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## HOW TO INCORPORATE COOPERATIVE LEARNING PRINCIPLES IN THE CLASSROOM: IT'S MORE THAN JUST PUTTING STUDENTS IN TEAMS

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In business organizations today, teams are a popular form of job design, and work teams represent a major change in the management of organizations. The traditional organizational model where managers think, supervisors push, and workers work is counterproductive in today's business environment. Self-directed work teams are seen as an important mechanism for dealing with today's complex and rapidly changing environment (Hitchcock & Willard, 1995). Similarly, the traditional model of business education, where professors lecture and students work individually with little interdependence with respect to their performance and grades is not in line with the business community's needs. As a result, businesses recommend that curriculum and teaching methods be modified to better develop student cognitive, communication, and interpersonal skills through the use of student groups in the learning process (Kunkel & Shafer, 1997). Group learning is an attempt to develop self-directed learning skills and to introduce students to real-world experiences before graduation.

One approach to group learning at the college level that has gained in popularity is cooperative (team-based) learning, where students work together in small groups that are structured to achieve positive interdependence (mutual goals and group rewards) and individual accountability (each student's respon-

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sibility for doing his or her share of the work and for mastery of all of the material to be learned). Although the effectiveness of cooperative learning in higher education has been documented (e.g., Astin, 1993; Cooper, Prescott, Cook, Smith, Mueck, and Cuseo, 1990; Goodsell, Maher, & Tinto, 1992), its use is not widespread across college campuses. One explanation, according to Manera and Glockhamer (1989) is that many college faculty actually believe they are using cooperative learning when they include a team component in the course design. Yet, according to these authors, most of the team activities exclusively emphasize the task, demand no interdependence among team members, and include no way to assess individual performance.

Johnson, Johnson, and Smith (1991) caution faculty:

Simply placing students in groups and telling them to work together does not mean that they know how to cooperate or that they will do so even if they know how. Many instructors believe that they are implementing cooperative learning when in fact they are missing its essence. Putting students into groups to learn is not the same as structuring cooperation among students. (p. 6)

Thus, this article describes a structure or model for designing team assignments using a cooperative learning framework wherein students help each other learn material from the course. It begins with a review of cooperative learning principles and then provides examples of how team assignments were structured in an undergraduate-level principles of management course.

### **The Cooperative Learning Concept**

The approaches to cooperative learning can be divided into two categories: direct and conceptual (Johnson et al., 1991). The direct approach consists of training faculty to use specific cooperative activities such as the jigsaw method (Aronson, Blaney, Stephan, Sikes, & Snapp, 1978), where teams in class have critical information based on one aspect of the problem in question and must share their information to complete the task. This approach calls for the exact duplication of specific exercises. The conceptual approach, on the other hand, is the basis for this article and involves training faculty to apply general principles on how to structure cooperative learning activities in the faculty's subject area. Once the principles are understood, faculty have the flexibility to design cooperative lessons that can accommodate undergraduate, graduate, and adult learning classes and achieve course goals.

In the literature, the cooperative learning framework has five elements or principles: (a) positive interdependence, (b) face-to-face promotive interaction, (c) individual accountability, (d) social skills, and (e) group processing

(Johnson, Johnson, & Holubec, 1990). The first element, positive interdependence, is present when students must rely on one another to achieve a specific outcome. To increase the likelihood of an interdependent effort, the faculty member structures several interdependency mechanisms: (a) a mutually shared team goal that requires team members to agree on the answer and strategies for solving each problem or task at hand; (b) positive role interdependence in which each member is assigned a role, such as a leader who gets members involved in the learning activity quickly, an encourager of participation who encourages all team members to participate in the discussion, a record keeper who completes all team forms and study sheets, and a checker of understanding who makes sure all members understand the task at hand; (c) shared resources, such as one copy of the problem or task per team; and, lastly, (d) joint rewards, such as giving each team five points if all members score above 80% on a quiz associated with the material.

The second component of the framework is face-to-face promotive interaction among students. It exists when students help, assist, encourage, and support each other's efforts to learn. Team members explain to each other how to solve problems by discussing the nature of the concepts being learned, by teaching their knowledge to each other, and by explaining the connections between present and past learning. During in-class exercises in particular, the faculty member must provide the time, face-to-face seating arrangement, and encouragement for students to exchange ideas and help each other learn. The goal, role, and resource interdependence elements described earlier facilitate this process as well.

The third component of the cooperative learning framework is individual accountability, which exists when each student's performance is assessed and the results are given back to the team and the individual. The team must know who needs more support, encouragement, and assistance in completing the assignment. Members must know that they cannot seek a free ride or hitchhike on the work of others. Individual accountability can be structured by keeping the size of the team small, giving individual quizzes or tests to each student, and observing each team and recording the frequency with which each member contributes.

Social skills, such as interpersonal and small-group skills, are essential for cooperative learning, and it is important to spend some time describing the skills needed for each role. Providing bonus points when each member of the cooperative learning team demonstrates a high percentage of the social skills reviewed in class increases the likelihood of those skills being utilized (Johnson et al., 1991). Peer evaluations also provide a form of feedback to team members regarding their role performance.

The final component of the cooperative learning structure is group processing, to determine if the goals are achieved and to maintain effective working relationships among members. At the end of the cooperative learning exercise, teams identify something that each member did that helped the team and what each member could do to make the team even better during the next exercise.

Figure 1 shows the relationship between the five components described above. The shadowed boxes indicate key faculty responsibilities in creating the cooperative learning framework.

### **Application of Cooperative Learning Principles**

The cooperative learning framework was used in a principles of management course made up of 30 students meeting twice weekly (80-minute sessions). Typically, in-class team exercises have been a mechanism for having students apply the theories and concepts taught in this survey course. However, in previous semesters, team members did not stay on task, particularly during early morning course sessions. For example, in some teams, students would not focus entirely on the task assignment but instead discussed last week's sports event. In other teams, a member would not participate and would shrug off any attempts to involve him or her in the team exercise. Little attempt was made by the other members to assist those who did not understand the theory or concept being demonstrated, no matter how often the teams were instructed to do so.

Thus, a cooperative learning framework was developed to improve the team process, specifically, to keep student attention focused on the task and to provide incentive for students to assist one another in understanding the course concepts or theories. Five in-class exercises were designed using cooperative learning principles. The exercises totaled 10% of the course grade (each worth 2%). In addition, a 5% peer evaluation component was part of the course grade. Students developed criteria for team member performance and then rated members on how well they met the criteria.

#### **FORMING TEAMS AND ASSIGNING ROLES**

Practitioners in cooperative learning prefer to construct cooperative learning teams in a heterogeneous manner using achievement measures, such as GPA or test performance, or some other characteristic, such as class standing or gender. Random assignment of students or student self-selection of teammates is not recommended because these methods historically are less effective than when the instructor determines groupings (Cooper et al., 1990;

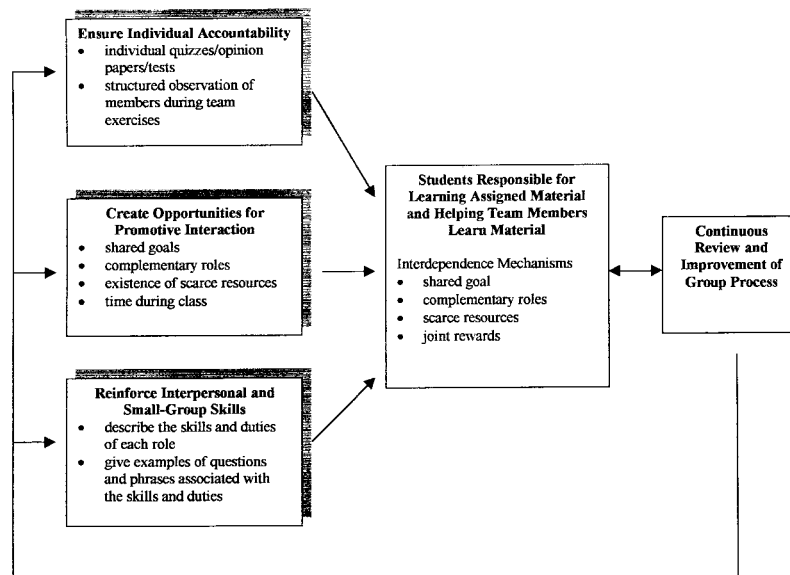


Figure 1: Relationship Among the Elements of Cooperative Learning

Fiechtner & Davis, 1990). For the principles of management class, team roles were first briefly reviewed. Then, students were surveyed for their preferences regarding roles (see Appendix A for a copy of the survey) and placed in groups of four (or three, depending on class size) based as closely as possible on their indicated role preferences. There is quite a bit of flexibility in assigning roles that accommodate student preferences, because students typically rate their interest in two or three of the roles with a score from 6 to 10 on the scale. Students were told that other factors would be taken into consideration as well when forming heterogeneous teams, such as class standing (freshmen, sophomore, or upperclassmen), gender, and academic major. GPA data was not available, because the students in this section were primarily first-semester freshmen.

Once teams were formed, a listing of all of the teams that showed the role assignment for each member was distributed to the class. At the start of the team exercises, skills and duties associated with each role were discussed in greater detail, as shown in Appendix B.

### IN-CLASS TEAM EXERCISES

With the teams in place and team members given some background about the role assignments, the in-class exercises began. Three of the five exercises are described in this section to demonstrate the cooperative learning framework in action. The first exercise dealt with a chapter on the history of management. At the start of class, a short multiple-choice quiz about the topics was given to ensure that students read the material beforehand. After the quiz, two copies of an exercise were given to each group. The exercise asked students to specify the perspective or theory of management that was being used in various scenarios. The team's goal was to answer the exercise questions. As the teams worked, the quiz was corrected and returned to the students. Team members shared the results and reviewed questions that were answered incorrectly. Five minutes before the end of the period, a member from each team was picked at random, and he or she stayed to answer several questions about the exercise. The team received the 2 percentage points for the exercise if the designated individual received an 80% or higher score on the end-of-the-class assessment. At the beginning of the next class, each team prepared a critique of its group process during the previous period and suggested improvements. For example, one team asked that more examples of the leader's skills be reviewed. Another team noted that the individual who answered the questions on the end-of-the-class assessment should be able to use his or her notes taken during the in-class exercise. That way, the team pointed out, there was less stress on members to memorize the team's decisions, particularly when the exercise involved a lot of variables. The professor agreed, and this became a new rule in the cooperative learning format.

A second exercise was designed to help students study for an upcoming test. On an individual basis, students brought to class expanded outlines of the chapters that would be included on the test, and the professor checked these for individual accountability purposes. Each team was assigned two chapters and given six blank index cards on which they developed questions about key concepts or theories on one side and the answers on the other side (similar to flash cards). All the teams shared their questions with the entire class, thus identifying key points from the chapters. Team members were encouraged to study for the exam together outside of class, and individuals were told they would receive a bonus of 10 points on the next test if all members of the group received a 75 or better on that test. This exercise demonstrated for students a technique for group study and provided a strong incentive for them to study as a group. Another incentive for active involvement in the exercise would be to inform students that a portion of the exam questions

would be taken directly from those questions generated by the teams as part of the in-class exercise.

A third exercise that dealt with organizational structure material consisted of a scenario where an organization changed its strategy and required a new structure. First, students were given 10 minutes to work on the problem individually. Then the teams drew charts on overhead transparencies of the organization before and after the strategy change, which the class reviewed together. At the end of the exercise, the letters A, B, C, and D, representing each of the roles, were written on separate pieces of paper, folded, and placed in an envelope. A student from the class randomly selected one of the papers from the envelope, which turned out to be marked C, and all of the record keepers stayed to answer short questions about their team decision. The exercise was worth 2 percentage points: one point for the team's in-class work and the other point for team member C's explanation of why that structure was chosen. This process helped to ensure that students who were not clear about organizational structure were helped by the other team members. It also provided an incentive for members to assist one another. Appendix C outlines the three exercises described above in terms of the cooperative learning framework.

#### **OTHER APPLICATIONS**

Cooperative learning principles can be applied to courses and team assignments involving advanced undergraduate and adult learners. Some professors may assume these audiences need less structure than first-semester freshmen and want more freedom and less direction. However, according to Simpson (1995), who observed adult learners assigned to groups in which cooperation was not structured, members engaged in competitive behavior within the teams, complained about the free-rider problem, and stated preferences for individual-based assignments. Structuring cooperation can improve the team experiences of these students who in the past were most likely given team assignments that lacked individual accountability, positive interdependence, and incentives to help one another learn.

For example, structured cooperation was used in a senior-level undergraduate strategy course where student teams operated a computer-simulated company for the entire semester. Part of the course goal was to expose students to team leadership and follower experiences, so team roles were changed three times during the semester, and feedback regarding team member performance



in each of the roles was part of the grade. Also, to encourage better understanding of the simulation details in the weekly decision rounds, two quizzes about simulation information and the team's performance were part of the course grading system. The quizzes were taken on an individual basis. For both quizzes, teams in which all members individually scored an 80 or better received bonus points on the team's final paper.

Cooperative lessons were also incorporated in an evening session consisting of full-time working students who were given a team project to complete outside of class. At the start of the project, students were quizzed individually on the course material. When the teams met outside of class, the recorders kept minutes that documented the questions and comments by team members in fulfilling their specific roles. The group reward was as follows: Teams were given in advance a set of essay questions about the content of their group project. Then, during class, individuals were randomly assigned one of the questions to answer. A portion of the team's grade was calculated based on the results of the individual answers.

In summary, exercises and projects, both inside and outside of the classroom, can be designed to enhance the group experience for a wide variety of student learners. For classes of upper-level and adult learners, incorporating structured assignments and explaining the rationale for them can help to offset some of the negative experiences students may have had in the past. Structured team assignments also can provide valuable practice for students who are increasingly being asked to participate in shared governance in organizational settings.

## Discussion

This article reported on a technique for structuring cooperation so that teams work together meaningfully during in-class exercises. The purpose of incorporating a cooperative learning framework was to keep team members focused on the task during each exercise and to provide motivation for students to assist one another in understanding course concepts and theories. Based on observation of the teams during the exercises, members stayed on task and more frequently assisted one another in understanding the material than was the case in past semesters when cooperation was not structured.

Students rated the cooperative learning exercises high (4.5 out of 5 in semester evaluations). Although there was one student who wrote on the

course evaluation and noted in class that he'd prefer to work independently, most of the student feedback regarding the format was positive. For example, the following comment was typical: "The group activities definitely helped me understand the chapter. We made sure each person knew the material. If they didn't, they would let the other team members down." Also, students wrote that the experience of team interdependence would be useful in the work place, a point that was emphasized throughout the semester by the professor, particularly when team member skills were reviewed and when teams discussed continuous improvement of group processes.

With regard to future research involving cooperative learning, opportunities for additional study are numerous. Although the evidence to date suggests that "the most successful activities are always highly structured and have very clear directions and expectations for how team members are to contribute and interact" (Cooper et al., 1990, p. 28), few empirical studies have documented the effects of structured team cooperation, particularly in business schools. Do students learn course material better and is there a difference in group satisfaction when cooperation among team members is structured? Is team learning more effective if there is consistent application of learning techniques over many classes in a student's curriculum?

With regard to teaching, structured cooperation, although still in its infancy in college classrooms, represents a technique for faculty to continuously improve the group component of their courses and for students to experience the interdependence of teams as part of their learning process.

### **Appendix A** **Team Role Survey**

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Your name: \_\_\_\_\_

Please circle the number that best describes your level of interest in the following activities:

1. How would you rate your interest/motivation to work in teams?

|          |   |              |   |   |               |   |   |           |    |
|----------|---|--------------|---|---|---------------|---|---|-----------|----|
| 1        | 2 | 3            | 4 | 5 | 6             | 7 | 8 | 9         | 10 |
| very low |   | somewhat low |   |   | somewhat high |   |   | very high |    |

2. How interested are you in being a team leader (whose role is to get team members involved in activities and keep the team on track)?

|                      |   |   |               |   |   |   |                 |   |    |
|----------------------|---|---|---------------|---|---|---|-----------------|---|----|
| 1                    | 2 | 3 | 4             | 5 | 6 | 7 | 8               | 9 | 10 |
| very little interest |   |   | some interest |   |   |   | strong interest |   |    |

3. Would you be interested in completing forms and other records for the team?

|                      |   |   |               |   |   |   |                 |   |    |
|----------------------|---|---|---------------|---|---|---|-----------------|---|----|
| 1                    | 2 | 3 | 4             | 5 | 6 | 7 | 8               | 9 | 10 |
| very little interest |   |   | some interest |   |   |   | strong interest |   |    |

4. How interested are you in taking the role of encouraging others in your team to participate?

|                      |   |   |               |   |   |   |                 |   |    |
|----------------------|---|---|---------------|---|---|---|-----------------|---|----|
| 1                    | 2 | 3 | 4             | 5 | 6 | 7 | 8               | 9 | 10 |
| very little interest |   |   | some interest |   |   |   | strong interest |   |    |

5. Describe your interest in taking the role of checking other members' understanding of the exercise or problem the team is solving.

|                      |   |   |               |   |   |   |                 |   |    |
|----------------------|---|---|---------------|---|---|---|-----------------|---|----|
| 1                    | 2 | 3 | 4             | 5 | 6 | 7 | 8               | 9 | 10 |
| very little interest |   |   | some interest |   |   |   | strong interest |   |    |

6. How often have you worked in a team or group?

|       |             |              |                                  |
|-------|-------------|--------------|----------------------------------|
| 1     | 2           | 3            | 4                                |
| never | very rarely | occasionally | several times over the past year |

## Appendix B Skills and Duties of Team Member Roles

| <i>Team Member Role<sup>a</sup></i> | <i>Skills/Duties</i>  | <i>Examples of Questions and Comments</i>  |
|-------------------------------------|---|--|
| A. Leader                           | Direct team's activities to ensure all parts of the assignment are completed on time.<br>Direct team members to stay on task.<br>Encourage team dialogue about its processes. | "We are getting off of the topic and have 10 minutes left."<br>"We have not answered the question but instead are reviewing another part of the chapter."<br>"Team Member B, are you |

*(continued)*

### Appendix B: Continued

| <i>Team Member Role<sup>a</sup></i>                                    | <i>Skills/Duties</i>   | <i>Examples of Questions and Comments</i>   |
|--|--|---|
| B. Encourager of Participation (may assume leader duties if necessary) | Encourage team members to fulfill their roles.   | happy with the way we are all participating?"   |
|  | Encourage all team members to participate in the discussion.                                   | "Team Member C, what is your opinion of our answer?"  |
|  | Make sure no team members dominate the discussion.   | "Everyone, write your opinion on a piece of paper. I'll collect them and write them on the board. We'll discuss them (with or) without identifying who had what opinion." |
|  | Ask for team member opinions.  |   |
| C. Recorder  | Complete all team exercise material.   | "Our performance to date is as follows . . ."   |
|  | Keep copies of all team forms and study sheets.  | "Here is what we will submit as our response to the exercise question. Do we all agree that it represents our discussion?"  |
|  | Provide copies of information the team developed if a team member is absent.                   |   |
| D. Checker of Understanding  | Develop mechanisms to check the understanding of each member prior to the end of the exercise. | "Let's take a minute and separately write down why we chose option 3 and then compare our answers."   |
|  | Make sure each member can verbalize the reasoning behind the team's decision.                  | "Team Member A, will you repeat what our team's solution is?"<br>"Team Member C, will you summarize for us why we decided to eliminate the third option?"                 |

a. Team roles can be combined to accommodate three or four-person teams. For example, in three-person teams, the recorder may also assume the role of checker of understanding, or the checker of understanding might perform the duties of the encourager of participation.

## Appendix C

### Summary of In-Class Exercises and Cooperative Learning Principles

| <i>Cooperative Learning Principles</i> | <i>Management History Exercise</i>   | <i>Study for Exam Exercise</i>   | <i>Organizational Structure Exercise</i>   |
|--|--|--|--|
| 1. Positive interdependence            |  |  |  |
| Goal interdependence                   | Answer all parts of the exercise   | Identify key concepts for each chapter and put in question/answer format   | Develop two organizational charts (before and after strategy change)   |
| Role interdependence                   | Leader, checker of participation, record keeper, checker of understanding  |  |  |
| Resource interdependence               | Two copies of exercise given to students   | One set of index cards for each team   | Two overhead transparencies per team   |
| Reward interdependence                 | All team members receive 2 points for the exercise if the randomly chosen team member scores at a certain level (at the end of the Exercise)         | All team members receive a 10-point bonus on the test if all members individually score 75 or better on the test | 2-point exercise: 1 point = team charts; 1 point = randomly chosen member explains why the team chose its chart design |
| 2. Face-to-face promotive interaction  | Students teach and encourage one another during the exercise to ensure that the randomly chosen team member will be prepared to answer for the group |  |  |
| 3. Individual accountability           | Quiz on chapter material before class exercise   | Students tested individually on chapter material   | Students prepare organizational charts before meeting in the team  |
| 4. Social skills                       | Behaviors and phrases described for each role  |  |  |
| 5. Group processing                    | After each exercise, students brainstorm for improvements in team learning   |  |  |

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