Chapter 4 Cooperative Learning

According to Faust and Paulson (1998), within the cooperative learning strategy, learners are organized into work teams of three or more with learning efforts focused on a common objective. The experience is characterized by positive group interdependence, face-to-face interaction, individual accountability, effective and efficient group processing, and suitable interpersonal and group social skills (Johnson, Johnson, & Holubec, 1991).

Panitz (n.d.) offers a similar definition; he goes on to add that the instructor maintains control of the learning environment, designs learning activities, structures work teams, and, in his view, does not empower students. Kagan (1989a) contributes that in cooperative learning the instructor designs the social interaction structures (e.g., work teams) as well as learning activities. Cooperative learning is more teacher directive than collaborative learning. See Appendix 4.1 Cooperative vs. Collaborative Learning: A Degree of Difference for a comparison of these two active learning approaches. See also Bruffee (1995).

Slavin (1996) argues that a critical element of active learning is group team work and team goals. He graphs the relationship between group learning goals, motivation, and enhanced learning as presented in Figure 4.1. Group learning goals produce within team members the motivation to learn, encourage other members to learn, and motivate members to help each other learn. Within each member deeper learning occurs as a result of peer tutoring, practice, assessment and correction.
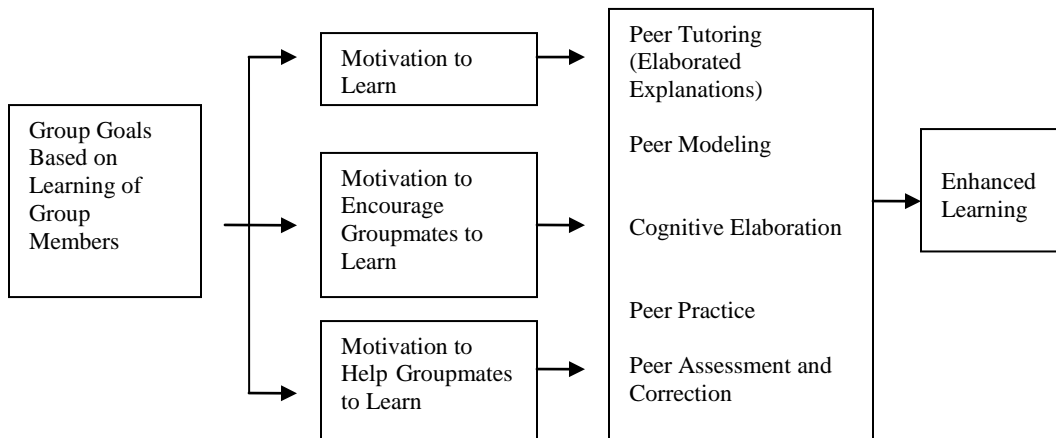

Figure 4.1 Group Goal's Effect on Enhanced Learning (Slavin, 1996).

Benefits of cooperative learning include, enhanced student achievement (i.e., deeper learning and improved retention), higher order thinking skills, improved teamwork skills, learning how to learn, learning independence and interdependence (shared responsibility for learning), self-direction, self-confidence, self-esteem, shared decision-making skills, and improved knowledge transfer skills. Additionally, CL blends individual strengths and weaknesses into a strong fabric for learning, simulates the "real work world", shifts

instructor and student roles and allows for extended project assignments. The instructor becomes a learning coach and students must take individual and collective responsibility for their own learning and must demonstrate that learning.

I. Cooperative Learning: Introduction
   A. Types of Cooperative Learning Groups (Johnson, Johnson & Holubec, 1991).
      1. <u>Formal Cooperative Learning Groups</u>: These are formally constituted work groups for a specific task or assignment.
         a. The instructor provides directions and learning objectives to the class.
         b. The instructor next, forms or causes the formation of work teams and provides relevant materials. He or she perhaps arranges for a meeting place and/or specifies team roles.
         c. The instructor again explains the task or assignment and cooperative structure (e.g., rules, processes, deadlines, etc.)
         d. The instructor monitors team performance and intervenes as needed to teach or reinforce interpersonal or group social skills and ensure learning. Learners are to help each other learn. The instructor assists only when necessary.
         e. The instructor assesses and evaluates the teams' work products which reflect achievement or learning. He or she may ensure each learner's contribution to the team effort is assessed.

      2. <u>Informal Cooperative Learning Groups</u>: These temporary or ad hoc groups are short lived, whose chief purpose is to focus the learner on the content to be learned. They also are used to reinforce critical lecture information. Most adults are able to focus for 12-15 minutes during a lecture. By breaking a lecture into 12-15 minute "chunks" and then allowing small groups of learners 5-7 minutes to "digest" (i.e., organize, explain, summarize, and connect "learning") it improves learning and builds positive relationships. Giddon & Kurfiss (1990) and Johnson & Johnson (1994a) have found this to be convenient and effective in enabling learner understanding and fostering achievement, especially when a concept or application is only partially understood.

      3. <u>Base Cooperative Learning Groups</u>: These groups are composed of members who "stay together" during an entire course, or in some cases, a degree program. Members give each other academic assistance, emotional support, and certainty. They typically exchange contact information and meet outside of class. The relationship between the instructor and base group members is the same as that found in the formal group.

   B. Reid and Cook (1989) have outlined the process through which an instructor can plan and manage a CL activity. It is a five-step process which consists of engagement, exploration, transformation, presentation, and reflection.

1. <u>Engagement</u>: The instructor "sets-the-stage." The activity should be presented so that learners see its relevance to the topic or skill at hand and "buy into" the learning.

2. <u>Exploration</u>: Once the engagement phase is complete, students explore information and ideas related to the topic or outcome. The instructor must be careful and provide only sufficient guidance to enable learners to as independently as possible to develop outside information sources. To foster positive group interdependence, the instructor can use the K-W-H-L-S tactic.
   a. K: What I now know.
   b. W: What I want to learn.
   c. H: How I will learn what I want to know and how I will use it to meet mutual goals.
   d. L: What I learned and how I can use it.
   e. S: How I shared or will share what I have learned for others.

3. <u>Transformation</u>: Learners reshape the information learned through their own organizing, clarifying, elaborating, or synthesizing. This is a very crucial phase. The instructor must ensure that all team members contribute. For example a learner can state what he or she believers a concept means, but must have examples to support the assertion as well as outline its implications.

4. <u>Presentation</u>: Work teams present their findings to an interested and critical audience. The critical effort for the instructor is to ensure that the audience is able to be constructively critical and can provide useful feedback. Team members then revise their final work product in light of the constructive criticism and feedback.

5. <u>Reflection</u>: Learners analyze what they have learned, identify strengths and weaknesses in the learning process, and offer constructive criticism for not only improving the learning activity, but how they individually and collectively learn. Guiding questions are:
   a. To prepare for this learning project, I…
   b. I contributed to my work team by…
   c. I think we will be better able to learn next time if we…
   d. The following action or activity did not help our team learn…
   e. For this project, our thinking could have been improved if we…

II. Deploying the Cooperative Learning Strategy Successfully
A. Strategies to Promote Positive Interdependence
1. Learners must recognize their need for each other to accomplish a mutual and/or assigned goal. Interdependence is stimulated by joint rewards, shared resources, and assigned or assumed roles within the group. Positive interdependence is characterized by mutual trust, shared nurturing, and constructive positive team dialogue. Hidden student or instructor agendas are not allowed. A team should strive to meet individual needs; however, the

needs of one or more individuals can not be permitted to override team needs, relative to the learning which must occur.

2. Forming Groups
   a. Dyads or trios are useful for introducing CL strategies to unfamiliar students or teachers who are starting to experiment with CL strategies.
   b. The most significant CL benefits occur when teams are of heterogeneous membership.
      (1) Felder & Brent (2001) strongly recommend that ability be the primary organizer in forming a team. Other factors such as gender and ethnicity are secondary organizers; for teams which meet outside class, common blocks of unscheduled time should be an organizer.
      (2) For academically at risk ethnic minorities, try to avoid groupings where such students are isolated; where possible, place at least 2 on a team. However, when the academic risk has passed, organize teams without reference to ethnic minority status.
      (3) To gather needed information for forming teams, during the first class session distribute a brief survey collecting name, gender, ethnicity, most recent grade point average--overall or in relevant or prerequisite courses which you have listed, and a hour by hour weekly (7 days) matrix so that a student can indicate when he or she cannot meet outside of class due to work, personal, or class schedule conflicts. Make any item optional.
      (4) For those courses with unstable membership for the first few weeks, form practice groups and then administer the survey, and/or a quiz when the membership seems to have stabilized.
      (5) For commuting students, set aside a regular portion of class time for team meetings. Team meetings can be supplemented with email, video streaming, instant messaging, and/or telephone communication.
   c. Initially students may be allowed to form their own groups so that comfort and acceptance will occur rapidly. An alternative to self-selected grouping is for the instructor to purposefully form groups and perhaps allow a student limited veto power over to which he or she is assigned.
   d. Groups should be limited to between 3 to 5 members.
   e. The instructor should provide an orientation about the characteristics of well functioning teams. For students who complain about working on a team explain the research and logic of CL and that they will have to work on teams upon employment. Allowing some students to work individually is not recommended.

3. Base and Formal Group or Team Governance
   a. The instructor should guide each group, depending on student's social development, in crafting a governance agreement (also called a compact, constitution, conduct codes, etc.) which reflects team expectations, violation sanctions, work plan with timelines, and dispute resolution processes for base and formal CL teams.

b. Required Components of the Compact are
   (1) A list of team members;
   (2) Team Expectations (e.g., group goals, attendance; meeting organization and conduct, meeting frequency; how conflicts are resolved; communication vehicles and contact preferences; character of participation; workload, roles, deadlines, and courtesy expectations);
   (3) Non-Compliance Sanctions (i.e., an increasing degree of sanction for non-compliance with at least three sanction levels before instructor intervention.);
   (4) Signed (by all members) team compact; and
   (5) Amending procedure (Any changes to a team compact must be by majority vote with instructor approval.).
c. The instructor should review each compact to ensure that its team expectations, non-compliance sanctions, dispute resolution process, and amending procedure are suitably comprehensive and reasonable.
d. A workplan must also be developed which minimally includes
   (1) Task specification (i.e., a clear statement as to what must be done);
   (2) Who is responsible for completing each task;
   (3) Task completion schedule; and
   (4) Specific task completion roles (e.g., researcher, proof reader, and editor).
e. Each team workplan should be reviewed by the instructor to ensure that the tasks are logically related and sequenced, the schedule is reasonable, the workloads are suitably equitable, all members participate, and the workplan is likely to produce an acceptable work product.
   (1) "Splintering" must be avoided. Splintering occurs when team members meet initially and divide the work into individual tasks and then fail to meet again until it is necessary to integrate the individually prepared "pieces" into a readable whole. CL benefits are not experienced when splintering occurs.
   (2) Depending on students' backgrounds and levels of social development there will likely be modest differences between students' contribution levels; this should not cause concern.

4. Assignment and assessment strategies can foster positive-interdependence. For example:
   a. Require a single group or team assignment, paper, project, i.e., a work product;
   b. Rotate member roles in the team as practical;
   c. If applicable to the task or work product, give each member different critical resources, e.g., information;
   d. Award a group grade for the team's work product; and
   e. Award a bonus (e.g., extra test points, recognition, trinkets, etc.) to teams, whose combined individual average score on a critical assignment or test exceeds a specified minimum standard.

      f. Stahl (1994) recommends
        (1) The instructor must ensure that each work team and learner has an equal opportunity for success.
        (2) Public recognition and reward must be provided for significant performance. The reward must be valued by learners.

B. Strategies to Promote Face-to-Face Interaction
1. Learners help each other by teaching, explaining, and discussing content among team members; challenging each other's reasoning and conclusions; and encouraging each other. Interaction may be physically face-to-face or electronic.
2. Some instructors require interaction logs which detail who communicated with who on what date, where, and about what topic.
3. In a virtual learning environment, this may be achieved by email, video streaming, or telephone communication.
4. Work teams must be inclusive and heterogeneous, i.e., composed of different ability levels and where possible different ethnic and cultural heritages.

C. Fostering Individual Accountability
1. Each member is accountable for his or her performance and that of the group. Slavin (1996) reported that when group goals and individual accountability are combined, the effects on student achievement is positive and consistent.

2. Specific Strategies
    a. Individual testing: Students are individually tested over the same or enabling content as the group project. Individual test scores are used in combination to determine a student's course or term grade and the team's bonus point eligibility. Teams with a high group grade and several low individual test scores may suggest one or two members did most of the team's work.
    b. Peer ratings: Students are given a standard, universal, relevant rating form and required to quantitatively rate fellow member's individual contribution to the team's product. See Appendix 4.2 for a sample.
      (1) Rating scales are distributed to students as part of the work product specifications; sanctions may be built into the rating scale process; if this is done scores below a specified point should be thoroughly explained by the student rater. Students can rate each other at instructor determined points during the assignment or course.
      (2) The instructor reserves the right to accept or reject any individual rating, but should explain his or her rationale to the rater or the team which is most appropriate. Felder & Brent (2001) suggest that students be given a "trial run", i.e., a brief assignment with team members rating each other and then sharing the ratings in a team meeting; limited class time can be allocated for this practice session.
      (3) For more on peer ratings, see Kaufman, Felder, & Fuller (2000) and Mills and Cottell (1998).

     c. <u>Counter-signed contribution descriptions</u>: These are narrative descriptions which describe an individual's contribution to the team's work product. The description maybe self-written or collectively composed, reviewed, adjusted, and endorsed by each team member.

     d. <u>Self-report</u>: Student A writes his or her contribution description independently and submits it to the instructor.

     e. <u>Justified peer grading</u>: Each member awards a grade to each other team member with a narrative and/or quantitative justification of the grade. The grade, once accepted by the instructor, is incorporated into the assignment, course, or term grade. The meaning of each grade (e.g., A, B, C, D, F) should be defined and a process established for determining a grade as should its weight in computing the final grade.

3. The relationship between any of these strategies and individual student grades must be thoroughly explained when introducing the assignment. For most instructors, individual testing may be the most efficient strategy.

4. Grading the Group
     a. Elements of a group grading policy may include
        (1) A log or report which records all meeting times, dates, attendance, and brief action summaries submitted with the final product;
        (2) Peer contribution ratings using a standard format as found in Appendix 4.2;
        (3) Individual assignment or test scores;
        (4) A product scoring rubric completed by the instructor; and
        (5) A group grade can be computed from the product's scoring rubric which can then be individually "adjusted" given the meeting logs (document meaningful participation), peer ratings, and individual assignment or test scores.
     b. Do not grade on the curve.
     c. Given the nature of CL assignments, a "free reading" or two where constructive comments are made by the instructor is recommended, if applicable and practical.
     d. For an excellent discussion on peer ratings, see Kaufman, Felder, and Fuller, 2000.

D. Ensuring Smooth and Effective Group Processing
1. Instructors must ensure groups have time to process information, produce needed work products, and develop effective working relationships. This requires the selection of appropriate roles, management of effective group dynamics as well as CL assignments.

2. Roles should be purposefully selected that mesh with the team's goals or objectives. The instructor should select the appropriate roles for the CL activity, assigning roles to younger students and letting older ones self-select. Roles should rotate among team members. Roles may include

a. The <u>facilitator or coordinator</u> acts as the team manager, works to ensure progress on the assignment, and keeps the team on task;
b. A <u>recorder</u> writes meeting logs and team responses to problems or assignments, if the task is not too burdensome;
c. The <u>reporter</u> shares group learning, activities, etc. with other teams or the larger class;
d. The <u>observer</u>, while participating, observes other members' participation, offers improvement suggestions, and checks for understanding;
e. The <u>skeptic</u> challenges others' thinking, reasoning, and arguments for internal consistency, sufficient evidence, and logic as well as preventing premature conclusions;
f. The <u>wildcard</u> assumes any missing member's assigned role;
g. The <u>editor</u> reviews and edits the team's work product for grammar, clarity, internal consistency, and writing quality.
h. All team members simultaneously assume the <u>contributor</u>'s role.

3. Managing Group Dynamics
    a. A carefully designed CL activity is the most efficient and effective management strategy. Construct explicit directions and product specifications.
    b. It is critical for students to understand the reasons for and benefits of CL assignments. The instructor should show significant enthusiasm for CL and the specific assignment.
    c. An assignment such as writing a team governance agreement and dispute resolution process will help members become acquainted and should improve group comfort and trust.
    d. Require teams to keep logs or minutes of meetings and to evaluate each other's performance. See Appendix 4.2 for a quantitative scale to rate a team member's contribution.
    e. Require that intra-team conflicts be resolved according to its dispute resolution process, but reserve the right to intervene and resolve any conflict.
    f. Ensure base and formal CL teams regularly assess performance citing what worked and didn't, difficulties encountered, and recommendations for improvement.
    g. Monitor and provide feedback to each team.

4. Managing the CL Assignment
    a. Ensure students fully understand the assignment. This may be done using explicit detailed directions, scoring criteria, grading policy, and specifications if a work product is required.
    b. Divide the assignment into sequential phases that are reviewed by the instructor according to an established schedule.
    c. Inquire informally as to group advancement frequently by asking questions, and formally by requiring brief progress reports.

d. To assist students in solving open-ended problems and to think critically
(1) Constructively critique initial student work;
(2) Reproduce, electronic or hard copy, several student work products on which strengths, weakness, and improvement suggestions are noted; and
(3) Repeat the process until student work meets acceptable quality standards (An additional benefit is that feedback within student groups will improve.).

5. Stahl (1994) recommends
a. The instructor must ensure there are clear, specific learning outcomes.
b. Learners must agree to the intended learning outcomes or products.
c. A comprehensive, clear set of task or work product specifications must be formulated and understood by learners.
d. The instructor must ensure learner access to "must-learn" information.
e. Work-teams must have opportunity to complete information enabling asks, e.g., library research, interviews, etc.
f. The instructor and/or work team must ensure sufficient learning time.
g. Time for formal reflection and debriefing must be provided.

E. **Ensuring Suitable Interpersonal and Group Social Skills**
1. Needed group skills include communication, trust building, leadership, decision-making, conflict-management, constructive criticism, compromise, negotiation, and clarifying, etc. Especially with younger students, instructors should model and teach and/or require suitable interpersonal and group social skills which typically include
a. Acceptable noise levels
b. Trust and confidentially
c. Equal participation
d. Mutual coaching, assistance, support, and feedback
e. Active and reflective listening
f. Reaching consensus
g. Tutoring
h. Critiquing an idea and not a person

2. Most interpersonal and team interaction problems will surface naturally. Most often, the team will manage the problem member on its own, so the instructor should not impose a solution unless absolutely essential. Felder & Brent (2001) suggest that students be trained to manage dysfunctional member behavior.
a. After a few weeks, direct team members to revisit their governance agreement and compare performance to the agreement; revise the agreement and performance as necessary.

     b. Felder & Brent (2001) indicate that an in-class troubleshooting exercise will teach students to manage interpersonal problems. For example, an instructor indicates that he or she has received complaints about "social loafing" also called "hitchhiking."

        (1) The instructor forms students into small groups to brainstorm management strategies.

        (2) After a few minutes, <u>all</u> student management strategies are listed on the blackboard, overhead, or paper.

        (3) Reform student groups to select the most effective strategies.

        (4) After a few minutes, list each selected strategy for all to see.

        (5) Permit teams to amend their governance agreement to incorporate selected strategies. The hitchhikers by now will clearly understand dysfunctional behavior has negative consequences. An instructor can employ the same strategy with most dysfunctional interpersonal behavior.

3. In those rare instances where are group member consistently fails to exhibit appropriate behavior, the group may be permitted to "fire" the member, provided all corrective action has failed including instructor consultation and intervention (Felder & Brent, 2001).

     a. The team should send a warning letter, detailing the evidence to the offending member, copying the instructor.

     b. If his or her behavior does not improve within the stated time frame, he or she is fired.

     c. The instructor must agree to fire a team member.

     d. The fired member must find another team to accept him or her; failure to do so may result in failing the assignment or course.

4. Felder and Brent (2001) permit a team member who is doing a disproportionate share of the work to quit the team. The member files a warning letter with the team, copying the instructor. The warning team member must fully describe the grievance and steps taken by the member to resolve the matter. If the team's behavior does not correct within the stated timeframe, he or she is free to quit and join another group.

5. If team disputes are so irresolvable after applying the team's dispute resolution process and instructor intervention, dissolution is probably the best option. CL will not benefit dysfunctional teams. Redistribute members to other groups; an instructor might give these members the right of refusal to be assigned to a different team.

6. When a CL activity is constructed so that there is positive interdependence, effective face-to-face interaction, individual accountability, and suitable group processing, members are highly likely to exhibit correct individual behavior within the group. With younger students, the instructor will need to monitor behavior and intervene as needed.

F. Overcoming Objections to Cooperative Learning
1. Content Coverage
    a. This is what Faust and Paulson (1998) call the "devil's bargain"—teach more and learn less or teach less and learn more.
    b. This is both a philosophical and often, a legal dilemma. For public school and many college faculty there are mandated content coverage requirements.
    c. It is true that AL and particularly CL will consume class time that was once devoted to lecture. Felder and Brent (1996) suggest that
       (1) Detailed lecture narrative, derivations, or complex diagrams be converted into handouts or course-packs (electronic or hard copy);
       (2) Class time be spent on connecting "the most critically important and conceptually difficult" content contained in the handouts or course-packs; and
       (3) Announce that significant elements of course assessment (e.g., tests, graded homework, etc.) will include information from the handouts or course-packs.
    d. Course-packs or handouts might contain critical questions which are answered by assigned readings or homework. Include some of these critical questions on quizzes or tests.
    e. It is also irrefutable that CL produces deeper student learning (i.e., information and skill acquisition and retention) than traditional lecture.
    f. When base or formal CL teams are formed, a significant amount of the content can be covered outside of class; thus the "devil's bargain" disappears.

2. Extended Preparation Time
    a. Planning a CL course takes more time than the classical lecture. This is true; but once planned, taught, and revised it's finished, except for routine "fine tuning." Careful planning, design, and execution will help ensure proper instructor management of each class section.
    b. If preparation time is critical, then the interactive lecture can employed. Any strategy that causes students to actively engage the content will improve their learning and retention.

3. Intimidating Innovation
    a. The incorporation of CL into a course is uncomfortable for some instructors and students. This can be overcome with faculty development and reconditioning students who have experienced primarily the classical or traditional lecture.
    b. Research has revealed that there are several different leaning styles. Traditional lecture appeals to a small segment of learners. CL strategies accommodate several different learning styles. CL is both an effective and efficient instructional method.
    c. CL activities can personalize large lecture classes.

4. The Free-For-All Fear
   a. Lecture is an effective method for controlling the classroom. CL is an effective method to manage the classroom and student learning. As with lecture, a CL course must be thoughtfully carefully planned, carefully managed, and stringently evaluated.
   b. The role of the instructor changes from "sage on the stage" to "[learning] guide on the side" (King, 1993). The instructor guides students to a deeper understanding of the course's content and/or skills. For an instructor who fears an academic free-for-all, start with the interactive lecture.

5. Yours, But Not Mine
   a. Some faculty believe that AL and CL activities will work in some academic disciplines, but not others. This just isn't accurate.
   b. There is over 120 years of research supporting the universality of CL effectiveness across disciplines. These CL meta-analyses are instructive Hagman & Hayes (1986); Johnson & Johnson (1989); Johnson, Johnson, & Stanne (2000); Slavin (1990, 1996); Spriger, Stanne, and Donovan (1999); and You, Abrami, & d' Apollonia (2001).

6. Student Resistance
   a. For students (particularly high achievers or strong introverts) resisting CL, Felder and Brent (1996) recommend advising learners that
      (1) There are short- and long-term CL benefits;
      (2) People really learn what they teach so by teaching each other, individual learning is enhanced;
      (3) Working efficiently and effectively in teams is a critical job skill; and
      (4) CL consistently produces higher grades.
   b. Early in the course, carefully explain course design, processes, expectations, and benefits. Provide time for student questions and the venting of concerns. Answer questions comprehensively, accurately, and patiently. Inform students about how you carefully designed the course using the most appropriate instructional strategies and the most recent empirical effectiveness evidence available.

III. Generic Cooperative Learning Strategies
A. Five Teambuilding CL Strategies
1. The 3 Step Interview: This and the following teambuilding exercises are intended to introduce students to other team members, increase comfort level, and build trust.
   a. Student pairs are given research questions which are appropriate to the students' developmental level and the purpose of the assignment to follow.
   b. Student A interviews student B for three minutes; then student B interviews student A for 3 minutes.

    c. Upon notice, each pair turns to another pair forming a team of four. Each pair introduces his or her partner to the other team members using information obtained from the interview.

    d. A variation is to allow pairs or a small group of 3-5 to spend more time (up to 30 minutes) together to really get acquainted. Next assign a short task to the pair or small group to be completed in task relevant to the instructional topic.

2. <u>Group Resume</u>

    a. Divide the class into groups of 3-5 members each. Tell each team that it is to construct a collective team resume using specific information organizers.

    b. Provide each team a large poster paper or board and response prompt, e.g., a job ad of one or two sentences relevant to instructional topic.

    c. Provide the informational organizers which may include education, work experience, knowledge specific to the ad, resources the team has access to (e.g., consultants or computers), as well as relevant skills and hobbies.

    d. Each team records their collective responses on the poster board or paper.

    e. Each team presents its resume to the entire class.

3. <u>Walking in Another's Shoes</u>

    a. Give students self-adhesive note paper and ask each to write at least one value, experience, question, place visited, or personal fact about themselves as well as their name.

    b. Next, direct students to go around the room reading each other's self-adhesive notes, trading those they would like to have. The trade must be mutually agreeable.

    c. After most students have stopped trading notes, reconvene the class asking each student to share one or more of his or her trades and why.

4. <u>The Team Compact</u>: The instructor should guide each group, depending on student's social development, in crafting a governance agreement (also called a compact, constitution, conduct codes, etc.) which reflects team expectations, violation sanctions, work plan with timelines, and dispute resolution processes for base and formal CL teams.

    a. Once teams have been formed and members become acquainted with each other, the instructor assigns each team to write its constitution or compact.

    b. Required Components of the Compact are

        (1) A list of team members;

        (2) Team Expectations (e.g., group goals, attendance; meeting organization and conduct, meeting frequency; how conflicts are resolved; communication vehicles and contact preferences; character of participation; workload, roles, deadlines, and courtesy expectations);

        (3) Non-Compliance Sanctions (i.e., an increasing degree of sanction for non-compliance with at least three sanction levels before instructor intervention.);

      (4) Signed (by all members) team compact; and
      (5) Amending procedure.
  c. Compacts can be exchanged between teams or presented to the entire class for review and comments.
  d. After the review and comments are collected, each team should be given time to make desired revisions.
  e. The instructor collects the revised compacts for his review and approval.

5. Team Workplan: The instructor should guide each team in constructing a workplan.
  a. A workplan minimally includes
      (1) Task specification (i.e., a clear statement as to what must be done);
      (2) Who is responsible for completing each task;
      (3) Task completion schedule; and
      (4) Specific task completion roles (e.g., researcher, proof reader, and editor).
  b. Workplans can be exchanged between teams or presented to the entire class for review and comments.
  c. After the review is complete and comments are collected, each team should be given time to make desired revisions.
  d. The instructor collects the revised workplans for his review and approval.

B. Twelve Simple CL Strategies to Foster Learning

1. Panel Discussions: The instructor assigns a team a research topic or project. Each panelist makes a brief presentation to the class. Once all presentations have been made, class members are permitted to ask questions. The instructor must ensure that panelists have sufficient time and resources to prepare and that all team members do so. The instructor may want to assign roles to class members to stimulate questioning and discussion.

2. Debates: When it's possible to divide a topic into opposing positions or views a debate can be employed. Teams are formed; each team is assigned to research and develop evidence and supportive arguments for their assigned position. The instructor appoints some in the class or the entire class as judges. There is no questioning by either team or the judges. The process usually unfolds as follows
  a. Team A presents its arguments and evidence.
  b. Team B rebuts Team A's arguments and evidence.
  c. Team A responds.
  d. Team B presents its arguments and evidence.
  e. Team A rebuts Team B's arguments and evidence.
  g. Team B responds.
  h. The judges decide which team was most persuasive.

   Seech (1984) and Johnson and Johnson and Johnson (1994b) strongly advocate using the debate activity.

3. Project Teams: Work teams are assigned a project or task with clear objectives, work product specifications, and performance expectations. Initially, the instructor acts as an expert consultant, but later evolves into a dual role as consultant and facilitator. The ingredients for success are explicit objectives, product specifications, performance expectations, and an instructor who is comfortable and effective in a dual role.
   a. Logically assign students to project teams. Have work areas already "set-up" which offer sufficient space and distance from other teams.
   b. Read exercise directions.
   c. Each PT discusses, plans, and constructs a session map for a 55 minute class session.
   d. Each PT should take a 10-15 minute break.
   e. Each PT presents its session map to another PT for review and comment. Roles are then reversed.
   f. Each PT revises its session map given comments made and team learning.

4. Role Playing: Some courses in history, medicine, nursing, philosophy, business, education, literature, or English allow students to act out a situation or incident.
   a. Bronwell and Eison (1991, p. 47) write, "Role playing can be used to help students experience stressful, unfamiliar, complex, or controversial situations by creating circumstances that are momentarily real, thereby letting students develop and practice those skills necessary for coping."
   b. Process
      (1) Students research a scenario, situation or incident to fully understand its relevant dimensions, which may include the issues, people, culture, and/or effects.
      (2) Students identify roles and assume the identities of the people involved. Conversely, the instructor may explain the situation, provide information, assign roles, and delineate the role-play's goals.
      (3) The scenario, situation or incident is then acted out using the information obtained and exhibiting expected behaviors.
      (4) Participants then "debrief." Debriefing involves discussing what was learned and felt by participants, including application of learning beyond the class-room.
   c. Students may write actual scripts to be followed or one team may write a play for another whose members learn the roles and act out the play using the provided script and directions.
   d. The instructor should not assume a role for a student who is having difficulty, but he or she may encourage and support the student. An instructor may assume a role in the role-play, if suitable to the role-play's instructional goals. However, the instructor's primary role is that of learning coach or facilitator.

5. Brainstorming: A problem, opportunity, issue, or challenge is posed to
   students.
   a. Usually informal CL groups are formed.
   b. Strategies to solve the problem or issue, capitalize upon the opportunity,
      or overcome the challenge are then generated by each team.
   c. All strategies are listed, regardless of simplicity, complexity, legality, or
      practicality.
   d. The teams reform into the larger class where a scribe(s) writes the
      strategies on the board, as they are reported by each team. The instructor,
      with the team's agreement, decides whether or not to record duplicates.
   e. The instructor must provide or lead the class in determining the final
      criteria to retain or discard a strategy.
   f. Once, the criteria are determined, they are applied and the list is reduced
      to the desired number of strategies.
   g. At no time during the brainstorming exercise are positive or negative
      comments are allowed. The word strategies may be replaced with reason,
      values, thoughts, fears, behaviors, etc.

6. Jig Saw: A project is assigned which results in a product being produced or an
   assignment being completed. Team members become "specialists", thereby
   fostering interdependence, mastering a critical portion of the content or skills
   needed to construct the product or complete the assignment (Aronson, Blaney,
   Stephan, Sikes, and Snapp, 1978; Clarke, 1994).
   a. A "home" group for each class member is formed. Each member of the
      home group selects or is assigned a portion of the content to be mastered.
      Each dimension must be comprehensible information that makes no
      reference to any other dimension.
   b. Students reform into focus groups to complete the needed research for
      their specialty.
   c. The focus groups disband; the specialists return to their home group to
      teach other group members what they know.
   d. Finally, the group applies the information to construct the required product
      or complete the assignment as given.
   e. Each student is independently tested to assess total content mastery.

7. Constructive Controversy: This activity encourages students to take a position
   regarding an issue and argue constructively for that position to eventually
   reach mutual understanding or consensus (Bredehoft, 1991).
   a. Teams of four students are formed. Pairs are assigned to opposite sides
      (position) of a controversial issue.
   b. Pairs prepare a position statement; research was previously completed.
   c. When the research is completed, the team reforms and discusses the issue.
      The single purpose of constructive controversy is informed discussion, not
      debate. Pairs record by note-taking each other's arguments.
   d. Next, the pairs exchange positions and argue their new position. Pairs
      record by note-taking each other's arguments.

    e.   The whole class discusses what was learned from the team issue discussions. The instructor asks a few teams to summarize their learning. A scribe writes on the board, overhead projector, or on large paper each "key learning." After 10-12 minutes, the instructor comments on the list as a summary activity.

    f.   Later, each student is individually tested to assess his or her own learning.

8. Writing a Group Paper: A group paper may be assigned.

    a.   At the first meeting, the team identifies key dimensions of the issue or topic; formulates strategies for framing and researching each dimension; appoints an editor for transitions and writing the paper's introduction, and conclusion sections; and the other members agree to write the identified dimensions.

    b.   Between the first and second meetings, the first draft of each section is written.

    c.   At the second meeting, the group edits each section of the paper. Transitions between segments are discussed as are the introduction and conclusion. Copies of each segment should be distributed for reading a few days before the second meeting.

    d.   Between the second and third meetings, the editor assembles the paper including transitions, the introduction, and conclusion.

    e.   At the third meeting, the group edits the paper, which was distributed a few days before the meeting, especially for needed elaboration, and elimination of overlap and inconsistency. Time may need to be allocated for additional research and writing.

    f.   Between the third and fourth meeting, the editor integrates changes into the paper.

    g.   At the fourth meeting, the group completes its final edit of the paper before submission.

    h.   Between the fourth meeting and submission, the editor integrates the changes into the paper, but should consult with members before unilaterally making major changes not agreed upon at the fourth meeting.

    i.   The paper is submitted.

9. Homework Teams: Informal or short duration formal CL teams may be formed to assist students in completing homework assignments.

    a.   The instructor carefully designs a specific assignment, problem, or problem set for students.

    b.   Students are formed into or may be allowed to form teams.

    c.   Students meet outside class complete the assignment. The team ensures all members can answer the problem or fully understands the response.

    d.   The instructor randomly calls on teams or individual members to provide an answer and/or response to each problem in the set.

10. <u>Double Entry Journal</u>: Students employ the double entry journal as they take notes on articles, textbook chapters, or other resources in preparation for a class discussion or CL activity.
    a. A recording page is constructed.

Critical Points	Response

    b. After reading and reflecting on the assigned reading or viewing, each student prepares his or her double entry journal. In the left column, critical points are recorded. In the right column, student responses or thoughts are entered next to each left column entry.
    c. Upon returning to class, the student refers to his or her journal during a class or team discussion of the reading or viewing.
    d. As a variation, a paired annotation can be added.
       (1) Each student completes a double entry journal.
       (2) The pair exchanges journals looking for divergent and convergent thinking. A discussion ensues.
       (3) The pair prepares a composite summary or annotation for their team or themselves.

11. <u>Co-op/Co-op</u> (Adapted from Kagan, 1989b): Individual students work within a team to develop a work product that is an element of a larger project which is related to an instructional topic or learning standard/outcome. The instructor guides the process at each phase.

    a. <u>Phase 1</u>: Initially the instructor explains the topic and breaks it into self-contained relevant sub-topics. The Co-op/Co-op CL strategy is outlined as well. Learners discuss the various sub-topics indicating those in which they have a keen interest. The information is recorded.
    b. <u>Phase 2</u>: CL teams are organized. Students may be permitted to self-select into teams.
    c. <u>Phase 3</u>: The team discusses the instructor defined topics and selects one in which it has an interest. The instructor grants the topic to the team. An alternative is to allow teams to create topics using the instructor's list as a starting point; however, if permitted, the instructor must ensure that all relevant sub-topics are addressed by the teams.
    d. <u>Phase 4:</u> Each team segments its topic into micro-topics for each team member. The team topic must be fully covered. The instructor may want to retain approval rights for each team's micro-topic list.
    e. <u>Phase 5:</u> Micro-topics are independently prepared. Micro-topic preparation may include library and/or database research, surveys, experiments, papers, videos, plays, or scenarios.

      f.   Phase 6: When completed, the micro-topics are formally presented to the team. The presentation and following discussion enable team members to constructively critique each, noting divergent and convergent information. The instructor should allow time for such feedback and the reworking of micro-topics as needed.

      g.   Phase 7: Students next integrate the micro-topics into a comprehensive team presentation. Panel discussions are not allowed. Non-lecture presentations are strongly encouraged, e.g., displays, role-plays, simulations, or demonstrations. If available audio-visual aids are used.

      h.   Phase 8: Team presentations are made during class sessions. The instructor should take notes so that he or she can elaborate, explicitly link, comment, or correct content between or within presentations. The instructor should set the presentation parameters.

      i.   Phase 9: Assessment should be rigorous and varied. For example, a mix of self-, peer, or instructor evaluation can be utilized. A comprehensive examination can also be administered to assess class-level learning.

12. Silberman (1996) presents 101 specific CL strategies for consideration organized by purpose which include: teambuilding, immediate assessment, immediate learning involvement, full class learning, stimulating class discussion, prompting questions, peer teaching, independent learning, affective learning, skill development, reviewing strategies, self-assessment, future planning, and final sentiments. Most of the strategies presented in Chapters 3 and 4 are suitable for most of these purposes. Felder and Brent (1994) provide guidance on using cooperative learning in technical classes.

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Appendix 4.1
Cooperative vs. Collaborative Learning: A Degree of Difference

1. Cooperative and collaborative learning, both AL strategies, are often confused. Panitz (n.d.) writes, "Collaboration is a philosophy of interaction and personal lifestyle where individuals are responsible for their actions, including learning, and respect the abilities and contributions of their peers."
   a. The instructor's role is less central to the work of the team, which after negotiation with the instructor determines its own work product which addresses the intended learning outcome(s).
   b. Assessment and grading policy are negotiated.
   c. Different teams may employ differing processes to accomplish the key learning outcome or outcomes.
   d. Brufee (1995) believes that the learning of foundational knowledge, i.e., core knowledge, e.g., history, grammar rules, basic arithmetic skills, is best learned through cooperative strategies. More advanced knowledge and skills are best learned via collaborative strategies.
   e. Responsibility for learning is almost entirely shifted from instructor to learner in the collaborative model.
   f. The collaborative model requires learners experienced with active learning strategies and with high levels of intellectual, emotional, and social maturity.

2. Collaborative Learning Principles (Pantiz, n.d.)
   a. Collaborative work teams will result in greater learning and understanding than individual study and learning.
   b. Verbal and written interactions are essential to a team's collaborative effort.
   c. Interaction within the work team leads to an awareness of the relationship of social interactions and improved understanding.
   d. Some collateral learning (i.e., unexpected learning) is going to occur.
   e. Learner participation is voluntary and cannot be required.

3. Cooperative Learning vs. Collaborative Learning (Adapted from Panitz, n.d.)
   a. One difference between these two active learning models is the role of the learner in decision making. Decisions to be made often include what and how to study, work team governance, work team roles in learning, grading policy, and any rewards or punishments, etc. In cooperative learning, the decisions identified are usually made by the instructor. In collaborative learning the decisions are almost always decided by the learners or negotiated between the learners and instructor.

   Decision Making Center
   Teacher _____ Student

   b. A second contrast relates to motivation and cooperation. Panitz (n.d.) argues that collaborative leaning thrives on intrinsic motivation. Learners

learn for the joy of learning, without grades or other rewards or punishments. In contrast, within the cooperative model, learners are motivated by extrinsic rewards, e.g., praise, grades, etc. The presence of rewards and punishments encourages cooperation.

Learner Motivation

Extrinsic _____ Intrinsic

c. A third difference between the two models is the role of the instructor in knowledge construction and transmission. Active learning theory argues that learners construct knowledge networks, by connecting new learning with prior learning. In the collaborative model, the instructor is seen as a facilitator or co-learner, encouraging each individual through the team to maximize opportunities to develop new knowledge. In the cooperative model, the instructor transmits new unfiltered knowledge to the learners, thus teams serve as a vehicle to ensure members master all transmitted learning.

Knowledge Dissemination

Transmitted_____ Constructed

d. A fourth contrast is the degree of structure. In collaborative model the instructor is seen as less controlling and uses less structure. In cooperative leaning the instructor is more "in charge" and uses more structured learning activities.

Degree of Structure

High_____ Low

e. It is argued that type of knowledge to be learned and used plays a role in selecting either a cooperative or collaborative model. Foundational or basic core knowledge is best learned with cooperative strategies. Advanced knowledge and skills, e.g., critical thinking, reasoning, and comprehension of social situations and interactions, are acquired and competently exercised via collaborative strategies.

Type of Knowledge

Foundational _____Advanced

f. Who is responsible for learning is not a simple question, the instructor, the learner, or both. This is philosophical question. Most educators would say both. Taxpayers or employers might argue the instructor. Others would lay responsibility on the learners. The answer really depends on the intellectual, emotional, and social maturity levels of both the instructor and learner. For young or inexperienced learners, the chief responsibility would most likely fall to the instructor. For experienced learners, the responsibility is mostly theirs with some going to the instructor.

Learning Responsibility

Instructor_____Learner

4. In reality, the choice between active learning strategies or combination of strategies is a matter of degree. Instructors inexperienced in using active learning strategies tend to employ cooperative strategies more than collaborative ones. Learners who are inexperienced with active learning strategies may first introduced to interactive lecture, increasingly intensive cooperative strategies and then progress towards the collaborative model considering the instructor's experience; intended learning outcomes; accountability reporting regulations; and the learners' intellectual, emotional, and social maturity.

Appendix 4.2
Group Contribution Index

Read each statement carefully. Next, circle the number that best represents your degree of agreement or disagreement with the statement for the individual whose group contribution you are measuring, using the following options:

1 = Strongly Disagree   3 = No Opinion   4 = Agree
2 = Disagree   5 = Strongly Agree

When you have completed rating each statement, total the individual ratings and record it the blank provided.

1. The group member's participation was focused on the task
   at hand.   1   2   3   4   5

2. The group member usually exhibited a respectful demeanor.   1   2   3   4   5

3. The group member contributed an acceptable quantity of data,
   e.g., research articles, URLs, books, etc., given the team's task.   1   2   3   4   5

4. The quality of the group member's data (e.g., research articles,
   URLs, books, etc.) contribution was high, given the task.   1   2   3   4   5

5. The group member's contribution of data (e.g., research articles,
   URLs, books, etc.) was relevant to the team's task.   1   2   3   4   5

6. The group member acceptably met the team's deadlines.   1   2   3   4   5

7. When required, the member exhibited appropriate mediating skills.   1   2   3   4   5

8. The member followed team directions in an acceptable manner.   1   2   3   4   5

9. The group member exhibited appropriate listening skills which
   assisted the team in accomplishing its task.   1   2   3   4   5

10. The team member was sufficiently flexible so as to enable the work
    group to complete the task at hand.   1   2   3   4   5

11. The team member demonstrated writing skills, which helped the
work group meet its objective.   1   2   3   4   5

12. By providing constructive feedback to team mates, the member
contributed towards accomplishing the team's task.   1   2   3   4   5

Score Total: _____

54-60: Very Significant Contribution   36-41: Poor Contribution
48-53: Significant Contribution   ≤ 35: No Meaningful or Useful Contribution
42-47: Average Contribution

Performance Category Definitions

Very Significant Contribution (4 points): The group member contributed towards the common purpose or project in such an outstanding or extraordinary manner so that the contribution was exceptional in terms of its meaning, usefulness, and timeliness.

Significant Contribution (3 points): The group member contributed towards the common purpose or project in an above average (i.e., more than would normally or reasonably be expected) manner so that the contribution was very meaningful, useful, and timely.

Average Contribution (2 points): The group member contributed towards the common purpose or project in a typical (i.e., as one would normally or reasonably be expected) manner so that the contribution was meaningful, useful, and timely but not atypical.

Poor Contribution (1 point): The group member made a modestly meaningful, useful, and timely contribution towards the common purpose or project but the contribution was less than what would normally or reasonably have been expected.

No Contribution (0 points): The group member did not make a meaningful, useful, or timely contribution.