

Fig. 4. Overview of Selected Structures		
Structure	Brief Description	Functions Academic & Social
Teambuilding		
Roundrobin	Each student in turn shares something with his or her teammates.	Expressing ideas and opinions, creation of stories. <i>Equal participation, getting acquainted with teammates.</i>
Classbuilding		
Corners	Each student moves to a corner of the room representing a teacher-determined alternative. Students discuss within corners, then listen to and paraphrase ideas from other corners.	Seeing alternative hypotheses, values, problem-solving approaches. <i>Knowing and respecting different points of view, meeting classmates.</i>
Communication Building		
Match Mine	Students attempt to match the arrangement of objects on a grid of another student using oral communication only.	Vocabulary development. <i>Communication skills, role-taking ability.</i>
Mastery		
Numbered Heads Together	The teacher asks a question, students consult to make sure everyone knows the answer, then one student is called upon to answer.	Review, checking for knowledge, comprehension. <i>Tutoring.</i>
Color-Coded Co-op Cards	Students memorize facts using a flash card game. 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.	Memorizing facts. <i>Helping, praising.</i>
Pairs Check	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.	Practicing skills. <i>Helping, praising.</i>
Concept Development		
Three-Step Interview	Students interview each other in pairs, first one way, then the other. Students each share with the group information they learned in the interview.	Sharing personal information such as hypotheses, reactions to a poem, conclusions from a unit. <i>Participation, listening.</i>
Think-Pair-Share	Students think to themselves on a topic provided by the teacher; they pair up with another student to discuss it; they then share their thoughts with the class.	Generating and revising hypotheses, inductive reasoning, deductive reasoning, application. <i>Participation, involvement.</i>
Team Word-Webbing	Students write simultaneously on a piece of chart paper, drawing main concepts, supporting elements, and bridges representing the relation of ideas in a concept.	Analysis of concepts into components, understanding multiple relations among ideas, differentiating concepts. <i>Role-taking.</i>
Multifunctional		
Roundtable	Each student in turn writes one answer as a paper and a pencil are passed around the group. With Simultaneous Roundtable more than one pencil and paper are used at once.	Assessing prior knowledge, practicing skills, recalling information, creating cooperative art. <i>Team-building, participation of all.</i>
Inside-Outside Circle	Students stand in pairs 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.	Checking for understanding, review, processing, helping. <i>Tutoring, sharing, meeting classmates.</i>
Partners	Students work in pairs to create or master content. They consult with partners from other teams. They then share their products or understanding with the other partner pair in their team.	Mastery and presentation of new material, concept development. <i>Presentation and communication skills.</i>
Jigsaw	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; and students are all assessed on all aspects of the topic.	Acquisition and presentation of new material, review, informed debate. <i>Interdependence, status equalization.</i>
Co-op Co-op	Students work in groups to produce a particular group product to share with the whole class; each student makes a particular contribution to the group.	Learning and sharing complex material, often with multiple sources; evaluation; application; analysis; synthesis. <i>Conflict resolution, presentation skills.</i>

Johnson & Johnson	Mid 1970s	Constructive Controversy
Aronson & Associates	Late 1970s	Jigsaw Procedure

<http://www.jigsaw.org/overview.htm>

Overview of the Jigsaw Technique

The jigsaw classroom is a cooperative learning technique with a three-decade track record of successfully reducing racial conflict and increasing positive educational outcomes. Just as in a jigsaw puzzle, each piece--each student's part--is essential for the completion and full understanding of the final product. If each student's part is essential, then each student is essential; and that is precisely what makes this strategy so effective.

Here is how it works: The students in a history class, for example, are divided into small groups of five or six students each. Suppose their task is to learn about World War II. In one jigsaw group, Sara is responsible for researching Hitler's rise to power in pre-war Germany. Another member of the group, Steven, is assigned to cover concentration camps; Pedro is assigned Britain's role in the war; Melody is to research the contribution of the Soviet Union; Tyrone will handle Japan's entry into the war; Clara will read about the development of the atom bomb.

Eventually each student will come back to her or his jigsaw group and will try to present a well-organized report to the group. The situation is specifically structured so that the only access any member has to the other five assignments is by listening closely to the report of the person reciting. Thus, if Tyrone doesn't like Pedro, or if he thinks Sara is a nerd and tunes her out or makes fun of her, he cannot possibly do well on the test that follows.



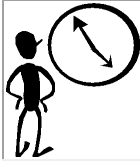
To increase the chances that each report will be accurate, the students doing the research do not immediately take it back to their jigsaw group. Instead, they meet first with students who have the identical assignment (one from each jigsaw group). For example, students assigned to the atom bomb topic meet as a team of specialists, gathering information, becoming experts on their topic, and rehearsing their presentations. We call this the "expert" group. It is particularly useful for students who might have initial difficulty learning or organizing their part of the assignment, for it allows them to hear and rehearse with other "experts."

Once each presenter is up to speed, the jigsaw groups reconvene in their initial heterogeneous configuration. The atom bomb expert in each group teaches the other group members about the development of the atom bomb. Each student in each group educates the whole group about her or his specialty. Students are then tested on what they have learned about World War II from their fellow group member.

What is the benefit of the jigsaw classroom? First and foremost, it is a remarkably efficient way to learn the material. But even more important, the jigsaw process encourages listening, engagement, and empathy by giving each member of the group an essential part to play in the academic activity. Group members must work together as a team to accomplish a common goal; each person depends on all the others. No student can succeed completely unless everyone works well together as a team. This "cooperation by design" facilitates interaction among all students in the class, leading them to value each other as contributors to their common task.

<http://edtech.kennesaw.edu/intech/cooperativelearning>

Three-minute review - Teachers stop any time during a lecture or discussion and give teams three minutes to review what has been said, ask clarifying questions or answer questions.



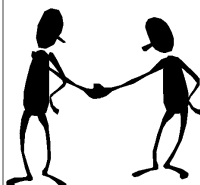
7. Team Pair Solo (Kagan)- Students do problems first as a team, then with a partner, and finally on their own. It is designed to motivate students to tackle and succeed at problems which initially are beyond their ability. It is based on a simple notion of mediated learning. Students can do more things with help (mediation) than they can do alone. By allowing them to work on problems they could not do alone, first as a team and then with a partner, they progress to a point they can do alone that which at first they could do only with help.



8. Circle the Sage (Kagan)- First the teacher polls the class to see which students have a special knowledge to share. For example the teacher may ask who in the class was able to solve a difficult math homework question, who had visited Mexico, who knows the chemical reactions involved in how salting the streets help dissipate snow. Those students (the sages) stand and spread out in the room. The teacher then has the rest of the classmates each surround a sage, with no two members of the same team going to the same sage. The sage explains what they know while the classmates listen, ask questions, and take notes. All students then return to their teams. Each in turn, explains what they learned. Because each one has gone to a different sage, they compare notes. If there is disagreement, they stand up as a team. Finally, the disagreements are aired and resolved.



9. Partners (Kagan) - The class is divided into teams of four. Partners move to one side of the room. Half of each team is given an assignment to master to be able to teach the other half. Partners work to learn and can consult with other partners working on the same material. Teams go back together with each set of partners teaching the other set. Partners quiz and tutor teammates. Team reviews how well they learned and taught and how they might improve the process.



<http://www.worksheetlibrary.com/teachingtips/cooperativelearningtips.html>

10 Tips for Cooperative Learning

Cooperative learning is a method where teachers place students in small teams with students of different learning levels. The object is for the higher-level students to help lower-level students

improve their understanding of concepts being taught. In essence, each member is responsible for learning, as well as helping teammates learn, too. Students are to keep practicing concepts until the entire team understands and completes the assignment given. Here are some tips for utilizing cooperative learning in your classroom.

Tip #1

Playing teacher. Divide students into even groups of five or less. Give each student in a group a unique concept to learn. Then bring the group back together and let students teach each other what they have learned. Make sure that the entire group is learning about the same subject, just a different aspect of the subject. Test each group when the teaching session is completed within each group.

Tip #2

The Interview. Divide students into groups with an even number of students in each group. Each member of a group chooses a partner. Have individuals interview their partner by asking them clarifying questions. Now let the partners switch roles. Lastly, let members of the entire group share their responses as a team.

Tip #3

Catch a brainstorm. Divide students into teams of 4 to 6, and appoint one student on each team to be the "secretary." Give each team a different question that can have many answers. Now give each team a chance to brainstorm answers to the question, with the "secretary" writing down the team's responses. Have the students work in a circle, each taking turns to give a response, instead of having all of the students shout out answers to the "secretary" at once.

Tip #4

Number Frenzy. Divide students in groups of four. Label each student in a group as number 1, 2, 3, or 4. Ask the groups a common question. The group then works together to come up with the correct answer. Now you call out a number (between 1 and 4), and the person in a group that is assigned that number is to give you the answer to the question.

Tip #5

Group Grading. After taking a test, divide your students into groups with an even number of people in each group. Let students trade their test papers, so they will be grading each other. Now give each group a few minutes to discuss the answers that group members got wrong, so that those members can see why their answer was wrong and what the correct answer should have been. Wrap up the groups and answer any dangling questions not addressed in the individual groups.

Tip #6

The great debate. Cooperative learning can be used in any situation where you want children to debate over a concept being taught. For instance, when learning about the elections process, you can divide students into groups and have them hold a debate over what they would change about the elections process, what is working and not working with the current process, etc.

Tip #7

Listing activity. Divide students into groups of five or less. Ask each group to list words and/or phrases that describe what they are being taught, i.e., farm animals that are most useful. Be sure that every response is written down that each individual gives. Have each group discuss their list and then come up with the words and/or phrases the entire group agrees on. Later each group can get up before the class and discuss why they chose the responses they did.

Tip #8

The One Minute Game. Divide the class into teams of five or less. Have each group contemplate answers to these questions, giving them one minute to answer them:

What was the main thing you learned today?

Tell me two questions that you have remaining about this lesson.

What else would you like to know about this topic?

This is a great cooperative learning activity that helps students give you feedback about the lessons they learned.

Tip #9

Assigning group roles. Consider assigning each member of a group a role, so each member feels they are contributing to the group in a positive way. Roles could consist of:

Leader - The individual that makes sure everyone in the group has mastered the concepts being learned through the exercises.

Secretary - The person who records responses for the entire group.

Reporter - The person that speaks for the group when standing in front of the class.

Monitor - The person who keeps time for the group with timed assignments.

Manager - The person who fills in for any member of the group who is absent, and assists the leader of the group.

Roles can be switched within a group from time-to-time.

Tip #10

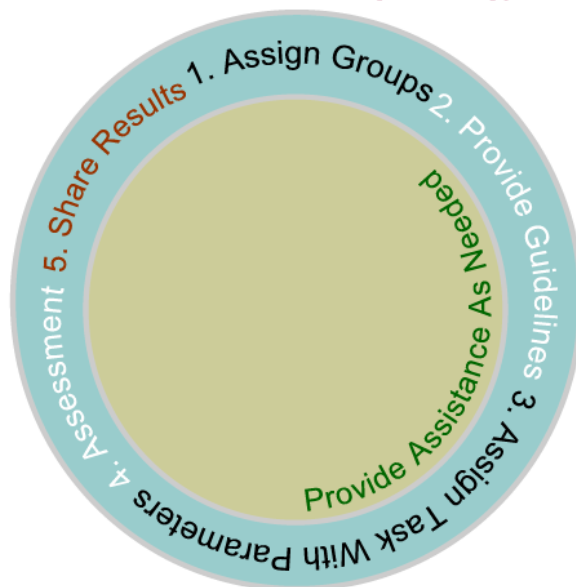
Ranking order. Determine whom you will put into groups by using the following exercise.

1. Present your students with an issue that is pertinent to a lesson. Have the students rank this issue by how they feel about it with 1 being in strong agreement and 10 being in strong disagreement.
2. Place a rank-order line on your whiteboard and record the students' responses on the line.
3. Now form your groups by pulling out one person from each end of the ranking order, and then two people from the center of the line.

<http://www.worksheetlibrary.com/teachingtips/cooplearning.html>

Cooperative Learning Strategies (Slavin, 1990)

Cooperative Learning Strategy



Cooperative Learning Visual Concept Diagram

Description

Cooperative learning can be described as means of providing opportunities for pupils to work together as a team in accomplishing a set of given objectives. It is collaborative in nature and focuses on individual accountability to team success. A major benefit of cooperative learning includes the nurturance and development of social interaction skills.

Principles of Project-based Learning

Cooperative learning as a teaching strategy relies on the following:

Pupils are assigned to small groups or teams (ideally no more than 4 members in a group),

Teams are comprised of pupils of different ability levels.

The immediate intention is that each member of the "team" accepts the responsibility to achieve the goal(s) of instruction while helping any teammates who need assistance. Tasks or activities that are assigned can vary in nature depending on the grade level. The ultimate goal is to promote positive relationships and mutual respect among teammates, to foster accountability (both individual and group), and to provide a venue for problem solving as a team.

The more popular strategies used in cooperative learning include:

> **Group Investigation**

> **STAD (Student Teams-Achievement Divisions)**

> Jigsaw II

Procedures

Assign groups according to different ability levels or backgrounds keeping each team as diverse as possible.

Choose a cooperative learning strategy that the team will use to complete the task.

Assign a task to be completed defining the parameters and clearly identifying the goals.

Provide assistance when needed.

Provide an evaluation checklist with points to determine progress in achieving team goals.

Provide an opportunity for the team to share results of teamwork.