needs to be addressed on location. When it doesn’t work, as in the case of the implementation of “Success For All” (Slavin’s umbrella Cooperative Learning program) in Lake Forest Elementary in Duval county, Florida, 48 schools in Miami School District, and a number of schools in Baltimore public schools (Slavin, 2000) it becomes clear that there are still some glitches that need to be addressed. After investing $6.5 million and several years Miami School District is now stating that “SFA should articulate its perceptions that Miami District is not implementing the program correctly. SFA needs to provide opportunities to make this lack of implementation clear” (Slavin 2000). Perhaps a little more cooperative learning needs to take place between the “tutors” and “tutees” here.
What About Research Bias?

This is a difficult issue to address because it's so easy to like a system that has so much positive research going for it, but a good place to start may be to take a look at the schools and districts where it has been implemented unsuccessfully and find comparisons to study that might have been overlooked, such as core beliefs of the people, or an autocratic sort of implementation. When well-researched models such as this don't always work, there is obviously need for further objective analysis.

Is there Something Else that Works Equally Well?

This is a valid question, but a difficult one as well, because it appears that if there is something that works, it is easily incorporated into the Cooperative Learning model.

Studies of one such approach, called Reciprocal Teaching, relates well to the cognitive elaboration perspective. In this process, students are required to create questions for one another around the lesson content. In so doing, they have to understand the material and focus in on its essential elements. Studies of this approach have supported its effects on student achievement (Palincsar, 1987; Rosenshine & Meister, 1994). There are other peer programs that utilize content-directed structures to enhance learning, but, once again, anything that utilizes peers in any way is probably already incorporated into Cooperative Learning.
Summary and Conclusion

Changes in American economics, demographics and social situations have all contributed to the challenges now facing American public schools. The world is getting smaller in terms of business and economics as we see companies draw on materials from all over the world to produce their final products. The industrial age, where competition was at its best, has transformed into the information/communication age. With this has come the need for a cooperative model as demonstrated by many big businesses.

The effects of mass immigration to America has also caused a challenge to the schools because of language and cultural differences. Add to that, the effect of urbanization which has been steadily increasing for many years, and the need for cooperative communication and learning structures becomes a rather glaring necessity.

Ideally (as in the past), learning cooperative social behaviors would begin in the home. However, when mothers and fathers both work full-time jobs and the television grabs its full measure of attention, there is little time left for true social experiences in that context. Somehow, the schools must pick up the slack and teach not only content material, but learning processes and social skills all at once. Overwhelming as this may seem at first, these challenges are being met in many schools today through Cooperative Learning programs.

Whereas in the past, teachers have used competitive, nonsocial structures almost exclusively, some are now beginning to use Cooperative Learning structures that make it possible to capitalize on the human need to socialize. Through this approach, social energy is channeled to motivate and educate students instead of suppressing it.

To understand how this works, some of the elements of Cooperative Learning have been described. The physical arrangements are that students are divided into teams of 2-6 (usually 4) with some kind of heterogeneous arrangement (race, sex, ability, etc.)
Then there is what are called improvement scores, where all students can contribute equally to their team’s reward or success. The intent is that everyone succeed and no one hitchhikes.

Positive interdependence is another basic element that needs to be met by making sure the goal is the same for each team, recognition is based on contributions made by everyone on the team, and the task is structured so that it cannot be done alone.

Inherent in this element is the assumption that the individual will be held accountable for his/her contribution.

Whereas in traditional methods, students would be lucky if they had a chance to talk for less than a minute once or twice in a whole day, in Cooperative Learning programs, simultaneous interaction is the ideal and the intent. When work is done in pairs, half the time would be spent talking and half listening. In groups of 4, each would have the opportunity to talk a fourth of the time.

Another very important element is the social skills training which is offered in both a direct, formal manner and an indirect, informal one.

The element of reflection time is like a “time out” for everyone to consider what they’ve been experiencing and how they would like to apply it to future plans, giving integration time to new learning as well as opportunities to calm down and consider what may be needed in terms of classroom management. Classroom management in Cooperative Learning is covered by structures directed to three noise levels, seating arrangement, giving directions, positive attention given by all, team recognition systems and individual accountability.

Peer support comes in many different packages such as practicing with flash cards, learning how to ask for help and gives it, and specific instruction as to how to help a person help himself and the team. When a student becomes an expert on a part of the
goal, he/she needs to be listened to as he/she teaches the team the new material. Even the seating arrangement is designed to lend itself to the positive experience of peer support.

Peer modeling is another on-going outcome tied in to peer support.

Division of labor is a more advanced element of Cooperative Learning, but one that is very important for society as a whole.

A Cooperative Learning classroom looks and sounds different than a traditional classroom in many ways. There is more noise and more moving about. The desks are arranged in small groups, and learning centers may be seen against the walls. Posters made by the teams may be hung on the walls as well as a chart showing how the teams are doing in relation to their goal.

Some programs and structures are content-specific, such as TAI, STAD, CIRC and FO/D. Examples of flexible-content structures would be all of Kagan’s Cooperative Learning structures, Learning Together processes and Group Investigation.

Cooperative Learning is much more than putting people into groups and telling them to accomplish a goal. It has 5-12 components, depending on whose program you’re looking at, but although they can be content-specific or not, they all tend to agree on the following:

1. The group goal or project combined with individual accountability is essential.
2. Groups may range in size from 2-6 participants.
3. Structures and rules must be in place to guide the activities.
4. Basic, formal groups most often need to be heterogeneous in one or more factors.
5. Social skills and communication issues are addressed.
6. Some kind of processing or self/group evaluation occurs.
7. Group rewards are given on an individual basis.

To determine whether or not these programs and outcomes are likely to be timely
for American Schools, the next portion of this research focuses on various studies done on
the elements of Cooperative Learning as well as the programs per se. Kagan, Slavin, Johnson and Johnson, and Sharan and. Sharan have done studies on their own programs, but would the elements also stand alone? Can it be expected that there would be a synergy if all the basics of Cooperative Learning are employed at once?

Evidence is presented to support the positive outcomes of the core elements of Cooperative Learning concerning issues such as: social skills, motivation to learn, academic achievement, “at-risk” students, mainstreaming, intergroup and race relations, psychological health and assessments.

Hundreds of lab and field research studies demonstrate that Cooperative Learning has a number of very positive outcomes. The three most important of these are (1) academic gains, especially for minority and low achieving students; (2) improved race-relations among students in integrated classrooms; and (3) improved social and affective development among all students. There is also evidence that cooperative learning has a positive impact on classroom climate, self-esteem among students, internal locus of control, role-taking abilities, time on task, attendance, acceptance of mainstreamed students, and liking for school and learning.

Whereas there is always room for improvement through more extensive research, Cooperative Learning has been shown to promote higher academic achievement and social skills than competitive and individualistic learning structures across all age levels, subject areas and almost all tasks. (Kagan, 1989)

It is challenging to implement new programs into the schools, but in a survey done by Puma, et. al (1993), it was found that 79% of elementary teachers and 62% of middle school teachers were utilizing some form of sustained cooperative learning. This looks good for the present and future, but the real possibilities
have just begun to be tapped. At times, the outcomes of implementation don’t quite correspond with the research, so there’s obviously more to understand about how to integrate the elements of Cooperative Learning into a school setting. Kagan would like to see it done by adding one element at a time as the teacher is ready. Programs like Slavin’s curriculum packages would have to be implemented all at once, and this abruptness in change appears to have created some of its own challenges.

The core elements of Cooperative Learning and numerous individual programs have been thoroughly researched and found effective by many people in educational settings, confirming that it has much to offer in satisfying the needs American schools have for the academic success, positive social strength, creativity and individual accountability of its students. There is much to learn about proper implementation of these programs, but Cooperative Learning is well worth the time and attention it requires. It truly offers a healthy environment for the development of integrity between American schools and the ideals/realities of American society today.
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APPENDIX
### COOPERATIVE LEARNING LESSON DESIGNS

#### Mastery Designs

**Color-Coded Co-op Cards**
1. Pre-test
2. Create cards
3. Flashcard Game
4. Practice Test
5. Count Improvement Points
6. Flashcard Game
7. Final test
8. Final Improvement Score
9. Individual, team and class recognition
10. Reflection

**STAD**
1. Direct Instruction
2. Group work for practice
3. Individual quiz
4. Improvement scoring
5. Team recognition

**Division of Labor Designs**

**Telephone**
1. A student exits room
2. Remaining students instructed
3. Student returns
4. Returnee instructed by teammates
5. Returnee is tested

**Partners**
1. Form partners within teams
2. Class division
3. Materials distributed
4. Partners work
5. Partners consult
6. Partners prepare to present
7. Teams reunite
8. Partners present and tutor
9. Reflection
10. Individual assessment

**Jigsaw II**
1. Direct Instruction
2. Expert topics assigned
3. Expert groups work
4. Experts teach teammates
5. Individual quiz
6. Improvement scoring
7. Team Recognition

**Project Designs**

**Co-op Co-op**
1. Class discussion
2. Team selection
3. Team-building/social skill
4. Team topic selection
5. Mini-topic selection
6. Mini-topic preparation
7. Mini-topic presentation
8. Prepare team presentation
9. Team presentations
10. Evaluation
11. Reflection

**Rotation Learning Centers**
1. Monday: input
2. Tuesday: 1st learning center
3. Wednesday: 2nd learning center
4. Thursday: 3rd learning center
5. Friday: Integration and assessment

**Group Investigation**
1. Identify topic; team selection
2. Plan the learning task
3. Carry out investigation
4. Prepare final report

**Johnson and Johnson**
1. Direct Instruction of content
2. Teach social skills
3. Students work in groups
4. Observe and process social skills & content

(Kagan, 1994)
COOPERATIVE LEARNING STRUCTURES

Roundrobin is a team-building structure where each student takes a turn sharing something with his/her teammates.

Match Mine is a communication-building structure where students attempt to match the arrangement of articles on a grid of another student using oral communication only.

Numbered Heads Together is a mastery structure where the teacher asks a question, students consult to make sure everyone knows the answer and then one student is called upon to answer.

Color-coded Co-op cards is a mastery structure where students memorize facts using flash cards. The game is structured so that there is a maximum probability of success at each step, moving from short-term to long-term memory. Scoring is based on improvement.

Pairs Check is a mastery structure where students work in pairs within groups of four. Within pairs students alternate—-one solves a problem while the other coaches. After every two problems the pair checks to see if they have the same answers as the other pair.

Three-step Interview is a structure used for concept development where students interview each other in pairs, first one way, then the other. Students each share with the group whatever they learned in the interview.

Think-Pair-Share is primarily for concept development and begins by having the students think to themselves about the topic the teacher presents. They then pair up with a teammate to discuss it and conclude by sharing their conclusions with the class.

Team word-webbing is for concept-development and done by having students write simultaneously on a large sheet of paper. They draw main concepts, supporting elements, and bridges representing the relation of ideas in a concept.

Roundtable is a multi-functional structure in which each student in turn writes one answer as a paper and a pencil are passed around the group. With Simultaneous Roundtable more that one pencil and paper are used at once.

Inside-outside Circle is accomplished by arranging students in two concentric circles. The inside circle faces out; the outside circle faces in. Students use flash cards or respond to teacher questions as they rotate to each new partner.

Jigsaw is a multi-functional structure in which each student on the team becomes an “expert” on one topic by working with members from other teams assigned the corresponding expert topic. Upon returning to their teams, each one in turn teaches the group. All students are assessed on all aspects of the material.

Partners is multi-functional and begins as students work in pairs to create or master content material. They consult with partners from other teams and then share their products or understanding with their original team-partner.

(Kagan, 1994)