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# Cooperative Learning

## What Is It?

**Cooperative Learning**, sometimes called small-group learning, is an instructional strategy in which small groups of students work together on a common task. The task can be as simple as solving a multi-step math problem together, or as complex as developing a design for a new kind of school. In some cases, each group member is individually accountable for part of the task; in other cases, group members work together without formal role assignments.

According to David Johnson and Roger Johnson (1999), there are five basic elements that allow successful small-group learning:

* **Positive interdependence**: Students feel responsible for their own and the group's effort.
* **Face-to-face interaction**: Students encourage and support one another; the environment encourages discussion and eye contact.
* **Individual and group accountability**: Each student is responsible for doing their part; the group is accountable for meeting its goal.
* **Group behaviors**: Group members gain direct instruction in the interpersonal, social, and collaborative skills needed to work with others occurs.
* **Group processing**: Group members analyze their own and the group's ability to work together.

Cooperative learning changes students' and teachers' roles in classrooms. The ownership of teaching and learning is shared by groups of students, and is no longer the sole responsibility of the teacher. The authority of setting goals, [assessing learning](http://www.teachervision.fen.com/curriculum-planning/printable/6282.html), and facilitating learning is shared by all. Students have more opportunities to actively participate in their learning, question and challenge each other, share and discuss their ideas, and internalize their learning. Along with improving academic learning, cooperative learning helps students engage in thoughtful discourse and examine different perspectives, and it has been proven to increase students' [self-esteem](http://www.teachervision.fen.com/intelligence/teaching-methods-and-management/4810.html), [motivation](http://www.teachervision.fen.com/teaching-methods/resource/5048.html), and empathy.

Some challenges of using cooperative learning include releasing the control of learning, managing noise levels, [resolving conflicts](http://www.teachervision.fen.com/classroom-discipline/resource/3038.html), and assessing student learning. Carefully structured activities can help students learn the skills to work together successfully, and structured discussion and reflection on group process can help avoid some problems.

## Why Is It Important?

The authors of *Classroom Instruction that Works* cite research showing that organizing students in cooperative learning groups can lead to a gain as high as 28 percentiles in measured student achievement (Marzano, Pickering, and Pollock 2001).

Other researchers report that cooperation typically results in higher group and individual achievement, healthier relationships with peers, more metacognition, and greater psychological health and self-esteem (Johnson and Johnson 1989).

When implemented well, cooperative learning encourages achievement, student discussion, active learning, student confidence, and motivation. The skills students develop while collaborating with others are different from the skills students develop while working independently. As more businesses organize employees into teams and task forces, the skills necessary to be a "team player" (e.g., verbalizing and justifying ideas, handling conflicts, collaborating, building consensus, and disagreeing politely) are becoming more valuable and useful. Using cooperative groups to accomplish academic tasks not only provides opportunities for students to develop interpersonal skills but also gives them authentic experiences that will help them be successful in their [future careers](http://www.teachervision.fen.com/careers/teacher-resources/6637.html).

## How Can You Make It Happen?

#### Beginning to Work in Groups

In classrooms where students are not familiar with working together in small groups, start with short, highly-structured activities. It will take time to develop a respectful and safe classroom community. Successful cooperative groups depend on students who respect each other, listen to one another, and feel safe enough to share their thoughts and feelings. You can help students learn the skills needed to work in groups by starting with short, structured lessons aimed at fostering turn-taking, involving all students in the discussion, and clarifying the roles, rights, and responsibilities of group members.

One way to introduce cooperative groups is to work with one group to get started, and allow the rest of the students to watch the group as they engage in a discussion – a "fishbowl" experience. Intervene when necessary to keep the thoughtful discussion going. With the large group, discuss effective strategies that the small group is using or should be using to continue and expand the discussion.

When beginning to use cooperative learning with students, it is also important to establish team norms. Team norms are guidelines or rules governing how group members agree to work together. Norms for working in groups tend to be very different from traditional classroom norms. For example, in a traditional classroom, students complete their own work. In cooperative classrooms, students work with others to complete tasks. Have students discuss and develop the norms that they will follow during group work. Team norms, if designed well, can help to create a safe and supportive atmosphere.

Some examples of team norms include:

* We always treat one another with respect.
* We always encourage new ideas and value the consideration of all suggestions.
* We always justify our opinions to the team.
* We always make decisions as a team.

### Preparation

Students should be grouped for instruction to maximize opportunities to learn, and the type of grouping can produce different results based on the circumstances. Establish groups using a variety of criteria, such as [social skills](http://www.teachervision.fen.com/emotional-development/teacher-resources/32913.html), academic skills, student interests, and instructional objectives.

Select the academic and collaborative objectives. For example, "Students will present their opinion of a candidate, supported with facts. Students will work cooperatively in groups of four, taking turns when talking."

Teachers should model positive interpersonal skills, have students practice the skills, and encourage the students to reflect on how effectively they are performing the skills.

### Instruction

Once groups have been determined, the most important phase begins. Instruction should be based on solid content, with grouping used to enhance and customize student learning. Students should understand the objectives, instructional tasks, and criteria for success. Review and assign student roles in order to smooth the transition to cooperative learning groups. During instruction, monitor groups and reinforce collaborative behaviors, conduct observations, assess social skills, or interview students.

### Assessment

After instruction, assessments may include paper and pencil achievement tests and/or measures of actual student performance or group products. Develop a way to assess both group and individual accountability. After working in groups, students should engage in group processing activities where they discuss the interpersonal skills that influence their effectiveness in working together.

Be sure to schedule a time for students to explain to the class how they completed a task or solved a problem, as different groups may have developed different solutions. Explaining their group's process is an important skill for students to develop. In addition, the whole class benefits from the range of ideas from each group.

You will need to decide how students and groups will be made accountable for their learning. In collaborative classrooms, it is often difficult to assign individual grades. Some teachers give "group" grades that each student receives, but this can be problematic if a few students do the majority of the work within a group. Giving each member both an individual and a group grade is another option. Each student can receive a grade for the group task and can be responsible for a subtask, which is graded as well. Some teachers average the academic grade with a "group performance" grade. This makes group interactions and processes as significant as academics. If you are uncomfortable with this, a good solution is to have students complete an individual task after the cooperative learning activity, such as writing a reflection piece about what they learned and how their group worked to complete the task. This may be a preferable way to evaluate students because it can be used as an assessment of student learning, metacognition, and group processing. Another possibility is to have individual students each complete a final draft of a report that the group has started.

### Student Roles

Some tasks are complex and may benefit from clear roles and responsibilities assigned to each student within a group. Create team roles that are simple, clear, and important. Roles that are frivolous, unclear, or too complex may frustrate one or more team members. Some sample roles are:

* **Organizer**—provides the group with the overall process structure
* **Recorder**—writes down important information (e.g., directions or group work)
* **Checker**—Makes sure that all team members understand the concepts and the team's conclusions.
* **Questioner**—generates questions and involves all students
* **Assessor**—evaluates the progress of each work session
* **Encourager**—models and reinforces appropriate social skills
* **Summarizer**: Restates the team's conclusions or answers.
* **Spokesperson**—represents the group and presents group work to rest of the class
* **Timekeeper**—keeps group on task and on time
* **Team facilitator**—Moderates discussions, keeps the team on schedule, ensures that work is completed by all, and makes sure that all have the opportunity to participate and learn.
* **Elaborator**—Relates the discussion with prior concepts and knowledge.
* **Research runner**—Gets needed materials and is the liaison between teams and between their team and the instructor.

At the start of a course, consider allowing team members to pick their own roles. As students become more comfortable with teamwork, however, it is a good idea to rotate roles within the teams so that students experience a variety of responsibilities.

### Challenging Group Dynamics

Like all groups of people trying to work together, student groups sometimes run into difficulties. Be proactive and have ways prepared to prevent or solve problems. Some suggestions include:

* [Brainstorm](http://www.teachervision.fen.com/teaching-methods/resource/5046.html) how groups could handle a specific difficult situation, such as one person not letting others talk. Have each group come up with a solution to the problem.
* Use a checklist to help students resolve conflicts. The checklist could have students assess how they are listening to each other, working together, and respecting each participant.
* Give clear written guidelines for each student role. Make sure that roles are clear before the activity begins.
* Establish a specific signal if the noise level is too high. Award points to each group for working quietly.
* Have students use their [journals](http://www.teachervision.fen.com/writing/teaching-methods/6382.html) to record how they would like their group to implement a specific collaborative skill. For example, if students know that the collaborative skill they will work on in their small group is "disagreeing nicely" they could write down what they could say. They could also reflect on why that skill is important to them and to the group.

Find other suggestions on [improving group dynamics](http://www.teachervision.fen.com/cooperative-learning/printable/48395.html).

## How Can You Stretch This Strategy?

As students become more familiar with cooperative group structures, have them take more ownership of the process. Have students determine how to break into groups, determine their group needs, and create and assign student roles. Students can create a list of collaborative and other social skills that they think could be improved, and develop a plan to work on those skills in their groups.

As groups begin to develop, have students reflect on how the group is functioning. Have students discuss their group's progress in interpersonal skills, and have them problem-solve the challenging dynamics of the group. This type of reflection will help students develop their metacognition and articulation skills. Students can reflect on their contributions to the group and monitor their own progress either as part of a discussion or in a written reflection.

In groups that stay together over a long period of time, and as students become familiar with each other's strengths and challenges, they should be given more autonomy in choosing roles and developing a process for completing the task. Encourage students to think about how they are progressing as a group and the challenges that they face, as well as how they are progressing academically and how to improve the quality of their work as a team.

## When Can You Use It?

Cooperative learning can be used in any class at any level with any subject area. Cooperative learning works well when it is a part of the culture of a classroom, and when students are familiar with working together and know what is expected of them. The following are some ideas for using cooperative groups in your classroom.

#### Reading/English

Use cooperative groups during partner reading. Have students read silently and then take turns reading aloud. The listener can guide the reader when necessary. Use cooperative groups after Sustained Silent Reading. Have students gather in groups to summarize what books or chapters they read. This also could be a time for students to "sell" the book they are reading and encourage others to read it as well.

#### Writing

Use cooperative groups during the writing process to brainstorm topics, to pre-write, and during peer review conferences. Use cooperative groups to write a "how-to" piece. Students, in groups, can write about how to make a model or drawing, exchange what they've written with another group, and collaborate to make the model or drawing.

Have students read texts and use a double-entry journal to list critical points and their responses. They can exchange their double-entry journals and create a summary of the assigned readings with a partner.

#### Math

Use cooperative groups to practice problem-solving strategies. Have student pairs use manipulatives to act out a problem. After solving a math problem, students can explain their thinking to a partner.

In cooperative groups, students can decide on a set of criteria to categorize geometric figures, and then explain their criteria to other groups.

#### Social Studies

Use [Jigsaw](http://www.teachervision.fen.com/group-work/cooperative-learning/48532.html) to review concepts and prepare for a test. In jigsaw groups, have students list important skills or concepts that are important enough to be on the test. In expert groups, have them write review questions. Then have students return to jigsaw groups to ask their two or three best questions, giving others in their group a chance to answer.

#### Science

Use cooperative groups to create and discuss hypotheses before completing experiments. Students can combine their prior knowledge about a topic and collaborate to make an educated guess.

## Lesson Plans

[Teamwork and Tangrams](http://www.teachervision.fen.com/group-work/lesson-plan/48534.html)
This is a primary lesson plan that uses tangrams to introduce teamwork.

[Explaining How to Make a Bar Graph](http://www.teachervision.fen.com/lesson-plan/group-work/48535.html)
This is a primary lesson in which students work in teams to describe how to make a bar graph.

# Teamwork and Tangrams

Grade Levels: **3 - 8**

### Lesson Summary

This lesson focuses on the group process and is designed to introduce students to working in teams. This lesson is anchored in [mathematics](http://www.teachervision.fen.com/math/teacher-resources/8592.html), using Tangram puzzles. Another task based on a different content area may be substituted.

In this lesson, students reflect on their interpersonal skills while working in cooperative groups to solve Tangram puzzles. Students share and discuss their group skills using the Numbered Heads Together cooperative learning strategy.

Lesson Driving Questions: What are my strengths for working in groups, and how can I contribute to solving conflicts that arise during group work?

## Objectives

1. Students will work in a group and use Tangram pieces to identify the relationships among similar and congruent shapes.
2. Students will identify productive and obstructive behaviors in group work and will brainstorm ways to make group work more effective.

## Materials

1. Set of Tangram pieces for each group of students
2. Writing materials for reflections and self-assessment

## Procedure

1. Begin a class discussion that focuses on constructive versus obstructive behaviors. Ask students to describe examples of each.

Inform students that they will be working in a group to solve a Tangram problem and will later reflect on behaviors that assisted or hampered completion of the task. Using an overhead projector and transparent colored Tangram shapes, demonstrate, with student input, how to arrange Tangram pieces into different shapes, beginning with a simple shape.

1. Divide students into small groups. Assign each student a number and a corresponding role. Roles should include:
	* Go-Getter: Has permission to leave the group to pick up materials
	* Timekeeper: Keeps track of how much time remains for the group to solve the problem
	* Quality Inspector: reminds the group of its task should the group stray from its assignment.
	* Encourager: Encourages all members to participate and gives positive feedback to group members.

Make sure each student understands his or her role and remind students that during the activity, you will not answer questions. This will require students to practice cooperative skills.

1. **Group Activity**

The first task of each group is to arrange the Tangram pieces into a square shape. Then, groups reproduce a second design using the Tangram pieces. Allow groups fifteen minutes to complete the two tasks.

If they finish before time is up, students should begin listing the constructive and obstructive behaviors exhibited during the activity and then discuss them within their groups. Remind students of group expectations, such as: use soft voices, everyone participates, and so on.

1. **Class Discussion**

Ask students to partner with one group member to discuss briefly the strengths they brought to the team activity. Students should be identifying ways to improve their group skills. Then have students, in their groups, prepare to discuss the importance of cooperation, teamwork, and communication by posing some or all of the following questions:

* + What were some of the constructive behaviors that helped you to complete the Tangram task?
	+ What were some of the obstructive behaviors that prevented you from completing the Tangram activity?
	+ What were some of the frustrations you felt when obstructive behaviors were exhibited?
	+ What are some choices you made in relation to frustrating behaviors?
	+ What was the result of these choices?
	+ What are your responsibilities as a group member?

To encourage all students to participate in the discussion, use the [Numbered Heads Together](http://www.teachervision.fen.com/group-work/cooperative-learning/48538.html) strategy. To begin the discussion, pose a question and call out a number to respond to the question. Someone from each group should be prepared to respond. Call on one of those students to answer. Call a new number to follow up or clarify the answer, promoting discussion. Continue the discussion by calling new numbers to respond to questions.

1. **Student Reflection in Learning Logs**

Restate the Lesson Driving Questions: What are my strengths for working in groups and how can I contribute to solving conflicts that arise during group work?

Have students answer the driving question individually in their learning logs by writing one or two paragraphs.

1. **Assessment**

Students should write one to two paragraphs in their learning logs to summarize the discussion. Use the student writing to assess their learning.

# Explaining How to Make a Bar Graph

Grade Level: **3**

### Lesson Summary

This is a third-grade math lesson in which students use data to make a bar graph. In small cooperative groups, they write a list of steps explaining how to make a bar graph and work on the collaborative skill of taking turns when talking.

Prerequisite skills: Students should be able to label parts of a bar graph and interpret a bar graph.

## Objectives

Students will list steps used to create a bar graph. Students in groups will take turns talking.

## Materials

Large graph paper, markers

## Procedure

1. **Demonstration**

Students may create the bar graph using data they have collected or they may use the data that is provided. Explain to students that in their small groups they will create a bar graph and then write the steps they took to create the graph.

Explain that they will be working on taking turns talking in their small groups. Groups may have the speaker hold a designated object, such as a koosh ball, to indicate it is that student's turn to talk, or groups may have students speak in a specific order. Have groups determine how each student will take turns when speaking.

Direct students to turn to a neighbor and use [Think-Pair-Share](http://www.teachervision.fen.com/group-work/cooperative-learning/48547.html) to explain the purpose of a bar graph (when you want to show data that can be read and compared quickly). When they are finished, have the whole class stand up. Ask a student pair to explain when they would use a bar graph.

After the first pair shares their answer, ask other pairs who have similar responses to sit down. Continue to have pairs share, and have pairs with similar responses sit down. During whole group instruction, model how to make a bar graph using data below.

**Pet Popularity**

|  |  |
| --- | --- |
| **Type of Pet** | **Number of Pets** |
| Parakeet | 9 |
| Dog | 22 |
| Cat | 53 |
| Hamster | 7 |

1. Briefly discuss the data in the chart above. Brainstorm parts of a bar graph with students. Use large graph paper to create a bar graph, thinking aloud throughout the process.

**Steps in the Process**

* 1. Decide on a title for your graph (Pet Popularity).
	2. Draw the vertical and horizontal axes.
	3. Label the horizontal axes (Type of Pet).
	4. Write the names of pets where the bars will be (Parakeet, Dog, and so on).
	5. Label the vertical axes (Number of Students).
	6. Decide on the scale. Explain that you should consider the least and the greatest number shown on the graph. Discuss what range of numbers should be shown on this bar graph (Begin at 0 and count by 5s to 25).
	7. Draw a bar to show the total for each item.
1. **Guided Practice**

Have students write 5-7 words or phrases that explain the process of creating a bar graph.

Divide students into groups of 3 or 4. Review and assign group roles. Possible roles include: Recorder, Questioner, Organizer, and Encourager. Remind students that the collaborative skill that they are working on is "taking turns talking."

Give students a time limit of 10 minutes and remind them that you will give them a 5-minute warning. Have students combine and order their 5-7 words or phrases and then use them to write the steps for making a bar graph. This should include the best of each individual student's list, and will be the bar graph process the group presents to the rest of the class.

Check in with each group to ensure that they understand the objectives. Encourage students to use the class bar graph to help them.

1. **Assessment**

As students work in their groups, monitor their progress and reinforce collaborative behaviors. Note how individual students are doing on both the academic and collaborative tasks to help improve grouping in future lessons. Help groups who seem stuck or confused. Give students group-processing time to reflect on how they worked collaboratively. For groups who are slow to discuss issues ask:

* 1. Were you able to take turns talking in your group?
	2. What kinds of behaviors helped you to take turns?
	3. Was your plan indicating whose turn it was to talk successful?
1. Return to the whole class. Have one student from each group explain the steps that their group wrote. Incorporate all groups' lists into one master list, keeping close to the actual order of steps you used. If the groups need help, ask some leading questions:
	1. Were there steps that needed to be done first?
	2. Was order important when writing your list?
	3. Which steps had to be written first?
2. What words could I use to indicate the order of the steps?