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| Challenges in Implementing Cooperative Learning      Sayonita Ghosh Hajra |

Abstract

In this paper, I discuss about “Cooperative Learning”. Here I briefly discuss about the essential features or characteristics of cooperative learning, and some binary tensions that might arise while implementing the teaching techniques for cooperative learning among individual learners in a cooperative group.

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# INTRODUCTION

In EMAT 7050, I learned about different forms of classroom discourse. Every week listening to the class piqued my interests in classroom discourse. The one that really attracted me was “Cooperative Learning”. I perceived cooperative learning as learning in a group, doing group tasks with members in a group sharing the same goal. In seminars, I have learned about courses based on cooperative learning. I was introduced with the positive sides of cooperative learning. Significant numbers of literatures talk about the positive effects of implementation of cooperative learning. I was curious to know the tensions that might arise on implementing cooperative learning in mathematics classroom.

# RATIONALE

In this paper, I propose to discuss what cooperative learning is, what are the essential features or characteristics of cooperative learning, what are some of the binary tensions present or emerge within cooperative, mathematical problem solving groups and how these tensions effect individual learners.

Next I discuss about cooperative learning after briefly talking about three main forms of classroom instructions.

# THREE MAIN FORMS OF CLASSROOM INSTRUCTION

The structure of a general classroom instruction is mainly classified into three main forms: competitive, individualistic, and cooperative (Johnson, Johnson, and Holubec, 1991). Competitive classrooms are based on the concept of ranking. Performance indicators such as grades are used to differentiate among individual students. Only one student can be at the top. For ones success, failures of others are necessary. Medical schools are a classic example where this environment is found.

Standards for success are clearly communicated in an individualistic classroom. Success or failure of any one student depends on that student’s individual actions. There is no connection of one student’s success or failure to any other student’s success or failure. It is possible for two or more students to be on top of the class. Many high schools use this approach for calculating standing in the graduating class.

The cooperative classroom is based on the group success. There is no way one can succeed if the other in the group fails. “Cooperative learning refers to methods of instruction that organize classroom instruction so that groups of 2-6 students work together to reach a common goal. Cooperative learning involves all group members who share in process, content, and accountability (“Cooperative Learning”, n.d.). Many researchers have affirmed that when the focus shifts from the individual to the group, individual learning is enhanced, not diminished (Marzano, 2003; Marzano, Pickering, & Pollock, 2001; Slavin, 1995, 1996).

Next I discuss the non-characteristics of cooperative learning.

# NON-CHARACTERISTICS OF COOPERATIVE LEARNING

According to Johnson and Johnson (1991), cooperative learning is relatively ignored and underutilized by teachers. To understand what cooperative learning is, we would try to understand first what cooperative learning is not. Johnson and Johnson (1994a) summarize what are some of the non-characteristics of cooperative learning:

* Having students sit side by side at the same table and talk with others as they do their individual assignments.
* Having students to complete tasks individually after instruction with those finishing first helping other students with their work.
* Assigning a report to a group where one student does all the work and others put their name on it.

Now after listing the non-characteristics of cooperative learning, I will discuss what cooperative learning is.

## WHAT IS COOPERATIVE LEARNING?

The answer to the question is very subjective; answer varies from one person to another. Cooperative learning involves students working in groups, usually mixed ability groups. Students complete the group task, which requires group interdependence and assessments are individually and group determined.

There are different forms of cooperative learning: Student Team Learning, Jigsaw, Group Investigations and Learning Together.

## FOUR OF THE WIDELY USED METHODS OF COOPERATIVE LEARNING

Four of the most widely used methods for cooperative learning are: Student Team Learning, Jigsaw, Group Investigations and Learning Together. The Student Team Learning Method was developed by Slavin (1983 a). The two most popular Student Team Learning methods are Student Teams-Achievement Divisions (STAD) and Teams-Games-Tournaments (TGT). In both the methods, students are grouped in teams and they compete against each other. STAD teams consist of students with different achievement levels. Teams’ overall grade is based on the collective improvement of the team members. TGT teams consist of games and tournaments in which teams are formed with the students of same achievement level.

The Jigsaw Method was developed by Aronson (1978) and is based on the concept of division of labor among the individual group members. Here each student is responsible for completing a task and teaching the task to the rest of the group. An intermediate step in Jigsaw Method would be such that a student of one group discusses and compare the results with the students from other groups.

The Group Investigations Method was developed by Sharan & Sharan (1976). This method is similar to the Jigsaw Method. In this method, each group has a different task and groups create presentations to teach the rest of the class. This method is unique because of the use of open-ended problems that provide students a significant control on the subtasks. Students are assessed on their presentations.

Learning Together was developed by Johnson and Johnson (1975). Learning Together is based on the belief that all students work together on the same task and should share a common goal. Johnson and Johnson offered five characteristics of cooperative learning (1994 b).

## CHARACTERISTICS OF COOPERATIVE LEARNING:

* **Group Interdependence**: Group interdependence is important when team members need to work together in groups to successfully complete the assigned tasks. With group interdependence, it is possible to achieve a minimal level of functioning with weaknesses in teams, group processing, or social skills (“Cooperative Learning”, n.d.). There are various ways to promote group interdependence. They are: (i) Resource Interdependence – Resource interdependence is the practice of limiting the resources available to a team to elevate the need for collaboration. (ii) Role Interdependence –This is based on the concept of ‘division of labor’. Teacher is responsible for assigning roles. Teacher must ensure that the roles assigned to the team members are necessary for the tasks and that the team members know how to fulfill the roles. (iii) Reward Interdependence – Sometimes teachers use rewards to intrinsically motivate students to work in a group. Rewards are given to the team not the individual member of the group. All teams in a cooperative learning classroom should have the opportunity to earn rewards. (iv) Goal Interdependence – This can be accomplished by assigning each group one project to complete and submit for grading; though each team member will be responsible for individual components in the project and combining together the final product.
* **Individual Accountability**: Each individual in a team must be able to show mastery of the assigned learning and should be able to document his/ her contribution to the team. Individual accountability is also based on the idea of “equal participation”. In true cooperative learning, every individual contributes equally for team’s success. “There are no “hitchhikers,” those that let the group carry them along for a free ride. And there are no “chauffeurs,” those that try to drive the team where they want to go. Teachers must take specific actions to ensure that there are no hitchhikers or chauffeurs on a cooperative team” (“Cooperative Learning”, n.d.). There are various ways to promote individual accountability. They are- (i) Assigning Roles: Assigning particular tasks to each team member could promote individual accountability. This also comes under the “Division of Labor”. Each individual can be assigned a discrete task and all the discrete components joined together to form the whole project of the team. (ii) Coding: In this, different colored pens or markers could be used by the team members so that each member has a different colored pen. Then everyone can identify at a glance which team members have contributed what. (iii) Quizzes and Tests: Formal assessment tools can be used to heighten individual accountability.
* **Group Processing**: In Group Processing, cooperative team members think and discuss in a group. This is often referred to as reflection, debriefing, or processing. There are various ways to promote group processing. They are: (i) Lesson Plans - The easiest tool for implementing Group Processing is the lesson plan. (ii) Questions – Prompt and structured questions could help students to initiate discussion in a group. (iii) Talking Chips – Talking chips are used to ensure all team members have a voice during group processing. Each team member is given two or three colored chips different than other team members in a group. When speaking during group processing, one must place one chip on the table. When the chips are used by the individual team member, the member must wait for all other team members to use their chips before speaking again. (iv) Talking Sticks – Talking sticks are similar to talking chips except the person holding the stick is allowed to talk.
* **Face-to-Face Interaction**: This indicates eye-to-eye contact in a group. Students will be close enough so that they share a common material and their conversations could be heard to each member of the group. There are various ways to elevate face-to-face interaction in groups. One is to build the physical environment in the class by arranging the desks so that no one is seated on an elevated platform and no one is the head of the discussion.
* **Small Group and Interpersonal Skills**: There are four different social interaction skills. They are basic cooperative skills, individual attitudes and skills, team interaction skills and team productivity skills. Human beings are egocentric and prone to individualistic and competitive. Most students in a class have not learned to work in groups and be productive members. Teachers need to play an important role in developing the skills in students to carry out the cooperative learning.

If one or more of the critical attributes are missing in one’s lesson, then one is not using cooperative learning but group work.

“In examining the philosophies that teachers need to adopt to successfully implement cooperative learning, Evans, Gatewood and Green’s (1993) review of related literature led to the following observation: Using cooperative learning as a teaching strategy requires three basic assumptions:

* Students can learn from each other.
* Students can, with instruction, govern themselves.
* The teacher is not the only source of information” (Sheehy, 2004, p.7).

# PROBLEMS WITH COOPERATIVE LEARNING

Many research literatures indicate the efficacy of cooperative learning for student learning and development (“Cooperative Learning”, n.d.). Teachers feel professional pressure to use this research-based teaching strategy and try to implement cooperative learning without adequate training (“Cooperative Learning”, n.d.). This results in giving “group activities” to students, which is labeled as cooperative learning. These students, teachers, and administrators then grow dissatisfied with the results of their “cooperative learning” experience. These individuals are often “inoculated” against cooperative learning on the basis of their exposure to group work (“Cooperative Learning”, n.d.).

A significant body of research and literature claims that practicing cooperative learning in the mathematics classroom helps in increasing achievement, in motivating and in generating social skills among students.

Sheehy found that though she had experienced successful cooperative learning, fellow teachers using cooperative learning experienced some difficulties in the classroom. Sheehy noticed that though students have been tested, observed, videotaped, and analyzed; their voices seemed missing in the literatures. Sheehy found that it is important to understand students’ social, emotional and mathematical experiences of cooperative problem solving team from students’ perspectives. In Sheehy’s dissertation (Sheehy, 2004, p. 174), Sheehy raised the following questions:

* How do students engage in and experience cooperative, mathematical problem solving?
* What binary tensions are present or emerge within cooperative, mathematical problem solving?
* How are these tensions related to students’ individual mathematical activity?

Sheehy interviewed three female college students; data collection involved videotaping three problem-solving sessions. “Each problem solving session was immediately followed by a group interview in which the participants discussed their mathematics, the roles and effects of group members, ways in which each participant felt helped or hindered in their mathematical thinking, group solving strategies, etc” (Sheehy, 2004, p. 175). Sheehy first identified the binary tensions that were identified and felt by the participants during cooperative, mathematical problem solving experiences. Sheehy found that binary tensions occurred within three general components of cooperative learning: the environment, the group members and the individual. “The size, number and access to manipulatives along with roles that group members took on were the aspects of the environment promoting or creating self/other tensions. Issues of being polite (or being selfish), sharing (not sharing) ideas, resisting (or submitting to) perceived power were raised by the participants as potentially problematic aspects of working with group members and were often difficult to reconcile. As the participants reflected on and discussed the notion of individuality within a cooperative group, they agreed that both a desire for individual ownership of the mathematics and a subsequent search for autonomy led to yet other binary tensions ” (Sheehy, 2004, p. 175). Sheehy found that self/other binary tensions limit individual mathematical activity.

Next, I briefly discuss how the five characteristics of Johnson and Johnson that might promote self/other binary tensions.

**Positive Interdependence**: Positive interdependence is promoted by creating specific roles for students, providing one set of manipulatives or materials to force students to work together, and creating the goal of one joint task. Sheehy found that these strategies could also be tools that diminish a student’s autonomy within a group. Sheehy suggested that the “We sink and we swim together” motto for groups can foster an individual/group tension which is difficult for students to resolve. “When an environment is clearly structured to promote group results and individual activity is performed for supporting the group goals, there simultaneously exists the danger of fostering unhealthy, dependent relationships. When a student perceives her responsibility to the group as more important than her responsibility to herself, individual mathematical activity is compromised and devalued” (Sheehy, 2004, p. 178).

**Individual Accountability**: Johnson and Johnson stated that teachers must assess the contribution of individual members to the group’s work in order to ensure that each individual is accountable for doing their job in the group’s work (Sheehy, 2004). Sheehy observed that regardless of however meaningful this contribution, students feel pressured to contribute an idea or the completion of a task to their group’s activity. Sheehy noticed that the assessment of individual accountability indicates that mathematical activity supporting the group is valued more than activity enhancing individual learning.

**Group Processing**: “The purpose of group processing is to clarify and improve the effectiveness of the members in contributing to the efforts to achieve the group’s goals” (Sheehy, 2004, p. 183). For group processing to be effective, teachers should provide students with organized format for discussion. Group processing promotes behavior that promotes the group goal rather than behavior that promotes mathematics. If the group goal was to solve a specific problem, then group processing would center on questions like: What did each group member contribute to finding this formula? How could your group work together tomorrow to solve problems more effectively? What is one thing each individual could improve on? If individual mathematical activity was privileged in group processing, questions would center on questions like: What was the first idea each participant had? How many different representations/ideas were discussed? How were the ideas connected? How did the group agree upon one representation? Why? How would each member proceed with or extend the problem?

**Face-to-Face interaction**: Teachers and students generally interpret social interaction as a required characteristic of effective learning in cooperative groups. A student who does not engage in conversation is often referred to as a “free-rider” or antisocial or is accused of not supporting and contributing to the group. The expectation of interaction might create a social pressure on group members to share their own ideas and suggestions as well as listen to those of others. Hence self/other binary tension emerges when individuals believe that their individual mathematical activity is valued only when it is shared and possibly only when the group takes it up. Because students do not feel free to reflect quietly on their own mathematics or to dismiss the ideas of others without polite consideration, the expectation of interaction could significantly hinder mathematical activity of the individual learner (Sheehy, 2004).

**Small Group and Interpersonal Skills**: Johnson and Johnson said that teachers must not only hold individuals accountable for *what* they contribute to their group, but also for *how* they contribute and interact with other group members. Sheehy found that although the ability to work with other people is an important characteristic to develop with students, the self/other binary tensions this structure creates not only leads to a decreased focus on individual learning but also on mathematics altogether. The findings of Sheehy’s study reveal that if a student perceives manners rather than mathematics as privileged in a cooperative learning environment, the student tends to do what is socially expected rather than what furthers student’s own mathematics. This privileging leads to a number of problematic outcomes; such as, students abandoning their own ideas in order to be respectful of others, forfeiting their own reflection time in order to actively participate in group activity, or accepting one solution instead of many in order to arrive at one agreed on group solution.

# CONCLUSION

Cooperative learning is a firmly established pedagogy that is present in both classroom and curricula. Many research literatures “claims the implementation of cooperative learning in mathematics classrooms results in increased achievement, motivation, and social skills among students” (Sheehy, 2004, p. 173). Sheehy observed many binary tensions among individual learners in cooperative problem solving sessions. Therefore, it is important for teachers and educators to understand the issues and tensions emerging from cooperative learning before trying to implement it in their own classrooms.

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