

## Collaboration vs Cooperation

In the class literature there are different explanations of the term collaboration. But one element present in all is that the participants work together towards a common goal. Most of the explanations acknowledge one form or another of sharing the work. Dillenbourg et al. (1995) make a distinction between cooperation and collaboration. They define cooperative work as "*... accomplished by the division of labor among participants, as an activity where each person is responsible for a portion of the problem solving...*" They define collaboration as "*...mutual engagement of participants in a coordinated effort to solve the problem together*". They further note that work often is split also in collaboration. But the difference is that in cooperation the task is split (hierarchically) into independent subtasks, and in collaboration the cognitive processes may be (heterarchically) divided into intertwined layers.

Pierre Dillenbourg, Michael Baker, Agnes Blaye & Claire O'Malley (1995) "The Evolution of Research on Collaborative Learning" In P. Reimann & H. Spada (Eds). *Learning in humans and machines. Towards an interdisciplinary learning science*, 189- 211. London: Pergamon.

# Grouping That Leads to Real Learning

## Common Characteristics of All Types of Effective Learning Groups

- Work done in groups is challenging and meaningful.
- The teacher is always actively involved in the students' learning process, serving as a resource person, questioner, guide, evaluator, and coach.
- Learning goals and timelines are clearly understood by the students and monitored by the teacher.
- Groups are heterogeneous, and all students are actively involved.
- Cooperation is valued over competition.
- Students have a sense of being able to accomplish more learning together than they can alone.
- The group process provides a comfort level for discussion and airing questions.
- Student interaction and social skills are required, but the purpose of grouping is not primarily social. Group time is not "free time" for student (or teacher).
- Multiple means of assessment are possible (rubrics, portfolios, quizzes, interviews, presentations, etc.). Evaluation can be of the individual student, of the group, or a combination of these.

## **FACTORS TO CONSIDER WHEN FORMING GROUPS**

- Are students with different ability levels placed in the same group?
- Are the personalities of the students in the group compatible?
- Have you avoided placing students with extremely incompatible abilities in the same group?
- Have you formed heterogeneous groups?
- Has attention been paid to making sure girls are not dominated by boys in the group?
- Is the size of the group appropriate for the age of students and the task?
- For this task, do you think it better to select the students for the groups or allow students to select their groups?
- For this task, will it be important for you to select students for the groups from among friends or select them totally randomly?
- Does the physical arrangement of your room affect how you need to select groups?
- Have groups created a team identity (team name, cheer, etc.)?
- Will you need to keep the group together or break it up throughout the project?
- Have you considered creating different functional groups such as home groups, base groups, or sharing groups?

**Table 2.** Common and Specialized Procedural Roles Used in Cooperative Learning

<b>Common Procedural Roles</b>			
<b>Facilitator</b>	<b>Recorder</b>	<b>Reporter</b>	<b>Time Keeper</b>
<ul style="list-style-type: none"> <li>• Ensures that everyone understands the instructions or task</li> <li>• Promotes the active participation of all members</li> <li>• Contacts the instructor</li> <li>• Monitors pace</li> </ul>	<ul style="list-style-type: none"> <li>• Organizes group report;</li> <li>• Discusses what will be reported;</li> <li>• Summarizes activity for introduction</li> </ul>	<ul style="list-style-type: none"> <li>• Makes sure the group has notes, diagrams, etc.</li> <li>• Checks that everyone has completed individual reports</li> <li>• Sees that reports are turned in</li> </ul>	<ul style="list-style-type: none"> <li>• Monitors time</li> <li>• Advises facilitator</li> <li>• Helps group to complete task within time constraint</li> </ul>
<b>Specialized Procedural Roles</b>			
<b>Equipment Manager</b>	<b>Controversy Moderator</b>	<b>Measurement Specialist</b>	
<ul style="list-style-type: none"> <li>• Gathers materials for activity</li> <li>• Makes sure that the group has and makes use of resources appropriately;</li> <li>• Inventories materials; obtains &amp; returns resources.</li> </ul>	<ul style="list-style-type: none"> <li>• Opens communication</li> <li>• Encourages clarifying questions and non-judgmental responses to opposing views</li> <li>• Identifies and discourages put-downs</li> </ul>	<ul style="list-style-type: none"> <li>• Discusses with group what is to be measured and how;</li> <li>• Makes sure predictions are justified;</li> <li>• Carefully measures for group—time, distance, number, etc.</li> </ul>	

# Characteristics of Collaboration

- **Equality**

- Students bring a similar level of knowledge and skills

- **Mutuality**

- Students work together to answer the same question

- **Meaning**

- Students work together and with each other to create understanding

## Problem-Solving Partnerships

- Two to three students per group.
- The duration of group work is short (part of a class period to a few days).
- The specific task or problem to solve is limited in scope (a single problem or question or a limited set) and is usually a challenge or practice activity for students to apply recent learning.
- Multiple approaches to solving the problem are encouraged. There is no single "right" way to solve most problems, and all reasonable solutions or answers to the problem are honored
- Individual students have an opportunity to explain and discuss their suggested solutions as well as their misconceptions
- New understandings are developed by the individual, by the team, and, finally, by the whole class.
- Group and class discussions (and solutions) provide immediate feedback to the student.

## Cooperative Teams

- Three to four students per group.
- The duration of group work ranges from several days to several weeks.
- The problem or task is clearly defined by the teacher.
- A team plan of operation and goals is specified, and teams are highly structured. Each student has a clearly defined role in the team such as recorder, questioner, reporter. The teacher takes time to teach each student role.
- Team members share leadership within the framework of specific roles.
- All team members must contribute or the team cannot progress. (Teams "win or lose together.") The end product represents the entire team.
- The team focus is on cooperation as well as on achievement of goals. Awareness of the group process is as important as completing the task.

## Collaborative Groups

- Three to six students per group.
- The duration of group work can be short (days) or longer (weeks or even months).
- The task or problem is open-ended and may cover large amounts of course content.
- Student roles are flexible and may change throughout the project or assignment. Students observe (and help with) other students' work, and critique, evaluate, explain, and suggest ways for improvement.
- Open communication and multiple approaches are emphasized. All students are involved in honest discussion about ideas, procedures, experimental results, gathered information, interpretations, resource materials, and their own or other students' work.
- Students are constantly aware of the collaborative communication process, as well as the product or goals. They know they can change direction to meet goals.

# Challenges

- A lack of collaborative skills.
- Loafing.
- The fear of being duped and the dominating of others.
- Status differential.
- Pacts.
- Diversity.
- Socially induced incompetence.
- A belief in the "right answer"
- Lack of support from parents, colleagues, or administrators.

# Collaboration almost always works better than individual learning.

- Multiple zones of proximal development are created among students that help scaffold learning.
- It positively affects achievement, problem solving, and understanding.
- The cognitive load is spread among students.
- It promotes autonomous, motivated learning.
- Anxiety about learning is reduced.
- Groups traditionally left behind in science are more likely to be included.
- Real life skills are developed.

Vygotsky believed that this life long process of development was dependent on social interaction and that social learning actually leads to cognitive development. This phenomena is called the Zone of Proximal Development. Vygotsky describes it as "the distance between the actual development level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978). In other words, a student can perform a task under adult guidance or with peer collaboration that could not be achieved alone. The Zone of Proximal Development bridges that gap between what is known and what can be known.

Vygotsky, L.S. (1978). *Mind and society: The development of higher mental processes*. Cambridge, MA: Harvard University Press.

Appropriation is necessary for cognitive development within the zone of proximal development. Individuals participating in peer collaboration or guided teacher instruction must share the same focus in order to access the zone of proximal development. "Joint attention and shared problem solving is needed to create a process of cognitive, social, and emotional interchange" (Hausfather, 1996). Furthermore, it is essential that the partners be on different developmental levels and the higher level partner be aware of the lower's level. If this does not occur, or if one partner dominates, the interaction is less successful (Driscoll, 1994; Hausfather, 1996).

Driscoll, Marcy P. (1994). *Psychology of Learning for Instruction*. Needham, Ma: Allyn & Bacon.

Hausfather, Samuel J., (1996) *Vygotsky and Schooling: Creating a Social Contest for learning*. *Action in Teacher Education*.

(18) 1-10.