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ARTICLE

**Cooperative Learning: An Effective Teaching Strategy**

\* **Dr. Mandeep Kaur, Asst. Professor**  
DAV College of Education, Abohar  
Email: [mandeepaneja.kaur22@gmail.com](mailto:mandeepaneja.kaur22@gmail.com)  
Mobile-9417950626

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**ABSTRACT**

*Cooperative learning refers to students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including that the team members be held individually accountable for the complete content of the assignment or project. The present paper represents the meaning and history of cooperative learning, types of cooperative team and types of cooperative learning. In the present paper basic elements and techniques of cooperative learning have also been discussed. Cooperative learning in classroom and benefits of cooperative learning has also been discussed.*

Cooperative learning is a teaching strategy in which classroom activities are arranged in such a way so as to offer students' academic and social learning experiences. It is much more than merely arranging students into groups. It has been described as "structuring positive interdependence." Students must work in small, heterogeneous groups to complete tasks (problem, project, or other instructional goal) collectively toward academic goals. Students work together using one another's resources and skills. Furthermore, the teacher's role changes from giving information to facilitating students' learning. Everyone succeeds when the group succeeds.

Cooperative learning is a successful teaching/instructional strategy in which small teams/groups, each with students of different ability levels, use a variety of learning activities to improve their understanding/learning of a subject. Each member of a team is responsible, not only for learning new thing or what is taught, but also for helping his or her teammates learning—thus creating an atmosphere of achievement. Although cooperative learning is specifically targeted for students in grades 2 through 12, it is equally successful for any subject, topic, or level. It can be effectively used for third-grade math, ninth-grade social studies, fifth-grade language arts, or twelfth-grade physics.

*A working definition of Cooperative Learning* is the use of small groups through which students work together to maximize their own and each other's learning. However, the ultimate success of cooperative learning is based on a single and very important principle: students must be taught how to

participate in a group situation. Teachers cannot assume that students know how to behave in a group setting.

### **History of Cooperative Learning**

The strategy of cooperative learning was developed as a means to reduce competition in American schools, which James Coleman (1961) identified as a negative component of the education system. In a two-year study of students at nine in high schools in the Midwest, Coleman developed what he called a “climate of values” for the “adolescent society” he studied. Based on his findings, Coleman suggests that instead of encouraging competition in the academic setting, “which effectively impedes the process of education,” schools should introduce a more collaborative approach to teaching.

Building on the work of James Coleman, Robert Slavin (1994) conducted research on a form of cooperative learning that he described as “Student Team Learning”. Slavin defines cooperative learning as “instructional programs in which students work in small groups to help one another & master academic content.” Slavin suggests that cooperative learning has the potential to capitalize on “the developmental characteristics of adolescents in order to harness their peer orientation, enthusiasm, activity, and craving for independence within a safe structure.” Slavin explains that there are various methods for implementing cooperative learning techniques into classes of all subject areas and grade levels; however, the underlying concept requires all students to work together and be responsible for each other’s learning.

Through his review of the literature on cooperative learning, Slavin identifies three concepts that are fundamental to all cooperative learning/Student Team Learning techniques:

- Students are rewarded as a team but are graded individually.
- The team’s success is not conditionally based on individual performance of one student. All students must help each other to achieve learning goals.
- All students are expected to improve based on their own previous performance, thus ensuring all students are challenged to do their best.

### **Types of Cooperative Teams**

There are four major types of cooperative teams: heterogeneous, random, homogeneous, and student-selected. All four have instructional purposes (Table-1). Thus, the type of team used should match the instructional learning goals and needs of the students. Heterogeneous groups are most widely used for cooperative learning because they naturally support peers assisting peers, improve social acceptance of all types of learners, and can assist with classroom management. However, all four can be implemented throughout the school year to support instruction.

**Table-1**

The advantages of and cautions against different types of cooperative teams -

Team Type	Advantages	Cautions
Heterogeneous Mixed-ability, sex, race teams	<ul style="list-style-type: none"> <li>• Balanced</li> <li>• Maximizes tutoring</li> <li>• Easier management</li> </ul>	<ul style="list-style-type: none"> <li>• Requires more teacher preparation time</li> <li>• Ranks students</li> <li>• Limited leadership opportunities</li> </ul>
Random Teams Randomly formed teams	<ul style="list-style-type: none"> <li>• Fairness</li> <li>• Novelty, variety, fun</li> <li>• Quick and easy</li> </ul>	<ul style="list-style-type: none"> <li>• Diversity not ensured</li> <li>• Potential for off-task behaviors</li> <li>• All-"low" or all-"high" teams may develop</li> </ul>
Student-Selected Teams Students select own teams	<ul style="list-style-type: none"> <li>• Novelty, variety, and fun</li> <li>• Familiarity</li> <li>• Easy decision making</li> </ul>	<ul style="list-style-type: none"> <li>• Not balanced</li> <li>• Potential for off-task behavior high</li> </ul>
Homogeneous Teams Teams with a shared trait (ability, interest, language)	<ul style="list-style-type: none"> <li>• Leadership opportunities</li> <li>• High esteem for top groups</li> <li>• Differentiated instruction</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of equity</li> <li>• Poor esteem for low groups</li> <li>• Negative stereotypes</li> </ul>

(Adapted from Kagan & Kagan, 2009)

## **TYPES OF COOPERATIVE LEARNING**

### **1. Formal Cooperative Learning**

Formal cooperative learning is structured, facilitated, and monitored by the educator over time and is used to achieve group goals in task work (e.g. completing a unit). Any course material or assignment can be adapted to this type of learning, and groups can vary from 2-6 people with discussions lasting from a few minutes up to an entire period. Types of formal cooperative learning strategies include:

1. The jigsaw technique
2. Assignments that involve group problem solving and decision making
3. Laboratory or experiment assignments
4. Peer review work (e.g. editing writing assignments).

### **2. Informal Cooperative Learning**

Informal cooperative learning incorporates group learning with passive teaching by drawing attention to material through small groups throughout the lesson or by discussion at the end of a lesson, and typically involves groups of two (e.g. turn-to-your-partner discussions). These groups are often temporary and can change from lesson to lesson (very much unlike formal learning where two

students may be lab partners throughout the entire semester contributing to one another's knowledge of science). Discussions typically have four components that include formulating a response to questions asked by the educator, sharing responses to the questions asked with a partner, listening to a partner's responses to the same question, and creating a new well-developed answer. This type of learning enables the student to process, consolidate, and retain more information.

### 3. Base Group Learning

Base group learning (e.g., a long term study group) is effective for learning complex subject matter over the course or semester and establishes caring, supportive peer relationships, which in turn motivates and strengthens the student's commitment to the group's education while increasing self-esteem and self-worth. Base group approaches also make the students accountable to educating their peer group in the event that a member was absent for a lesson. This is effective both for individual learning, as well as social support.

#### The Basic Elements of Cooperative Learning

1. **Positive Interdependence:** We will be succeeded in structuring positive interdependence when students perceive that they "sink or swim together." This can be achieved through mutual goals, division of labor, dividing materials, roles, and by making part of each student's grade dependent on the performance of the rest of the group. Group members must believe that each person's efforts benefit not only him- or herself, but all group members as well.
2. **Individual and group accountability:** Each student must demonstrate mastery of the content being studied. Each student is accountable for their learning and work. Give an individual test to each student or randomly examine students orally. Plan time to observe a group, and record the frequency with which each member contributes to the group's work. Invite students to teach what they learn to someone else. Ask group members to discuss how well they're achieving their goals or how they're maintaining effective working relationships. Help students make decisions about what behaviour to continue, what to change, and what to eliminate.
3. **Face-to-Face Interaction:** Important cognitive activities and interpersonal dynamics only occur when students promote each other's learning. This includes oral explanations of how to solve problems, discussing the nature of the concepts being learned, and connecting present learning with past knowledge. It is through face-to-face interaction that members become personally committed to each other as well as to their mutual goals.
4. **Interpersonal and Small Group Social Skills:** In cooperative learning groups, students learn academic subject matter (task work) and also interpersonal and small group skills (teamwork). Thus, a group must know how to provide effective leadership, decision-making, trust-building, communication, and conflict management. Given the complexity of these skills, teachers can

encourage much higher performance by teaching cooperative skill components within cooperative lessons. As students develop these skills, later group projects will probably run more smoothly and efficiently than early ones.

5. **Group Processing:** After completing their task, students must be given time and procedures for analysing how well their learning groups are functioning and how well social skills are being employed. Group processing involves both task work and teamwork, with an eye to improving it on the next project.
6. **Heterogeneous groups:** Groups should be comprised of three, four, or five members. Mix the membership within a group according to academic abilities, ethnic backgrounds, race, and gender. It's also important that groups not be arranged according to friendships or cliques.
7. **Clear instructions:** Be sure to state the instructions in clear, precise terms. Let your students know exactly what they are to do. When appropriate, inform them what they are to generate as evidence of their mastery of the material. You must share these directions with students before they engage in cooperative learning activities.
8. **Equal opportunity for success:** Be sure every student knows that she or he has an equal chance of learning the material. Inform every student that she or he can help the group earn rewards for academic success. Be sure students understand that there's absolutely no academic penalty for being placed in a particular group.
9. **A clear set of learning objectives:** You must describe exactly what students are expected to learn. Let students know that cooperative learning groups are a means to an end rather than an end in itself. Do not use ambiguous language; describe precisely what students will learn or the knowledge they will gain.
10. **Teacher supervision:** The teacher should always monitor group activity to ensure that students are not veering too far off task. The teacher should also be available to answer student questions and guide discussion if necessary.
11. **Evaluation:** All activities should include both individual and group assessment.
12. **Sufficient time:** Be sure you have sufficient time to learn the targeted information. Groups should stay together until the designated subject matter is learned.

### Cooperative Learning Techniques

1. **Think-Pair-Share:** Think-Pair-Share is a method that allows students to engage in individual and small-group thinking before they are asked to answer questions in front of the whole class. There are four steps to this method. The first step, groups of four students listen to a question posed by the teacher. Secondly, individual students are given time to think and then write their

responses. Thirdly, pairs of students read and discuss their responses. Finally, a few students are called on by the teacher to share their thoughts and ideas with the whole class. This method can be very useful and work well in the science classroom due to the continual request of science teachers having students formulate hypotheses about the outcome of an experiment before it is done.

2. **Three-step interview:** This structure can be used both as an ice-breaker which introduces students to one another and to provide students with a venue for soliciting opinions, positions, or ideas from their peers. Students are first paired and take turns interviewing each other using a series of questions provided by the instructor. Pairs then match up and students introduce their original partner. At the end of the exercise, all four students have had their position or viewpoints on an issue heard, digested, and described by their peers. Each member of a team chooses another member to be a partner. During the first step individuals interview their partners by asking clarifying questions. During the second step partners reverse the roles. For the final step, members share their partner's response with the team.
3. **Round Table or Rally Table:** Round table or rally table are simple cooperative learning structures that cover much content, builds team spirit, and incorporates writing. The round table has three steps to it. In the first step, the teacher poses a question that has multiple answers. Step two, the first student in each group writes one response on a paper and passes the paper counter-clockwise to the next student. Finally, in step three, teams with the greatest number of correct responses gain some type of recognition. This type of cooperative learning can easily be used in the science classroom. For example, the students may be asked to write as many reptile names as they can. At the end the group with the most reptiles written down is rewarded.
4. **Numbered Heads Together:** The teacher has groups of three to five members. Each member is given numbers so that each member has a different number. The teacher asks either a very specific or very broad question, depending on the subject matter. Students work together to arrive at an answer and make sure that everyone knows the answer. The teacher calls out a number (suppose 2) and the students from each group with that specific number (2) share their answers with the entire class.
5. **Note-taking pairs:** Poor note-taking leads to poor performance. Designing an exercise which requires students to summarize their understanding of a concept based on notes taken (with directed questions such as what is the definition of a concept, how is it used, what are the three most important characteristics of a topic) and receiving reflective feedback from their partner provides students the opportunity to find critical gaps in their written records.
6. **Jigsaw:** For more complex problems, this structure provides students the opportunity to develop expertise in one of many components of a problem by first participating in a group solely

focused on a single component. In the second stage of the exercise, groups are reformed with a representative from each expert group who together now has sufficient expertise to tackle the whole problem.

Students are members of two groups: home group and expert group. In the heterogeneous home group, students are each assigned a different topic. Once a topic has been identified, students leave the home group and group with the other students with their assigned topic. In the new group, students learn the material together before returning to their home group. Once back in their home group, each student is accountable for teaching his or her assigned topic.

### **Jigsaw II**

Jigsaw II is Robert Slavin's (1980) variation of Jigsaw in which members of the home group are assigned the same material, but focus on separate portions of the material. Each member must become an "expert" on his or her assigned portion and teach the other members of the home group.

### **Reverse Jigsaw**

This variation was created by Timothy Hedeem (2003) It differs from the original Jigsaw during the teaching portion of the activity. In the Reverse Jigsaw technique, students in the expert groups teach the whole class rather than return to their home groups to teach the content.

7. **Team Pair Solo:** 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:** 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. 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. **Graphic organizers:** Graphic organizers help in discovering patterns and establishing relationships. Graphic organizers are powerful tools for converting complex information into meaningful displays. They can provide a framework for gathering and sorting ideas for discussion, writing, and research.

- **Group grid:** Students practice organizing and classifying information in a table. A more complex version of this structure requires students to first identify the classification scheme that will be used.
- **Sequence chains:** The goal of this exercise is to provide a visual representation of a series of events, actions, roles, or decisions. Students can be provided with the items to be organized or asked to first generate these based on a predetermined end goal. This structure can be made more complex by having students also identify and describe the links between each of the sequenced components.

**10. Writing:** A written assignment helps the students to organize, synthesize and communicate information, to clarify thinking and to learn new concepts and information.

- **Dyadic essays:** Students prepare for the in-class portion of this exercise by developing an essay question and model answer based on assigned reading. Students typically need to be guided to develop questions that integrate material across classes as opposed to ones that simply recite facts presented in the reading. In class, students exchange essay questions and write a spontaneous answer essay. Students then pair up, compare and contrast the model answer and the spontaneously generated answer. Subsequently, questions and answers can be shared with the larger class.
- **Peer editing:** As opposed to the editing process that often appears only at the final stage of a paper, peer editing pairs up students at the idea generation stage and peers provide feedback throughout the process. For example, the relationship begins as each student in the pair describes their topic ideas and outlines the structure of their work while their partner asks questions, and develops an outline based on what is described.

**11. Problem solving:**

- **Send-a-problem:** Students participate in a series of problem solving rounds, contributing their independently generated solution to those that have been developed by other groups. After a number of rounds, students are asked to review the solutions developed by their peers, evaluate the answers and develop a final solution. (Example: Understanding the Impact of (Fiscal and Monetary) Policy)
- **Three-stay, one-stray:** Even students working in groups can benefit from the feedback of additional peers. In this structure, students periodically take a break from their work (often at key decision making points) and send one group member to another group to describe their progress. The role of the group is to gain information and alternative perspectives by listening and sharing. The number of times the group sends a representative to another group depends



on the level of complexity of the problem. This method can also be used to report out final solutions.

### **Cooperative Learning in the Classroom**

There are six key steps involved in planning for cooperative learning:


- 1. Choose an Approach-** Students in heterogeneous groups of four to five members use study devices to master academic material and then help each other learn the material through tutoring, quizzing and team discussions.
- 2. Choose Appropriate Content** -Teachers must be sure to choose content that will spark and keep the interest of the students. If the students do not find the content interesting and appropriately challenging, they will quickly lose interest and the cooperative learning approach will fail.
- 3. Form Student Teams** - The formation of student teams will vary according to the goals and objectives of the lesson as well as the diversity among racial, ethical, gender and ability groups. Teacher-selected groups have been proven time and again to be the best method of forming teams because it ensures a good mix and avoids friends from working together, which neglects to achieve the goal of improvement of social interactions among students who do not know each other as well.
- 4. Develop Materials** -Teachers usually provide verbal information along with worksheets, outlines and study guides during a cooperative learning lesson. Good materials take time to develop and must be both interesting and at an appropriate reading level for the students or they will not be able to understand the lesson and will quickly become uninterested and give up. Teachers can reach out to librarians and media specialists for assistance in choosing exciting and appropriate materials to implement into the cooperative learning lesson.
- 5. Plan for Orienting Students to Tasks and Roles** - Students who are unfamiliar with the cooperative learning model will need to be taught about the model and be clear on their roles as well as the teacher's expectations during this type of lesson. Students also need to be made aware that the reward structure will be cooperatively based, not competitively based like most other class work. Help students develop social skills naturally or by specific teaching of the required skills in the following areas Leadership, Decision-making, Trust-building, Communication, Conflict-management skills. Provide opportunities for students to "naturally" use social skills in fun or high interest topics. Teach, model, chart, process (provide feedback), role play, and reinforce social skills, Assign roles and skills and teach associated response modes and gambits. Avoid: Placing students in situations before they have appropriate skills, e.g., placing them in conflict before they have conflict resolution skills

**6. Plan for the Use of Time and Space** - Most teachers underestimate the amount of time it takes to conduct a successful cooperative learning lesson. Research shows the minimum time for a cooperative learning lesson to produce real cognitive change to be at least 4 weeks. It is crucial to carefully plan for the additional time that it will take students to interact with one another during cooperative learning lessons. Reflection (group processing) is an essential part of the cooperative learning process. By clarifying and describing which actions and decisions were helpful and unhelpful the group continues the learning process and improves each members' effectiveness when contributing to a collaborative group. Cluster seating is a popular seating arrangement for cooperative learning because it allows students to sit in groups of four or six during their small group discussions.

**Difference between Traditional and Cooperative Learning**

Cooperative learning challenges some people's beliefs about education. Cooperative classrooms represent a shift from traditional lecture-style classrooms to more brain-friendly environments that benefit all learners (Table- 2).

**Table-2**  
**From traditional to cooperative learning.**

From ...		To ...
A good class is a quiet class		Learning involves healthy noise
This is an independent task		This is collaborative teamwork
Keep your eyes on your paper		Ask your partner for help
Sit quietly		Get up and look at what others did
Talking is cheating		Talking is learning
Responsibility only for oneself		Responsibility for each other
No individual accountability		individual accountability
Social skills assumed		Social skills taught & reinforced
Teacher is primary resource		Students are the major resource
Teacher intervenes		Teacher interacts
One appointed leader		Shared Leadership
No group processing		Effective group processing
Top priority: get the job done		Top priority: get the job done, have fun, enjoy each other

(Adapted from Kagan & Kagan, 2009)

**BENEFITS OF COOPERATIVE LEARNING**

**Celebration of diversity-** Students learn to work with all types of people. During small-group interactions, they find many opportunities to reflect upon and reply to the diverse responses fellow

learners bring to the questions raised. Small groups also allow students to add their perspectives to an issue based on their cultural differences. This exchange inevitably helps students to better understand other cultures and points of view.

**Acknowledgment of individual differences-** When questions are raised, different students will have a variety of responses. Each of these can help the group create a product that reflects a wide range of perspectives and is thus more complete and comprehensive.

**Interpersonal development-** Students learn to relate to their peers and other learners as they work together in group enterprises. This can be especially helpful for students who have difficulty with social skills. They can benefit from structured interactions with others.

**Actively involving students in learning-** Each member has opportunities to contribute in small groups. Students are apt to take more ownership of their material and to think critically about related issues when they work as a team.

**More opportunities for personal feedback-** Because there are more exchanges among students in small groups, your students receive more personal feedback about their ideas and responses. This feedback is often not possible in large-group instruction, in which one or two students exchange ideas and the rest of the class listens.

**Student achievement-** The effects on student achievement are positive and long-lasting, regardless of grade level or subject matter.

**Student retention-** Students are more apt to stay in school and not drop out because their contributions are solicited, respected, and celebrated.

**Improved relations-** One of the most positive benefits is that students who cooperate with each other also tend to understand and like each other more. This is particularly true for members of different ethnic groups. Relationships between students with learning disabilities and other students in the class improve dramatically as well.

**Improved critical thinking skills-** More opportunities for critical thinking skills are provided, and students show a significant improvement in those thinking skills.

**Oral communication improvement-** Students improve in their oral communication skills with members of their peer group.

**Promoted social skills -** Students' social skills are enhanced.

**Heightened self-esteem-** When students' work is valued by team members, their individual self-esteem and respect escalate dramatically.

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**\* Corresponding Author**

**Dr. Mandeep Kaur, Asst. Professor**  
DAV College of Education, Abohar,

Email: [mandeepaneja.kaur22@gmail.com](mailto:mandeepaneja.kaur22@gmail.com), Mobile-9417950626