

Cooperative Learning Strategies

Cooperative Learning Strategies for Establishing an Effective In-Class Community: *Five Components*

1. Positive Interdependence

The most essential element of cooperative learning is positive interdependence. Students must believe that they are linked with others so that they cannot succeed unless the other members of the group succeed (and vice versa). Structuring positive interdependence involves three steps:

Step One: Assign each group a clear, measurable task

This is easy to do when the learning contexts are meaningful. Group projects involving creation, simulation, situation exploration, games etc. generally have very measurable and well-defined tasks.

Step Two: Structure positive *goal interdependence*

This is simply a matter of informing the members of cooperative groups that the entire group must collectively meet a specified level of performance before the “goal” is considered accomplished. This can be structured by informing members of the group that they are responsible for ensuring that all members score above a certain level on an assessment, all members must improve their level of performance on an assessment, the average score of all group member performance on an assessment is above a specified level, or one product or project will be assessed on behalf of the entire group.

Step Three: Structure supporting *positive interdependence*

There are a number of different ways to encourage positive interdependence among cooperative group members. Here are brief descriptions of some of the supporting positive interdependence strategies that might be used:

Celebration/reward interdependence. A joint reward is given for successful group work and members’ efforts to succeed.

Resource interdependence. Each group member has only a portion of the information, resources, or materials needed for the group to accomplish its task. All resources must be combined in order to accomplish all assigned tasks. When computer resources are limited, access to the Internet and other

electronic resources can be allocated to individual group members. “Jigsaw” is a concept used to describe resource interdependence, as well as strategies for helping all group members learn and then teach specific skills to each other. The best explanation of jigsawing can be view at Elliot Aronson’s website: <http://www.jigsaw.org>

Identity interdependence. The group establishes an identity for itself through a name, flag, motto, web page etc.

Role interdependence. Each member is assigned complementary and interconnected roles that specify responsibilities needed to be assumed in order for the group to reach its goal. The types of roles assigned depend on the task as well as the developmental level of the students. General examples of different roles include reader, recorder, keyboarder, checker of understanding, encourager of participation, task manager, project manager, runner (can leave group to obtain resources), key master (can access “answers” or hints), consensus seeker, summarizer, and presenter.

Environmental interdependence. Group members are bound together by the physical environment in some way. Sending a cooperative group to the computer lab is an example of environmental interdependence.

Simulation interdependence. Group members are given a specific “character” within a simulation task, and they must do all they can to survive and thrive in order for the group to succeed within the simulation. Computer-based simulations often enable multiple characters or elements to be developed, making it easy to assign individual roles within the simulation itself.

Task interdependence. A division of labor is created so that the actions of one group member must be completed before other group members can complete their tasks. Many opportunities for this type of interdependence can occur when students are engaged in computer-based creation contexts, since sharing limited computer resources is often a challenge.

Game interdependence. Cooperative groups are placed in competition with each other. Individual group members then feel interdependent as they strive to beat the other groups and win the competition.

2. Individual Accountability/Personal Responsibility

The purpose of cooperative learning is to help learners learn how to work constructively in group situations AND to facilitate the individual learning of specified outcomes. To ensure that each member learns, students are held individually accountable. Common ways to structure individual accountability include:

Group size. The smaller the group, the greater the individual accountability. 2-4 students usually work best.

Tests. Administer individual quizzes/test.

Presentation pressure. Randomly select individual students to summarize their group's work to the entire class.

Teacher Observations and Feedback. The teacher observes groups in action, recording instances of participation...or lack of. Computer spreadsheets are very useful in keeping track of observations.

Checker. One student in each group is assigned the role of *checker*. The *checker* asks other group members to explain their reasoning, articulate their understanding, ask questions about things they don't understand, and communicate their level of comfort with the group's progress.

Teaching. Assign individuals who can successfully perform specified tasks the job of teaching other individuals or groups their skills. This is a VERY useful strategy for helping individuals and groups accomplish specific computer-related tasks.

3. Face-to-Face, Supportive Interaction

Group processing and positive interdependence cannot take place without learner-to-learner interactions. This is best accomplished through the simple act of making sure group members have opportunities to be "knee-to-knee & eye-to-eye." This can occur by creating seating assignments and room arrangements that promote interactivity, scheduling group meeting times, clearly communicating to each group the positive interdependence strategies used, and providing constant feedback regarding the positive nature of group member interaction.

Computers can play a part in promoting group member interactivity by acting as a meeting place for groups (one computer per group often forces all members to arrange themselves around a central resource). Computers can also be use to promote interactivity that may not be face-to-face, but can be intimate nonetheless. The use of e-mail and chat environments can help group members interact with each other from their individual homes.

4. Interpersonal and Small Group Skills

Contributing to the success of cooperative efforts requires teamwork skills. Students must learn and apply skills in leadership, decision-making, trust-building, communication, and conflict-management to be a constructive collaborator within a cooperative learning team. Whenever cooperative learning is implemented within a K-12 classroom, collaboration skills need to be facilitated as purposefully and

precisely as academic skills. It is important for teachers as instructional designers to identify collaboration skills needed to succeed within the structured learning environment, and then design instructional strategies to facilitate these skills. A listing of possible skills to be included within an instructional plan follows.

5. Group Processing

Teachers need to ensure that members of each cooperative learning group discuss how well they are achieving their goals and maintaining effective working relationships. Group members need to describe how each other's actions are helpful and harmful and make decisions about what to continue or change. Such processing enables groups to focus on group maintenance, facilitates the learning of collaborative skills, ensures that members receive feedback on their participation, and reminds students to practice collaborative skills consistently. Some of the keys to successful processing are allowing sufficient time for it to take place, making it specific rather than vague, maintaining student involvement in processing, reminding students to use their teamwork skills during processing, and ensuring that students are clear about the process that has been communicated.

In order to ensure that group processing occurs regularly, teachers should incorporate it into the instructional design. Self-reflection is an important part of any lesson review, and encouraging learners to reflect on their abilities to collaborate constructively can be easily accomplished by asking them questions related to how well they feel they performed the skills indicated above. Perhaps the most effective way to group process is to have the teacher record information about individual group member behavior during the lesson, and then meet with the group (or class) to review the observations. This is where the use of computer-based technology can help teachers manage cooperative learning. On the low-tech end, a spreadsheet could be created to track instances of constructive (and destructive) collaboration, personal interaction and small group behavior during a cooperative lesson, and feedback could be provided based on any patterns of acceptable and unacceptable behavior identified. And a word-processing program could be used to create an observation sheet for recording collaboration behavior of a single cooperative group over a period of time.

On the more high-tech end, a tool such as ClassDojo can be used to easily identify and record group member behavior.

These strategies are based on the work of Johnson & Johnson (1993).

Constructive Collaboration Skills

<i>Constructive Collaboration Skills</i>	
<i>Category</i>	<i>Skills</i>
Interpersonal Skills	<ul style="list-style-type: none"> ▪ Encourage other group members ▪ Listen attentively ▪ Speak clearly and directly to others ▪ Don't criticize during brainstorming ▪ Respond to questions asked ▪ Treat others with respect at all times ▪ Ask questions about things that are unclear or not understood ▪ Do not hurt others with words or actions
Cooperative Learning Small Group Skills	<ul style="list-style-type: none"> ▪ Carry out assigned roles ▪ Remain on-task when needed ▪ Accomplish assigned tasks ▪ Stay with group when directed to do so ▪ Monitor progress of all group members, offering help when needed
Project Management Skills	<ul style="list-style-type: none"> ▪ Set group and personal goals ▪ Organize workflow tasks ▪ Schedule and manage time ▪ Encourage brainstorming and multiple solution possibilities for problem ▪ Follows plan ▪ Meet deadlines ▪ Review progress ▪ Make changes to plan when needed ▪ Seek help when needed

Cooperative Learning Group Roles

Assigning roles to members of teams is often necessary in order to help them manage their time and activity. In addition managing student behavior, roles can help improve the overall effectiveness of the learning experience because roles constitute strategies for equally engaging all the learners within the experience. Also, roles help learners recognize and utilize the various resources available throughout the learning experience. Here are some suggested steps for designing and implementing explicit student AND faculty roles during a group-based project:

1. Clearly articulate the project, and describe what a successful and adequate “product” should look like.
2. Clearly describe the tasks and subtasks that the students must accomplish in a project timeline.
3. Identify individual roles that could and should be assumed by students within each of the groups for the tasks identified (see roles chart below).
4. Assign roles to the students in each team, paying special attention to those roles that could (and should) be assumed by any special needs students in each team.
5. Decide on the manner in which faculty roles will be implemented within the class session.
6. Determine the manner in which the roles will be presented to the students. Benchmark instruction over collaborative team roles will need to be implemented.
7. Make plans to assess and review the collaborative behaviors. Consider using a behavior checklist, and have each group make a brief presentation regarding their constructive and destructive behaviors at the end of selected class sessions.
8. Monitor and adjust role assignments as needed.

Team Member Role Examples

Role	Description
Reader	The <i>Reader</i> reads aloud to the group specific information related to the project from various sources, including the computer screen.
Recorder	The <i>Recorder</i> is responsible for writing down information from the group that may need to be recorded from meetings, group research, etc. The recorder and the keyboarder often share roles.
Technician	The <i>Technician</i> is responsible for doing the typing when more than one student uses the computer together.
Checker of Understanding	The <i>Checker of Understanding</i> asks group members, at specified times in the day, if they understand what is going on with the project. It is helpful for the instructors to prepare “understanding” questions in advance for the checker, and to help facilitate the asking of such questions when needed.
Encourager	The <i>Encourager</i> is responsible for encouraging each of the other group members by observing when they are carrying out their assigned roles and contributing to the project. It is often helpful to have the teachers prepare statements of encouragement in advance to help guide the encouragers in their role.
Shadower	The <i>Shadower</i> is responsible for observing the actions of other group members. The <i>Shadower</i> asks questions about things she/he does not understand. In addition, the <i>Shadower</i> is encouraged to participate with the student she/he shadows in specific ways.
Task manager	The <i>Task Manager</i> is responsible for ensuring that all team members are on tasks and carrying out their assigned roles and responsibilities in accordance with any schedules established. The Task Manager reports directly to the instructor/facilitator when needed.
Project Manager	The <i>Project Manager</i> is primarily responsible for communicating or summarizing the project “Big Picture” to the team at the beginning of each meeting. This often involves communicating the project goal(s), the assigned tasks, the available resources etc.
Runner	The <i>Runner</i> is the only student who is given permission to leave a team work area in order to get supplies, ask questions of the teacher, etc.
Key Master	The <i>Key Master</i> is provided with access to appropriate quiz answer keys, Web addresses, and other supplies or hints that might constitute help when needed.
Consensus Seeker	During team discussions, the <i>Consensus Seeker</i> is responsible for encouraging group members to reach a consensus decision when needed. Like other roles, the <i>Consensus Seeker</i> must be provided with resources and guides in order to facilitate the consensus-seeking process.
Summarizer	The <i>Summarizer</i> sums up the results of a team meeting and reiterates the summary back to the group or shares the summary with the whole class when applicable.

Presenter	The <i>Presenter</i> is responsible for directing the presentation of the project to the entire class. If an electronic presentation is made, the presenter often needs to coordinate efforts with the <i>Keyboarder</i> .
Observer	The <i>Observer</i> records observations on a prepared sheet related to each group members' ability to contribute constructively to the team.
Facilitator	<i>The Facilitator</i> ensures that everyone contributes and makes sure the group is following procedures appropriately.
Time Keeper	The <i>time-keeper</i> keeps track of time and communicates time to the group.
Quality Control Manager	The <i>QC Manager</i> ensures that group products adhere to the rubrics or other checklists for quality work.

Team Formation Issues

Size

The smallest group is two. The largest recommended is six. Generally, in smaller groups each member participates more, fewer social skills are required, and groups can work more quickly. Larger groups generate more ideas, deal better with complex ideas, and create fewer group reports to process. Remember, it's hard to get left out of a pair; triads tend to surface issues and are good for process observing; teams of four allow multiple ways to pair.

Formation

With a few exceptions, research favors groups which are heterogeneous with regard to academic achievement, gender, ethnicity, task orientation, ability, and learning style. Heterogeneous groups promote more elaborate thinking and explanations, and provide opportunities for students to develop feelings of mutual concern. Student self-selection of groups is generally not successful, although students may provide input for teachers to consider in assigning groups. Random assignment promotes the idea that everyone is expected to work with everyone else at some point. Random assignment can result in teams that are not heterogeneous or equal in ability, so are best used if the task is of short duration.

Duration

If the task is of some duration, the makeup of groups must be seen as "fair," so the groups should be carefully structured. Groups that stay together for longer periods (4-6 weeks) form stronger bonds, develop more complex collaborative skills, and can tackle more complex tasks. Groups should remain together long enough to feel successful, but not so long that bonds become counter-productive. It is usually a mistake to break groups up because they are having trouble functioning since members will feel unsuccessful in groups and transfer that feeling to the next group. Try to establish some success first!

Management Tips

Noise

Develop and practice a Quiet or Zero-Noise signal. The closer students are seated, the quieter their voices can be. Practice "12-inch voices." Use structures such as Circle of Knowledge or Roundtable that have quiet time built-in. Remember that if only one student in a group is speaking at a time, larger groups should result in fewer voices, therefore less noise. Have students brainstorm solutions to noise.

Deadlining and Task Structure

Give students specific tasks to finish within a predetermined time limit, e.g., "You have one minute to agree as a group on 3 reasons." Use a timer.

Instructions

Show, don't tell, instructions (have a group model the steps). Have students tell each other the instructions to make sure they understand prior to starting the task.

Questions

Answer team questions only. Individual questions should be dealt with in the team. Teach students to use the "Three Before Me" technique.

Circulate

Use proximity. Monitor discussions to check for understanding and to be aware of collaborative skills that may need to be addressed.

Commonly Used Cooperative Learning Face-to-Face Supportive Interaction Techniques

SIMPLE STRUCTURES

Think-Pair-Share

This is a four-step discussion strategy that incorporates wait time and aspects of cooperative learning. Students (and teachers) learn to LISTEN while a question is posed, THINK (without raising hands) of a response, PAIR with a neighbor to discuss responses, and SHARE their responses with the whole class. Time limits and transition cues help discussion move smoothly. Students are able to rehearse responses mentally and verbally, and all students have an opportunity to talk. Both students and teachers have increased opportunities to think and become involved in group discussion. (Lyman)

Three-Step Interview

This involves structured group activity with students. Using interviews/listening techniques that have been modeled, one student interviews another about an announced topic. When time is up, students switch roles as interviewer and interviewee. Pairs then join to form groups of four. Students take turns introducing their pair partners and sharing what the pair partners had to say. This structure can be used as a teambuilder, and also for opinion questions, predicting, evaluation, sharing book reports, etc. (Kagan)

Roundtable

Roundtable can be used for brainstorming, reviewing, or practicing while also serving as a teambuilder. Sequential form: Students sit in teams of 3 or more, with one piece of paper and one pencil. The teacher asks a question which has multiple answers. Students take turns writing one answer on the paper, then passing the paper and pencil clockwise to the next person. When time is called, teams with the most correct answers are recognized. Teams reflect on their strategies and consider ways they could improve. Simultaneous form: Each student starts a piece of paper, writes one answer, and passes it, so several papers are moving at once. (Kagan)

Numbered Heads Together

This structure is useful for quickly reviewing objective material in a fun way. The students in each team are numbered (each team might have 4 students numbered 1, 2, 3, 4). Students coach each other on material to be mastered. Teachers pose a question and call a number. Only the students with that

number are eligible to answer and earn points for their team, building both individual accountability and positive interdependence. This may be done with only one student in the class responding (sequential form), or with all the numbers, 3's for instance, responding using an Every Pupil Response technique such as cards or hand signals (simultaneous form). (Kagan)

Pairs Check

This is a way to structure pair work on mastery-oriented worksheets. Students work in teams of four with two sets of partners. The worksheet is set up with problems presented in pairs. The first person in each partnership does the first problem with the pair partner serving as coach, and offering exaggerated praise. After the first problem is done, partners change roles. After each pair of problems, teams of four check each others' work and, if they agree, give a team cheer or handshake. In this way students stay on task, working together toward mastery. (Kagan)

Send a Problem

Each student on a team writes a review problem on a flash card. Teams reach consensus on answers and write them on the backs of the cards. Each group's stack of questions passes to another group, which attempts to answer them and checks to see if they agree with the sending group. If not, they write their answer as an alternative. Stacks of cards can be sent to a third and fourth group. Stacks of cards are finally returned to the senders, who may discuss the alternative answers. (Kagan)

STUDENT TEAM LEARNING TECHNIQUES

Jigsaw II

Using this structure, students are responsible for teaching each other material. A unit of work, often a reading, is divided into 4 expert areas, and each student on a team is assigned one area. Experts from different teams meet together at tables to discuss their expert areas. Students then return to their teams and take turns teaching. A quiz may be given at this time. Jigsawing materials refers to any strategy in which each student on a team receives only a piece of the material that is to be learned so that students must rely on the other members of their team to learn all of the material. (Slavin)

Using Role Cards

While working in cooperative learning groups it is necessary for each member of the group to be assigned a task and be given a role. Once a

decision has been made as to the number of groups and the roles that will be needed to perform the task, a set of role cards, similar to the ones that follow, should be constructed for each team member. Before roles are assigned, teachers should explain and model the task and the individual roles for students so that they know and understand how his/her individual task and role will contribute to the success of the group. Roles should be rotated on a regular basis so that all students become proficient in each task.

References

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