THE PEOPLE–PRODUCTIVITY LINK IN ORGANIZATIONAL DEVELOPMENT

by

Suzanne Somers

A Master's Research Project in Partial Fulfillment of the Requirements for the Degree Master of Arts

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Chairperson

Supervisory Committee

ACCEPTED:

Director of Graduate Studies
ABSTRACT

Although interest in groups has a long history, the past three decades have witnessed a new flurry of activity in this field. To meet the challenges of quality and productivity improvement, American companies are implementing management models of mutual commitment in which people work together toward the achievement of common goals.

Treating people as the primary source of productivity gains is the finding of one research study after another. Research findings in the corporate, business, and educational settings support the use of group collaboration in increasing productivity and learning.

Traditional education views social contact between students within the classroom setting as a peripheral phenomenon of school life, even as potentially disruptive of learning. Cooperative learning applies existing theoretical and empirical knowledge relating to groups to the practice of effective skills in a classroom setting.

A curriculum model is developed that is content specific and can be incorporated into an already existing high school curriculum at the pre-calculus level.
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CHAPTER ONE
INTRODUCTION TO THE PROBLEM

The 1980s may be characterized as a period when revolutionary changes became necessary to solve grave problems affecting our nation's economic survival. In their quest to meet the challenges of quality and productivity improvement driven by unprecedented foreign competition, American companies are redesigning work to increase the effectiveness of their workers and to better utilize capital, energy and materials. These companies learned that quality and productivity improvement must be integrated into their day-to-day activities and management systems.

Many of these changes have involved the innovative use of people in the work place. Techniques aimed at enhancing both organizational effectiveness and employee fulfillment are being used with considerable success. The traditional management view of relationships between labor and management has been that people had to be controlled toward goals set by management alone. This view is increasingly giving way to a model of mutual commitment in which both labor and management work together toward the achievement of common goals. Treating people - not capital spending and automation - as the primary source of productivity gains is the finding of research from excellent
companies. With at least 80,000 people starting new jobs every day in the United States, costing untold billions in separation, relocation, recruitment and legal fees, it is important to assess the effect of group dynamics on inhibiting or enhancing the capacity of the individual to perform and to derive satisfaction from that performance.

Research findings in the corporate, business and the educational settings support the use of group collaboration in increasing productivity and job satisfaction. In today's society, especially in the work place, tasks are accomplished, decisions are made, and problems solved in small groups, yet common educational practices in most high school classrooms ignore the use of small group processes.

Preparing young people for the world of work is one of the primary goals of education yet students, for the most part, perform and produce as individuals. Students are ill-prepared for the realities of business life - where successful employees and leaders practice effective group skills. There exists a great need to develop effective collaborative skills in young people to enable them to meet with future success in a business setting.

To meet this need, a pilot program applying existing theoretical and empirical knowledge relating to groups, collaborative skills, and productivity has been designed to develop the people-productivity link in the high school classroom.
CHAPTER TWO

REVIEW OF LITERATURE

Emergence of the team idea came with the now classic Hawthorne studies. Research was conducted by a group of Harvard professors at the suburban Chicago plant of Western Electric Company. The research team initially tested the hypothesis that work output is directly related to the amount of light in the work area. This research was an outgrowth of stimulus-response theory that indicates people will respond directly to external stimuli and, if you can control the stimuli, you can control the individual effort. The result of the initial research proved that, as expected, output increased as the illumination level increased. Further research indicated that lowering the lights also resulted in increased output. After an in-depth study of all factors, the research team found that the most significant factor was the development of a sense of group identity, a feeling of mutual support, and the cohesiveness that came from the increased worker interaction (Dyer, 7).

According to The Leadership Challenge, James Kouzes and Barry Posner developed the Leadership Practices Inventory (LPI) to empirically measure the conceptual framework developed in the case studies of managers' personal best experiences as leaders — times when they had accomplished something extraordinary in an
organization. Various analyses suggest that the LPI has sound psychometric properties (322).

Kouzes and Posner surveyed hundreds of managers over a five year period to determine a pattern of behavior that people used to achieve extraordinary results in corporate settings. The survey was twelve pages long and consisted of thirty-eight open-ended questions. 550 surveys were collected. A two-page short form of the survey was completed by an additional 780 managers. A fundamental pattern of behavior emerged when people were accomplishing extraordinary things in organizations. The following five practices were identified as leadership behaviors instrumental in accomplishing extraordinary things in organizations:

1. Challenging the process  
   a. Search for opportunities  
   b. Experiment and take risks

2. Inspiring a shared vision  
   a. Envision the future  
   b. Enlist others

3. Enabling others to act  
   a. Foster collaboration  
   b. Strengthen others

4. Modeling the way  
   a. Set the example  
   b. Strengthen others

5. Encouraging the heart  
   a. Recognize contributions  
   b. Celebrate accomplishments (Kouzes, 310).
A five-point Likert scale was used for each statement on the LPI. The two forms of the LPI differ only in whether the behavior described is the respondent's (self) or that of another specific person (other). There were approximately three subordinate respondents (LPI-Other) for each managerial subject \( (N = 1, 144) \). The .01 level of probability was used through the analyses as the appropriate level of statistical significance. Means and standard deviations for each scale of the LPI are presented in Table A. Enabling others to act was the leadership practice most frequently reported being used and forms part of the basis for the development of this pilot program.

Internal reliabilities on the LPI-Self ranged from .69 to .85 and on the LPI-Other from .78 to .90. None of the correlations in Table A was statistically significant \( (p < .01 \text{ Kouzes, 311}) \). Using only the responses from the LPI-Other \( (N = 514) \), the relationship between leaders' effectiveness and their behavior as measured on the LPI was examined. By including only the responses from "other people" about their managers, relatively independent assessments were used, minimizing any potential self-report bias. Regression analysis was performed, with the leader effectiveness as the dependent variable and the five practices from the LPI the independent variables. The regression equation was highly significant \( (F = 318.88), (p < .0001) \). The leadership practices explained over 55 percent (adjusted \( R^2 = .756 \)) of the
variance around subordinates' assessments of their leaders' effectiveness (Kouzes, 321).

**TABLE A**

**MEANS, STANDARD DEVIATIONS, AND RELIABILITY INDICES**

**FOR THE LEADERSHIP PRACTICES INVENTORY (N=1,567)**

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>LPI</th>
<th>LPI</th>
<th>LPI</th>
<th>Test-Retest Reliability</th>
<th>Social Desire-A</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Deviation (N=1,567)</td>
<td>Mean</td>
<td>Self</td>
<td>Other</td>
<td>Scale (N=30)</td>
<td>Ability</td>
</tr>
<tr>
<td><strong>CHALLENGING THE PROCESS</strong></td>
<td>22.63</td>
<td>3.85</td>
<td>.78</td>
<td>.73</td>
<td>.79</td>
<td>.93</td>
<td>.13</td>
</tr>
<tr>
<td><strong>INSPIRING A SHARED VISION</strong></td>
<td>20.08</td>
<td>4.86</td>
<td>.88</td>
<td>.84</td>
<td>.89</td>
<td>.94</td>
<td>.04</td>
</tr>
<tr>
<td><strong>ENABLING OTHERS TO ACT</strong></td>
<td>23.96</td>
<td>3.95</td>
<td>.83</td>
<td>.69</td>
<td>.84</td>
<td>.94</td>
<td>.24</td>
</tr>
<tr>
<td><strong>MODELING THE WAY</strong></td>
<td>22.42</td>
<td>3.90</td>
<td>.79</td>
<td>.73</td>
<td>.80</td>
<td>.95</td>
<td>.29</td>
</tr>
<tr>
<td><strong>ENCOURAGING THE HEART</strong></td>
<td>22.23</td>
<td>4.72</td>
<td>.89</td>
<td>.85</td>
<td>.90</td>
<td>.93</td>
<td>.27</td>
</tr>
</tbody>
</table>

(Kouzes, 315)
Missing
Leaders do not achieve success by themselves. Outstanding leaders enlist the support and assistance of all those who must make the project work. They involve those who must live with the results and they make it possible for others to do good work. They encourage collaboration, build teams, and empower others. In 91 percent of the cases analyzed by Kouzes and Posner, leaders proudly discussed how teamwork and collaboration were essential. Their research further indicates that this is the most significant of all five leadership practices (Kouzes, 10).

Rosabeth Moss Kanter, a Harvard professor, conducted research on successful innovations inside large corporations. In The Change Masters, she states, "the few projects in my study that disintegrated did so because the manager failed to build a coalition of supporters and collaborators" (102). Enabling others to act is to make them feel strong, capable, and committed. They feel empowered and are more likely to use their energies to produce extraordinary results.

The two components of enabling others to act, fostering collaboration and strengthening others, need to be discussed in-depth. Fostering collaboration is the process of getting people to work together. This process involves developing cooperative goals, seeking integrative solutions, and building trusting relationships.

Teamwork is essential for a productive organization.
Collaboration is needed to develop the commitment and skills of employees, solve problems, and respond to environmental pressures. Kouzes and Posner view collaboration as the key leaders use to unlock the energies and talents available in their organizations (135).

Competition within the team or between team members was never described in anyone's personal best as a way that they got something extraordinary accomplished in their organization. Employees are bound together in collaborative efforts through shared visions and values. Political scientist Robert Axelrod studied the process of collaboration using a computer-based tournament in a simulation based on the "prisoner's dilemma." His research found that cooperation based on reciprocity is the most effective strategy for creating and sustaining collaborative relationships between two parties. Reciprocating cooperation establishes trust and promotes the notion that the two parties' goals are collaborative (The Evolution of Cooperation, 98). Axelrod also reports that the expectation of future interactions encourages people to cooperate with one another in the present (112).

Kanter has proposed the following strategy for leaders to utilize in promoting integrative solutions:

Seek many inputs. Integrative solutions begin with diverse opinions. Active listening inspires other people's new and creative ideas. People feel consulted about decisions that affect them. Competing viewpoints need to be aired and incorporated into a project (106).
Second-guessing and negotiation games are minimized if people are clear about their needs and interests. Reciprocity encourages all parties to recognize that the greatest gain comes from cooperating with each other.

Robert Blake and Jane Mouton have devoted over twenty years to the study of the team-building leadership style. They maintain this style is the one most positively associated with productivity and profitability, career success and satisfaction, and with physical and mental health:

"Managers come in all sizes, shapes and philosophies. Some are gung ho for production and ride roughshod over everyone and everything. Some concentrate on being "nice guys" and create a country club atmosphere at the expense of accomplishment. Still others live by the rules, take their cues from the boss, and play it safe. Some talented few have discovered the secret of involving others, and use the team approach to building organizational effectiveness (The New Managerial Grid, 24).

Dr. Jay Hall, author of The Competence Process, completed a large-scale research project that supports the work of Blake and Mouton. He studied several thousand managers - their personalities, management styles and patterns. The high-achieving managers had a deep interest in both people and productivity. Results indicate that high-achieving managers also rely heavily on the participative ethic, whereas low and moderate achievers avoid involving their subordinates in decision making. He concludes:

"The portrait of the Achieving Manager which emerges from this study is that of an individual employing an integrative style of management, wherein people are valued just as highly as accomplishment of production goals, ... wherein candor, openness,
sensitivity and receptivity comprise the rule in interpersonal relationships rather than its exception, ... wherein participative practices are favored over unilaterally directive or lame duck prescriptive measures (35)."

Hall suggests that production goals and people's needs are equally important. He believes that to be a successful supervisor or manager, one must be supportive of other people and create opportunities for them.

In the late 1950s, Douglas McGregor, in the *Human Side of Enterprise*, presented convincing arguments that management has been ignoring certain important facts about people. Managers often fail to recognize the potential for growth and fulfillment characteristic of most workers. McGregor emphasized that "unity of purpose" is the main distinguishing characteristic of many productive work units (229). When a work group shares common goals and a common commitment, more is accomplished.

McGregor discussed several characteristics of an effective work team.

1. The atmosphere of the work place tends to be informal, comfortable, relaxed. There are no obvious tensions. It is a working environment in which people are involved and interested. There are no signs of boredom.

2. There is a lot of discussion about work-related issues, and virtually everyone participates; but their contributions remain pertinent to the task of the group. If the discussion gets off the subject, someone will bring it back in short order.
3. The task or the objective of the group is well understood and accepted by the members. There will have been free discussion of the objectives at some point, until the goals are formulated in such a way that the members of the group can commit themselves to achieving them.

4. The members listen to each other. The discussion does not jump from one idea to another unrelated one. Every idea is given a hearing.

5. There is disagreement. The group is comfortable with this and shows no signs of having to avoid conflict or to keep everything on a plane of sweetness and light.

6. People freely express their feelings as well as their ideas both on the problem and on the group's operation. There is little avoidance, and there are few "hidden agendas" (Dyer, 232-235).

In an interview in *Phi Delta Kappan*, William Glasser, MD, summarizes many of his ideas regarding the concepts of control theory in the classroom. Situations in schools where things work well are situations where students are working together in some sort of a group that he calls a learning team. According to Glasser, "The idea of having students function as a group to produce some result has been carefully studied, and it works (659)."

In *The Futurist* July-August 1988, a list of long term management trends included the following:

- The actual work will be done by task-focused teams of specialists.

- Research, development, manufacturing, and marketing specialists will work together as team on all stages of product development (37).
Today, research centers in several countries are carrying out substantial programs of research designed to review the nature of groups and of their functioning. The phrase "group dynamics" has come into common usage during this time and intense efforts have been devoted to the development of the field. In this development the name of Kurt Lewin has been outstanding. In 1945 he established the Research Center for Group Dynamics. Since that date the center has been devoting its efforts to improving scientific understanding of groups through laboratory experimentation, field studies, and the use of techniques of action research.

In one series of experiments directed by Lewin, it was found that a method of group decision, in which the group as a whole made a decision to have its members change their behavior, was from two to ten times as effective in producing actual change as was a lecture presenting exhortation to change (229-36).

The experience has been essentially the same when people have attempted to increase the productivity of individuals in work settings. Traditional concepts of how to increase the output of workers have stressed the individual: select the right man for the job; simplify the job for him; train him in the skills required; motivate him by economic incentives; make it clear to whom he reports; keep the lines of authority and responsibility simple and straight. But even when all these conditions are
reason to conclude that this individualistic concept of the determinants of productivity actually fosters negative consequences. The individual, now isolated and subjected to the demands of the organization through the commands of his boss, finds that he must create informal groups with his fellow employees, not shown on any table of organization, in order to protect himself from arbitrary control of his life, and the frustration of his basic needs for social interactions, participation, and acceptance in a stable group (Lewin, 241).

Experiments conducted by Dorwin Cartwright have demonstrated clearly that the productivity of work groups can be greatly increased by methods of work organization and supervision which give more responsibility to work groups, which allow for fuller participation in important decisions, and which make stable groups the firm basis for support of the individual's social needs (253-67).

In a project directed by Ronald Lippitt, the different effects of a training workshop upon trainees who came as isolated individuals were compared to trainees who came as teams. Before the workshop there was no difference in the activity level of the people who were to be trained as isolates and those who were to be trained as teams. Six months after the workshop, however, those who had been trained as isolates were only slightly more active than before the workshop. Those who had been members of
strong training teams were much more active. For isolates the effect of the workshop had the characteristic of a "shot in the arm" while for the team member it produced a more enduring change because the team provided continuous support and reinforcement for its members (312-322).

In *Advanced Cooperative Learning*, Johnson, Johnson, and Holubec have completed a review of the research that has compared the effectiveness of cooperative, competitive, and individualistic efforts. Over 500 studies have been conducted by a wide variety of researchers in a wide variety of settings with widely diverse tasks, subject areas, and subjects. To control for possible bias resulting from so many measures, each finding was assigned a weight inversely proportional to the number of findings from the study. Each study was given the same overall weight in the analysis, the sample size was reduced, and the findings were independent from each other. The findings are reported in Table B.

That working together to achieve a common goal produces higher achievement and greater productivity than does working alone is so well confirmed by so much research that it stands as one of the strongest principles of social and organizational psychology. Table B shows that cooperative learning experiences, compared with competitive and individualistic ones, promote higher achievement (effect sizes of 0.60 and 0.72 respectively).
achievement (effect sizes of 0.60 and 0.72 respectively). Learning basic facts, understanding concepts, higher level reasoning, problem solving, and applying may all be best done in cooperative learning groups.

<table>
<thead>
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<td>Meta-Analysis of Social Interdependence: Weighted Findings</td>
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**EFFECT-SIZES**

**MEAN S.D.N.**

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<th>ACHIEVEMENT</th>
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<td>COMPETITIVE VS. INDIVIDUALISTIC</td>
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<td>COOPERATIVE VS. INDIVIDUALISTIC</td>
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<td>COMPETITIVE VS. INDIVIDUALISTIC</td>
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<td>0.36</td>
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Johnson, Johnson, and Holubec
Research conducted by Slavin supports the findings of Johnson, Johnson and Holubec. Out of 46 experimental studies contrasting cooperative structures with either individualistic or competitive goal structures, Slavin found that small group cooperative structures having the elements of group study with group reward for individual learning were the most consistently effective in improving achievement (429).

The idea behind a competitive goal structure is that students are given individual goals and rewarded by means of a classroom-based normative evaluation system. In a competitive structure a person can attain their goals. Outcomes are personally beneficial but detrimental to others. A cooperative incentive structure has been described as one where two or more individuals are in a situation in which the task-related efforts of any individual helps others to be rewarded. In a cooperative structure every group member is rewarded on the basis of the quality or quantity of the group product according to a fixed set of standards.

Teamwork ensures not only that a job gets done, but that it gets done efficiently. Therefore, the element of teamwork can often make the difference between the profitable and unprofitable operation of an organization. The team-building leadership style is effective because it is suited to the needs of most of today's employees.
An effective work team tends to be informal and relaxed. There are no obvious tensions. People are involved, interested, and anxious to participate in solving work-related problems. An effective work group also has clearly understood goals and objectives. Group dynamics can inhibit or enhance the capacity of the individual to perform and to derive satisfaction from that performance.
CHAPTER THREE
DEVELOPMENT OF A PILOT PROGRAM

Research in both the corporate setting and educational setting justify the need for incorporating group learning principles in high school curriculum. The greatest impact of group dynamics research on the practical affairs of our culture has been in leadership training and organizational development. All members of a group, not just the designated leaders, require training in the skills of group participation.

The new technology of training in the business setting emphasizes the development of an understanding of the forces at work in groups, the development of sensitivity to the needs of individuals and groups, the development of skill in diagnosing human relation problems, and the development of the ability to learn from actual experience. It starts with the proposition that the target of training is change in the behavior of individuals so that they can take appropriate and effective membership in groups. The people-productivity link in organizational development is mirrored in the training program designed at the high school level. The curriculum design provides students an opportunity to behave, to secure feedback on their behavior, to experiment with new ideas of leadership and membership and to get a real awareness of the problems of group organization, functioning, and growth.
An intensive search of the Kraus Curriculum Guide, ERIC databases, and ASU data bases failed to turn up any published cooperative learning curriculum designed for the high school mathematics content area. The purpose of this pilot program is to provide a model which will apply cooperative learning principles to an already existing pre-calculus high school curriculum and expose students to the social practices that are concerned with improving the quality of work done in organizations.

After examination of models for curriculum development, a linear model developed by Peter F. Oliva was selected. The Oliva model is simple, comprehensive, and systematic. The design is shown in Figure 1 (Oliva, 173).

![Diagram](image)

**Figure 1**

(Kraus)

A philosophy should include statements of belief about the purposes of education, society, the learner, and the role of the teacher. A curriculum goal is an educational purpose or end
stated in general terms. Goals are derived from the statement of philosophy.

Objectives are derived from curriculum goals and are statements of performance to be demonstrated by students in the classroom, phrased in measurable and observable terms. After the selection and sequencing of objectives is completed, instructional strategies are chosen and learning activities are designed.

Implementation is the process by which the teacher proceeds to direct the students' learning experiences in the classroom. Evaluation is the continuous process of collecting and interpreting information in order to assess decisions made in designing the entire model. The Oliva model illustrates feedback loops to all phases of the design system.

Research has shown that cooperation through group participation is basic throughout life for working with others on a job, yet cooperative group learning is the least used teaching procedure. The learning activities designed to accompany each objective are patterned after the Johnson and Johnson model (Cooperative Learning: Warm-Ups, Grouping Strategies and Group Activities). According to the Johnson and Johnson model, each learning activity should include the following five components:

Academic Task: Clearly state what you want students to do.

Criteria for Success: State how students will know they have been successful with the task.
Positive Interdependence: Student groups need to know they have to be concerned with each other's learning. They sink or swim together.

Individual Accountability: Each student should know he is responsible for knowing the work.

Expected Behaviors: Specify how you want students to behave while they work. Name specific, observable, describable behaviors (Cooperative Learning).

The characteristics of an effective group also need to be considered when designing a cooperative learning curriculum. Students need practice in the behaviors that contribute to group effectiveness.

Johnson and Johnson have determined that groups have three core activities: (1) accomplishing its goals, (2) maintaining itself internally, and (3) developing and changing in ways that improve its effectiveness.

Blake and Mouton have developed a list of similar principles that support effective team-building:

1. Shared participation in problem solving and decision making is basic to growth, development, and contribution.

2. Mutual trust and respect undergird productive human relationships.

3. Open communication supports mutual understanding.

Mink, Mink, and Owen in *Groups at Work* believe that the following five norms promote growth and development in teams:

1. Developing Trust

2. Accepting and Recognizing Individual Differences

3. Giving and Receiving Feedback

4. Problem Solving

5. Letting Go of the Past

The sequencing and choice of objectives for the pilot program focus on initially developing the skills necessary for effective team functioning.
DEVELOPING THE PEOPLE-PRODUCTIVITY LINK IN THE HIGH SCHOOL CLASSROOM: A PILOT PROGRAM
STATEMENT OF PHILOSOPHY

+ All students should be provided an education that will enable them to reach their highest possible intellectual, social, physical, and emotional development.

+ Education should provide students with the knowledge and skills necessary for full participation in our changing society.

+ Education should enable students to understand themselves and the world about them, so that they can live effectively in the world of expanding experiences and constant changes.

+ Education is a life-long process.

STATEMENT OF GOALS

1. Learn to acquire ideas through reading and listening.

2. Learn to communicate ideas through writing and speaking.

3. Learn to utilize mathematical concepts.

4. Develop the ability to think rationally, including problem-solving skills.

5. Develop the ability to use and evaluate knowledge.

6. Develop habits and attitudes, such as pride in good teamwork, that will make one a productive participant in economic life.

7. Develop skills in communicating effectively in groups.

8. Develop the ability to identify with and advance the goals and concerns of others.

9. Learn to form productive and satisfying relations with others based on respect, trust, cooperation, consideration, caring.

10. Develop an understanding and appreciation of values different from one's own.

11. Develop the ability to deal with problems in original ways.
12. Develop the willingness and ability to communicate through creative work in an active way.

14. Recognize that one's self-concept is developed in interaction with other people.

15. Develop skill in making group decisions with purpose.
CURRICULUM OBJECTIVES
Skill: Develop listening skills, communication skills, and one-to-one relationships. (Ice Breaker)

Objective: Given an ice breaker activity, students interact with other students on a one-to-one basis by asking questions, and listening to and recording responses.

Directions: Distribute a blank piece of paper to each student. Have students fold paper into nine rectangles, two folds in each direction. Each student should then think up one question such as "What is your favorite rock group?" and ask nine different classmates the same question. Students should record names and responses in rectangles.

When rectangles are completed, instructor introduces students one at a time. Everyone who has recorded information about that student shares it with the whole class.

Academic Task: Generate a question and record responses of nine students and their names in the rectangular grid.

Criteria for Success:

Positive Interdependence: Each student must interact with nine other student in order to successfully complete task.

Individual Accountability: Students must individually share responses with whole group.

Expected Behaviors: Questions are to be of a positive and inoffensive. Students should circulate around the room and complete the task in a set time frame.
Skill: Development trust and openness in groups.

Objective: Given a sheet of paper divided into three sections labeled Family-School-Interests, each student will write at least one positive statement about themselves in each category. Groups will discuss and share information.

Directions: Divide students into groups of four. Distribute sheet of paper divided into three sections labeled Family-School-Interests. Have each student write at least one positive statement about himself for each category.

One member of each group shares positive statements about himself. Then give the group two or three minutes to explore this information, asking questions, clarifying, and sharing the similar experiences.

Continue until all members of the group have shared their strengths with each other. Then have groups share major learnings, interesting things they noticed, differences, etc., with the whole group.

Academic Task: Complete the sheet and discuss and share information with group members.

Criteria for Success: Points given individually for completed sheets.

Positive Interdependence: Members must listen to each other and share information.

Individual Accountability: Individual student must complete sheet to earn points.

Expected Behaviors: Students should be directed to listen with acceptance. Questions, clarifying statements, and similar experiences must be phrased in positive terms.
Skill: Develop creativity and value differences. Develop common skills.

Objective: Given a brainstorm topic, student groups will generate a list of at least eight ideas relating to topic.

Directions: Divide students into groups of four. Ask students to brainstorm ideas for ways to provide recognition for outstanding performance or contributions by a student in a classroom setting.

Academic Task: Student groups are to generate a list of at least eight ideas, minimum of one idea per member.

Criteria for Success: A list of eight or more ideas will earn total points. Bonus points for extra ideas will be given.

Positive Interdependence: Group members all receive group point total.

Individual Accountability: Each member must generate at least one idea.

Expected Behaviors: Group members are directed to encourage creative, unusual ideas. Direct students to listen with acceptance and not judge any idea as less worthy than another.
Skill: Develop creativity and value differences.

Objective: Given a hypothetical Snickers candy bar, student groups will illustrate at least eight ways to cut a candy bar into 8 pieces. All pieces have to be the same size and shape.

Directions: Divide students into groups of four. Ask students to illustrate on paper different ways to cut a candy bar into 8 pieces of equal sizes and same shape. Each group must submit at least eight different illustrations and individual group members must submit a minimum of one illustration.

Bonus points will be given for more than eight illustrations.

Academic Task: Student groups are to submit eight illustrations.

Criteria for Success: Eight illustrations will earn total points. Bonus points for extra illustrations will be given.

Positive Interdependence: Group members all receive group point total.

Individual Accountability: Individual members must generate at least one illustration.

Expected Behaviors: Group members are directed to encourage creative, unusual ideas. Direct students to view with acceptance and *not* judge any illustration as less worthy than another.
Skill: Develop creativity.

Objective: Given an unrelated assortment of items and materials, student groups will assemble items and materials into a mural, collage, design, etc.

Directions: Divide students into groups of four. Distribute assortment of items and materials to each group. Each group has ten minutes to assemble materials and items into a mural, collage, design, etc. All group members need to be prepared to discuss end result with whole group.

A group assortment of materials and items might include 4-6 of the following: screw driver, scissors, nail file, cotton ball, piece of tinker toy, and piece of construction paper. Any group of unrelated items may be used.

After ten minutes, instructor will designate one group member at random to discuss the group creation with the whole class.

Academic Task: Create something from a group of unrelated items.

Criteria for Success: All members participate in creation.

Positive Interdependence: Students must interact with each other to make creation.

Expected Behaviors: All members will offer suggestions. Members will listen with acceptance.
Skill: Develop awareness of advantages of two-way communication skills.

Objective: After listening to a short story, a student will repeat the story to another person.

Directions: Select two groups of five students. Ask them to leave the room. The first group will demonstrate one-way communication by entering the room one by one. Each student listens to a brief story and repeats it to the next person in his own way without help from other students or observers. The receiver cannot ask questions, only listen and then repeat the story to the next person. The second group will demonstrate two-way communication by entering the room one by one. Each student listens to the story and asks questions about it to clarify its meaning and to make sure that he knows what the story is about. He then repeats the story to the next person in the group in his own way without help from other students or observers. The receiver can ask as many questions as he wants.

Distribute observation forms and copy of the story to each observer. Direct observers to record each telling of the story as accurately as possible.

Begin the one-way communication demonstration by asking the first student to enter the room.

Read the story once, ask the second person to enter, and have the first person repeat the story to the second person, and so on until all five students are finished. The fifth person repeats the story to the observers.

Begin the two-way communication demonstration by asking the first student to enter the room, read the story once, answer all questions he has about the story, ask the second student to enter and have the first student repeat the story to the second student and answer all of the second student’s questions, and so on until the fifth student repeats the story to the observers.
Using the results recorded by the observers, chart the percentages of original details retained correctly in the repeated stories and compare one-way and two-way communications. Discuss the results and draw conclusions about one-way and two-way communications.
OBSERVATION SHEET

Twenty specific details of the story are listed in the first column. As Student One repeats the story to Student Two, note the mistakes in Student One's version by writing the wrong words or phrases in the proper row and column. Use a check mark for details correctly repeated and a zero for details left out. Repeat this procedure for the rest of the students.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STUDENT 1</th>
<th>STUDENT 2</th>
<th>STUDENT 3</th>
<th>STUDENT 4</th>
<th>STUDENT 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmer</td>
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<td></td>
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<tr>
<td>Western Kansas</td>
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<tr>
<td>Tin Roof on</td>
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<tr>
<td>His Barn</td>
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<tr>
<td>Small Tornado</td>
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<td>Two Countries Away</td>
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<td>Twisted and Mangled</td>
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<td>Friend and Lawyer</td>
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<td>Ford Motor Co.</td>
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<td>Good Price</td>
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<td>Ship the Roof</td>
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<td>How Much Could</td>
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<td>He Get for It</td>
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<tr>
<td>Big wooden Box</td>
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<tr>
<td>Dearborn, MI</td>
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<tr>
<td>Return Address</td>
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<tr>
<td>Send the Check</td>
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<tr>
<td>Twelve Weeks passed</td>
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<tr>
<td>Verge of Writing</td>
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<td>Received an Envelop</td>
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<tr>
<td>Hit your Car</td>
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<tr>
<td>19th of Next Month</td>
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</table>
THE STORY

A farmer in western Kansas put a tin roof on his barn. Then a small tornado blew the roof off, and when the farmer found it two counties away, it was twisted and mangled beyond repair. A friend and a lawyer advised him that the Ford Motor Company would pay him a good price for the scrap tin, and the farmer decided he would ship the roof up to the company to see how much he could get for it. He crated it up in a very big wooden box and sent it off to Dearborn, Michigan, marking it plainly with his return address so that the Ford Company would know where to send the check.

Twelve weeks passed, and the farmer didn't hear from the Ford company. Finally he was just on the verge of writing them to find out what was the matter, when he received an envelope from them. It said, "We don't know what hit your car, mister, but we'll have it fixed for you by the fifteenth of next month." (Johnson, 328).

<table>
<thead>
<tr>
<th>Student</th>
<th>Detail Correct Number</th>
<th>Details Incorrect Number</th>
<th>Details Left Out Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>2</td>
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<tr>
<td>5</td>
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</tr>
</tbody>
</table>
SUMMARY CHART

# of Details Retained Correctly

100 -
90 -
80 -
70 -
60 -
50 -
40 -
30 -
20 -
10 -

1  2  3  4  5  STUDENTS

Academic Task: Ten students will demonstrate one-way and two-way communication by repeating a story. Other students will observe communication and record observations.

Criteria for Success: All students will participate in a positive manner and receive equal amount of participation points.

Positive Interdependence: Observers are dependent on story-tellers. Story-tellers dependent on previous story-teller.

Individual Accountability: Participation points awarded on individual participation as determined by instructor.

Expected Behaviors: Students are to follow directions carefully for their roles as observers or story-tellers.
Skills: Develop group communication skills in problem-solving situations.

Objective: Given pieces of information regarding a new way of measuring distance and time, randomly distributed, a group will determine the time it takes to complete a trip.

Directions: Divide students into groups of four. Randomly distribute twenty-six separate pieces of information to group members. Also give students the following directions in written form: Pretend that lutts and mipps represent a new way of measuring distance, and that dars, wors, and mirs represent a new way of measuring time. Ms. Somers drives from Town A through Town B and Town C to Town D. Determine how many wors the entire trip took. You may share this information orally but you may not show your information to anyone.

Pieces of Information:
1. How far is it from A to B?
2. It is 4 lutts from A to B.
3. How far is it from B to C?
4. It is 8 lutts from B to C.
5. How far is it from C to D?
6. It is 10 lutts from C to D.
7. What is a lutt?
8. A lutt is 10 mipps.
9. What is a mipp?
10. A mipp is a way of measuring distance.
11. How many mipps are there in a mile?
12. There are 2 mipps in a mile.
13. What is a dar?
14. A dar is 10 wors.
15. What is a wor?
16. A wor is 5 mirs.
17. What is a mir?
18. A mir is a way of measuring time.
19. How many mirs are there in an hour?
20. There are two mirs in an hour.
21. How fast does the man drive from a to B?
22. The man drives from A to B at the rate of 24 lutts per wor.
23. How fast does the woman drive from A to B?
24. The woman drives from B to C at the rate of 30 lutts per wor.
25. How fast does the woman drive from C to D?
26. The woman drives from C to D at the rate of 30 lutts per wor.
Solution: 23/30 words.

Extra students and instructor act as observers and record observations on frequency chart.

At the end of the time limit, share observers' frequency forms with group members. Have students discuss and answer the following questions:

a. Who spoke to whom?
b. Who talked, how often, and how long?
c. Was the needed information easily obtained by all students?
d. Did students share their information appropriately?
e. Was everyone listened to?
f. How cooperative or competitive were the group members?
g. What problems did the group have in working together?
h. How did the group make decisions?
i. What conclusions about communication can be made from the group's experience?

Have groups share conclusions with whole group and continue discussion on effective means of group communication.
OBSERVATION FREQUENCY CHART

Label the squares with the names of each student in the group. Indicate the frequency of message sending for each student by tally marks. Place an "x" in the square every time the student interrupts or overrides another student. Place a check in the student's square every time he encourages another student to participate. Example:

```
+ + + + +
  V V V V
  X X X X
```

STUDENT 1

STUDENT 2

STUDENT 3

STUDENT 4
Academic Task: Determine how many hours the entire trip took.

Criteria for Success: Group points awarded for correct answer.

Positive Interdependence: Randomly distributed information must be shared with group to achieve success.

Individual Accountability: Individual students responsible for sharing randomly held information.

Expected Behaviors: Students in groups may share pieces of information orally but may not show information to anyone in the group. Observers will record observations and enforce rules.
Skill: Develop group communication skills in problem solving situations.

Objective: Given a set of clues distributed randomly, a group will solve a murder mystery by identifying the murderer, the weapon, the time of the murder, the place of the murder, and the motive.

Directions: Divide students into groups of four. Randomly distribute twenty-two clues to group members. The goal of the group is to identify the murderer, the weapon, the time of the murder, the place of the murder, the place of the murder, and the motive. Clues may be communicated verbally among members, but the clues may not be shown to other group members.

Set a time limit of 20-30 minutes.

Extra students and instructor act as observers and record observations on frequency chart.

Clues:

1. When he was discovered dead, Mr. Gurule had a bullet wound in his calf and a knife wound in his back.
2. Mr. Burke shot at an intruder in his apartment building at midnight.
3. Mr. Gurule had virtually wiped out Mr. Burke's business by stealing his customers.
4. The elevator operator reported to police that he saw Mr. Gurule at 12:15 a.m.
5. The bullet taken from Mr. Gurule's calf matched the gun owned by Mr. Burker.
6. Only one bullet had been fired from Mr. Burke's gun.
7. The elevator man said Mr. Gurule did not seem too badly hurt.
8. A knife found in the parking garage had been wiped clean of fingerprints.
9. Mrs. Emmons had been waiting in the lobby for her husband to get off work.
10. The elevator man went off duty at 12:30 a.m.
11. Mr. Gurule's body was found in the park.
12. Mr. Gurule's body was found at 1:20 a.m.
13. Mr. Gurule had been dead for about an hour when his body was found, according to the medical examiner.
14. Mrs. Emmons did not see Mr. Gurule leave through the lobby while she was waiting.
15. Blood stains corresponding to Mr. Gurule's blood type were found in the basement parking garage.
16. Police were unable to locate Mr. Burke after the murder.
17. Mr. Gurule's blood type was found on the carpet outside Mr. Burke's apartment.
18. Mrs. Emmons' husband had been jealous of the friendship.
19. Mrs. Emmons had been a good friend of Mr. Gurule and had often visited his apartment.
20. Mrs. Emmons' husband had been jealous of the friendship.
21. Mrs. Emmons' husband did not appear in the lobby at 12:30 a.m., the end of his normal working hours. She had to return home alone and he arrived later.
22. At 12:45 a.m., Mrs. Emmons could not find her husband or the family car in the basement parking lot of the apartment.

Solution:

After receiving a superficial gunshot wound from Mr. Burke, Mr. Gurule stepped on the elevator and was killed by Mr. Emmons (the elevator man) with a knife at 12:30 a.m. because Mr. Emmons was jealous.

At end of time limit, share observers' frequency forms with group members. Have students discuss an answer the following questions:

a. Who spoke to him?
b. Who talked, how often, and how long?
c. Was the needed information easily obtained by all students?
d. Did students share their information appropriately?
e. Was everyone listened to?
f. How cooperative or competitive were the group members.
g. What problems did the group have in working together?
h. How did the group make decisions?
i. What conclusions about communication can be made from the group's experience?

Have groups share conclusions with whole group and continue discussion on effective means of group communication.
OBSERVATION FREQUENCY CHART

Label the squares with the names of each student in the group. Indicate the frequency of message sending for each student by tally marks. Place an "x" in the square every time the student interrupts or overrides another student. Place a check in the student’s square every time he encourages another student to participate. Example:

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<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>VV</td>
<td>VV</td>
</tr>
<tr>
<td>XX</td>
<td>XX</td>
</tr>
</tbody>
</table>
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STUDENT 1

STUDENT 2

STUDENT 3

STUDENT 4
<table>
<thead>
<tr>
<th>Academic Task:</th>
<th>Identify the murderer, the weapon, the time of the murder, the place of the murder, and the motive.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria for Success:</td>
<td>Equal amounts of group points awarded for each of the five identification areas correctly identified.</td>
</tr>
<tr>
<td>Positive Interdependence:</td>
<td>Randomly distributed clues must be shared with group to achieve success.</td>
</tr>
<tr>
<td>Individual Accountability:</td>
<td>Individual students responsible for sharing randomly held clues.</td>
</tr>
<tr>
<td>Expected Behaviors:</td>
<td>Students in groups may share clue information orally but may not show clues to anyone in the group. Observers will record observations and enforce rules.</td>
</tr>
</tbody>
</table>
Skill: Develop awareness of competitive and cooperative group behaviors.

Objective: Given an instruction sheet and an envelope containing puzzle pieces, student groups will solve the puzzle.

Directions: Divide students into groups of five. Extra students will act as observers with instructor. Hand out instructions to observers and instruction sheet to each group. Half of the groups should receive instructions that are cooperative and half instructions that are competitive. Review instructions with each group and observers. Hand out envelopes containing puzzle pieces to each group.

Begin groups at the same time. Groups are to work until all of them have solved the puzzle. Observers should carefully time each group. At the end of twenty-five minutes, each group should halt.

Collect the observation sheets and record the information in the table below. While instructor records information, groups should discuss their experiences by pairing a cooperative group with a competitive group and sharing their instructions and experiences with each other. Observers should participate in these discussions. One person in each group should be appointed to record the conclusions and the differences between working in a cooperative or a competitive problem solving group.

Share the results of the discussions among all the groups. Present the information gathered by the observers. Continue discussion on cooperative and competitive behaviors.
<table>
<thead>
<tr>
<th>TABLE:</th>
<th>COOPERATIVE</th>
<th>COMPETITIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td># of groups</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Completing task</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time for task completion</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of times a member gave away a puzzle piece</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of times a member took away a puzzle piece</td>
<td></td>
<td></td>
</tr>
<tr>
<td># of members who cut themselves off from others</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooperative behaviors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Competitive behaviors</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Each group member has an envelope containing pieces of a puzzle for forming squares. Each group is to form one square in front of each member. Only parts of the pieces for forming the five squares are in each envelope. There are two goals. Your goal is to form a square in front of yourself as fast as possible and the group's goal is to form squares in front of every member as fast as possible.

You are to role play a member of a group in which members are all highly cooperative. To you the group goal is far more important than the individual goal. Your job is to cooperate with the other group members as much as possible in order to accomplish the group goal in the shortest period of time possible. To you the other group members are your partners, and you are concerned with helping them complete their square.

RULE:

1. No talking, pointing, or any other kind of communication among the five members of your group.
2. No one may ASK another member for a piece of the puzzle in any way signal that another person is to give him a puzzle piece.
3. Members may GIVE puzzle pieces to other members.
4. Members may not throw their pieces into the center for others to take; they have to GIVE the pieces directly to one person.
5. Anyone may give away all the pieces of his puzzle, even if he has already formed a square.
6. Observers will enforce these rules.
COMPETITIVE DIRECTIONS:

Each member has an envelope that contains pieces of a puzzle for forming squares. Each member is to form a square in front of himself. Only parts of the pieces for forming the five squares are in each envelope. The group has two goals. Your goal is to form a square in front of you as fast as possible and the group's goal is to form squares in front of every member as fast as possible.

You are to role play a member of a group in which the members are all highly competitive. To you the individual goal is far more important than the group goal. Your job is to compete with the other group members to see who can get a completed square in front of himself first. At the end of the time period, members will be ranked on the basis of their speed in completing their square. The member finishing first will be labelled "best" and the member finishing last will be labelled "worst." If you complete your square and then decide to give a piece of it away, you lose your previous rank in terms of order of members completing their squares and must start over.

RULES:

1. No talking, pointing, or any other kind of communicating among the five members of your group.

2. No person may ASK another member for a piece of the puzzle or in any way signal that another person is to give him a puzzle piece.

3. Members may GIVE puzzle pieces to other members.

4. Members may not throw their pieces into the center for others to take; they have to give the pieces directly to one person.

5. Observers will enforce these rules.
OBSERVER DIRECTIONS: Your job is part observer, part recorder, and part rule enforcer. Do your best to enforce strictly the rules on the instruction sheet for group members. Then record and observe the items listed below. This information will be used to help discuss the results of the assignment.

1. Did the group complete the task?
   ____ Yes; ____ No.

2. How long did it take for the group to complete the task?
   ____ Minutes, ____ Seconds

3. Number of times a group member took a puzzle piece from another member:

4. Number of members who finished their square and then divorced themselves from the struggles of the rest of the group?

5. Were there any critical turning points at which cooperation or competition increased?

6. What behaviors in the group show cooperativeness or competitiveness?
Directions for Making a Set of Squares:

A set consists of five envelopes containing pieces of cardboard of heavy construction paper which have been cut in different patterns and which, when properly arranged, will form five squares of equal size.

Cut five squares, approximately 6 inches by 6 inches. Mark each square to match the pattern below. Distribute the pieces in the five envelopes as follows:

Envelope A has pieces i, h, e.
Envelope B has pieces a,a,a,c.
Envelope C has pieces a,j.
Envelope D has pieces d,f.
Envelope E has pieces g,b,f,c.

Academic Task:

Groups will complete five squares each.

Criteria for Success:

All five squares will be completed.

Positive Interdependence:

Squares can only be completed if members individually give pieces of puzzle to other members.

Individual Accountability:

Each individual must complete one square in front of himself.

Expected Behaviors:

Students will follow written rules carefully.
Skill: Resolve controversies through consensus decision making.

Objective: Ask students to individually list the five most important characteristics of an effective teacher and write a short rationale for each choice.

Divide students into groups of four. Distribute the instructions for decision by consensus to each student. Following the guidelines, each group is to generate a list of the five most important characteristics of an effective teacher.

Set a time limit of 20-30 minutes. Discuss group characteristics with whole groups and compare.

Instructions: This is an exercise in group decision making. Your group is to use the method of group consensus in resolving controversies and reaching decisions. This means that the group list the five characteristics must be agreed upon by each group member before it becomes part of the group decision. Consensus is difficult to reach. Not every list will meet with everyone's complete approval. Try, as a group, to make each characteristic one with which all group members can at least partially agree. Here are the guidelines to use in reaching consensus:

1. Avoid blindly arguing for your own individual judgments. Present your position as clearly and logically as possible, but listen to other members' reactions and consider them carefully before you press your point.

2. Avoid changing your mind just to reach agreement and avoid conflict. Support only characteristics with which you are able to agree to at least some degree. Yield only to positions that have objective and logically sound foundations.
3. Avoid "conflict reducing" procedures such as majority vote, tossing a coin, averaging, or bargaining in teaching decisions.

4. Seek out differences of opinion. They are natural and expected. Try to involve everyone in the decision process. Disagreements can help the group's decision because a wide range of information and opinions improves the chances for the group to hit upon more adequate decisions.

5. Do not assume that someone must win and someone must lose when discussion reaches a stalemate. Instead, look for the next most acceptable alternative for all members.

6. Discuss underlying assumptions, listen carefully to one another, and encourage the participation of all members - three important factors in reaching decisions by consensus.

Academic Task: Generate a list of the five most important characteristics of an effective teacher by consensus.

Criteria for Success:

Consensus on five characteristics is reached.

Positive Interdependence: Consensus, by nature, requires members to interact with each other.

Individual Accountability: Individuals must bring list of five characteristics and rationale for each to the group.

Expected Behaviors: Group members are to follow the guidelines listed on the decision by consensus instruction sheet.
Skill: Develop skills in making group decisions with a purpose.

Objective: Given a game format, students will be able to identify:

A) Graphs of 6 trig functions in the form \( y = A \sin bX + C \)

OR

B) Trig functions of all special angles
\( 0^\circ \leq X \leq 360^\circ \) or \( 0 \leq X \leq 2\pi \)

Directions:

Day 1: Students, in groups of four, will discuss and brainstorm possible game designs meeting criteria in A or B.

Day 2: Student groups will begin writing:
A) Game structure
B) Game procedures
C) Game rules
D) Scoring criteria
E) Materials needed for assembly

Day 3: Complete activity from day before.
Day 4: Assemble game.
Day 5: Test game and rewrite where needed.
Day 6: Demonstrate game to whole class.

Game Considerations:

+ In what ways do players interact?
+ In what order do players make their moves?
+ How is the game to start?
+ Who makes the first move and what will this be?
+ Are there any specific acts which players may not perform.
+ Are the rules simple and few in number so they can be easily learned and observed?
+ How will a team or individual win?
+ What materials are needed - playing board, score cards, information cards, dice, spinners?
+ Does game meet specified criteria in A or B?
Academic Task: Design game for other students to use.

Criteria for Success: Groups points awarded for quality of product.

Positive interdependence: Game designed and assembled by all members of group.

Individual Accountability: Each student must participate in group presentation.

Expected Behaviors: Group members are directed to encourage creative, unusual ideas. Decisions reached by consensus.
Skill: Use of descriptive statistics.

Objective: Using results of a survey, groups will illustrate the statistical data and present to whole group.

Directions: Each student will survey 10 different seniors regarding one of the following:

A) How many hours per week do you spend on homework?
B) How many hours per week do you spend on watching television or listening to music?
C) How many hours per week do you spend in paid employment?
D) How many hours per week do you spend in extra curricular activities or sports?

Survey information will be shared with class and tallied. Each group of four students will then take one area covered by the survey and:

1. Illustrate graphically the frequency distribution.
2. Determine the mean, median mode, standard deviation, and standard error of the mean for the data.
3. Find range of probability is .95.

Groups will present findings to whole class in group presentation.

Academic Task: Use survey information to illustrate and determine statistical data.

Criteria for Success: Group presentation presents accurate data.

Positive Interdependence: Group responsible for presentation.

Individual Accountability: Each student must survey 10 different seniors.

Expected Behaviors: Individuals will complete surveys when assigned and will work cooperative with groups to prepare presentation.
Skill: Design and solve linear programming problems.

Objective: In groups of three, students will create in writing a real life situation that can be solved by linear programming. A minimum of three constraints must be used.

Directions:
1. Define two variables.
2. Write constraints as system of inequalities.
3. Graph system. Find vertices of polygon (vertices must be whole numbers).
4. Write expression to be maximized or minimized.
5. Substitute values from vertices into expression.
6. Select the greatest or least result.
7. Write descriptive paragraph with all pertinent information describing situation.
8. Each student then pairs up with another student from a different group to exchange problems.
9. Students solve each other's problems.

Academic Task: Design and solve linear programming problems.

Criteria for Success: Accurately solve a linear programming problem designed by another group.

Positive Interdependence: Group design of linear programming problem.

Individual Accountability: Must solve problem individually.

Expected Behaviors: All members will participate in design in a positive manner.
Skill: Polar and rectangular conversion.

Objective: Given five polar equations and five rectangular equations written by groups, students will convert them to rectangular form and polar form, respectively.

Directions: In groups of three, groups will create five polar equations and five rectangular equations. Groups will then convert the equations to rectangular form and polar form, respectively.

Academic Task: Write and convert polar and rectangular equations.

Criteria for Success: Individual students will accurately convert ten polar and rectangular equations.

Positive Interdependence: Groups must write ten equations together.

Individual Accountability: Must convert ten equations individually.

Expected Behaviors: Members will all help in the writing of the original ten equations - at least three each.
CHAPTER FOUR

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The value of cooperative groups has been supported by over 500 research studies. Effective group functioning is an important aspect of success in the business world as well as in the educational setting.

Although many teachers would like to experiment with work in groups, they are unlikely to do so. Teachers typically receive no training specific to cooperative learning and when they try it out for themselves the results are often disappointing. Cooperative learning, if it is to meet the educational and social goals of the teacher, must be structured carefully. There are specific skills necessary for effective group participation which must be learned by the students. Activities must be highly structured through sophisticated planning, such as the model developed for this pilot program.

The role of the teacher in group learning situations is significantly different from the conventional role. The teacher must exhibit good organizational skills in planning and structuring the learning experience. Thereafter, the role becomes more adaptive and less authoritarian or autocratic than in lecture-based teaching situations. The teacher acts as a group facilitator and consultant.
Another important aspect of the teacher role is in the feedback process. This involves going over with the group members the events that occurred during the group session and pulling out any important points that arose, either in connection with the content of the discussions or regarding the processes and interactions within the group itself.

Johnson, Johnson and Holubec have outlined five simple steps for teaching and implementing cooperation in the classroom:

1. Help students become aware of the need for each skill.
2. Help students gain a clear understanding of each skill.
3. Give students situations in which they can practice social skills.
4. Give each student feedback on his or her performance of the skill.
5. Persevere in practicing the skill *(Circles of Learning)*.

In making recommendations for schools and teachers interested in developing and implementing a cooperative learning curriculum, one of the most important factors to be considered is training. To have an effective program, teachers should be allowed the time to attend an inservice training session in the principles of cooperative learning. An eight hour training session for teachers has been designed and can be found in Appendix A.

Another recommendation to teachers would be to introduce cooperative learning activities slowly. Students must first be trained in skills necessary for group functioning and many of
the objectives and activities of the pilot program do just that. An additional list of quick starter ideas, along with several other implementations and evaluation tools, can be found in Appendix B.

Group participation provides the opportunity to expand human potential. The years ahead offer the promise of further exciting developments in social technology and human affairs.
REFERENCES


Slavin, Robert. "When does Cooperative Learning Increase Student Achievement?" *Psychological Bulletin,* Vol 93, Spring 1983.
APPENDIX A

Cooperative Learning Workshop for Mathematics Teachers
COURSE TITLE: Cooperative Learning Workshop for Mathematics Teachers (CL WS)

INSTRUCTOR: Suzanne Somers

COURSE ACTIVITIES AND OBJECTIVES

1. Introduction.

2. After completing competitive, individual, and cooperative activities, participants will generate a list of at least 8 advantages cooperative learning.

3. Participants, in groups of three, will identify in writing the five basic elements of cooperative learning in each of three activities described on a worksheet. The five basic elements are positive interdependence, face-to-face interaction, individual accountability, interpersonal and small group skills, and group processing.

4. Participants will design four learning activities using the five basic elements of cooperative learning appropriate for freshmen level math courses. Activities will be designed jointly in groups of four following the Johnson and Johnson format.

5. Closing.
**INTRODUCTION**

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<th>METHOD</th>
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<tr>
<td>8:00 AM</td>
<td>INTRODUCE MYSELF</td>
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<td>XXX</td>
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<tr>
<td></td>
<td>RELATE C.L. STORY IN MY CLASSROOM.</td>
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<td>NAME TENTS</td>
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<td>OVERALL OBJECTIVE:</td>
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<td>MARKERS</td>
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<td></td>
<td>PRODUCE 6 C.L.</td>
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<tr>
<td></td>
<td>ACTIVITIES AT THE ALG 1-2 LEVEL.</td>
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<td>MAKE NAME TENTS.</td>
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<td></td>
<td>ASK PARTICIPANTS TO INTRODUCE THEMSELVES</td>
<td>ASK</td>
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<td>IDENTIFY HOME SCHOOL SUBJECTS TAUGHT</td>
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<td>HOW LONG</td>
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Objective: INTRODUCTION

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<td>8:20 AM</td>
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MEASUREMENT: INTRODUCTION - NO MEASUREMENT

TRANSITION: BEFORE YOU DESIGN LEARNING ACTIVITIES, I HAVE PLANNED A ROLE REVERSAL EXPERIENCE. PRETEND YOU ARE ONE OF YOUR OWN STUDENTS SO YOU CAN SEE WHAT IT FEELS LIKE TO LEARN IN A COMPETITIVE, INDIVIDUAL, AND SETTING.
**Objective:** #2

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<tr>
<td>8:25 AM</td>
<td>△ ACTIVITY - COMPETITIVE</td>
<td></td>
<td>△ WORK SHEET # 1</td>
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<td></td>
<td>DIRECTIONS:</td>
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<tr>
<td></td>
<td>1. COUNT NUMBER OF △'S WHEN I SAY &quot;BEGIN&quot;.</td>
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<td>2. FIRST ONE DONE WITH CORRECT ANSWER IS WINNER.</td>
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<td></td>
<td>DISTRIBUT WORKSHEETS AND BEGIN</td>
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<tr>
<td>3:35 AM</td>
<td>ANNOUNCE WINNER</td>
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<td>DISPLAY ANSWER ON OVERHEAD</td>
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<td>OH KEY TO WORKSHEET # 1</td>
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**OBJECTIVE:**

2

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<tr>
<td>8:50 AM</td>
<td>□ ACTIVITY - COOPERATIVE OR INDIVIDUAL</td>
<td>(X)</td>
<td>[ ] WORKSHEET # 2</td>
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<td>DIRECTIONS:</td>
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<td></td>
<td>1. SPLIT GROUP INTO PARTS.</td>
<td>(A)</td>
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<td></td>
<td>A. 6 PEOPLE WORKING ALONE.</td>
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<td>B. 6 GROUPS OF 2 EACH - MAY HELP OTHER GROUPS.</td>
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<td>2. 10 MINUTE TIME LIMIT</td>
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<td>DISTRIBUTED WORKSHEETS AND BEGIN</td>
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<tr>
<td>9:10 AM</td>
<td>CALL TIME</td>
<td></td>
<td>OH KEY TO WORKSHEET # 2</td>
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<td>DISPLAY ANSWER ON OVERHEAD</td>
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<tr>
<td>9:20 AM</td>
<td>REVIEW ACTIVITIES JUST COMPLETED: COMPETITIVE, INDIVIDUAL, AND COOPERATIVE.</td>
<td></td>
<td>△ WORK SHEET #1</td>
</tr>
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<td></td>
<td>REFLECT ON FEELINGS, ATTITUDES, AND THOUGHTS DURING ACTIVITIES.</td>
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<td>CHALK BOARD</td>
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<td></td>
<td>WRITE THESE ON BACK OF ( ) WORKSHEET.</td>
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<td></td>
<td>GENERATE LIST OF ADVANTAGES OF COOPERATIVE LEARNING.</td>
<td>ASK *** *</td>
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<tr>
<td></td>
<td>DISTRIBUTE WORKSHEETS AND BEGIN</td>
<td></td>
<td>CHALK</td>
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**Course Title:** CL MS  
**Frame Name:** ADVANTAGES  
**Frame Number:** 2-4  
**Author:** SOMERS  
**Date:** 5/21/89  
**Total Time:** 1 HR 35 MIN

**Objective:** #2

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<td></td>
<td><strong>COOPERATION</strong></td>
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<td></td>
<td>+ <strong>EVERYONE CAN GET RIGHT ANSWERS.</strong></td>
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<td>+ <strong>LOTS OF ACTIVE PARTICIPATION BY EVERYONE.</strong></td>
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<td>+ <strong>FOSTERS COMMUNICATION.</strong></td>
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**9:50 AM**  
**DISCUSS IMPLICATIONS:**  
**COOPERATION HAS MOST ADVANTAGES.**

**10:00 AM**  
**BREAK**
HOW MANY TRIANGLES CAN YOU COUNT
HOW MANY SQUARES CAN YOU COUNT?
**Lesson Frame A**

**Course Title:** CL MS  
**Date:** 5/21/89  
**Frame Name:** ADVANTAGES  
**Frame Number:** 2-5  
**Author:** SOMERS  
**Total Time:** 1 HR 35 MIN  
**Objective:** #2

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<tr>
<td>10:00 AM</td>
<td>BREAK</td>
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</table>

**Measurements:**  
**Transition:**

INSTRUCTOR WILL WRITE PARTICIPANT GENERATED LIST OF AT LEAST 8 ADVANTAGES OF COOPERATIVE LEARNING.  
AFTER A 15 MINUTE BREAK, WE'LL DISCUSS THE COMPONENTS OF A COOPERATIVE LESSON.
**LESSON FRAME A**

**Course Title:** CL WS                      **Date:** 5/21/89

**Frame Name:** BASIC ELEMENTS                   **Frame Number:** 3-1

**Author:** SOMERS                              **Total Time:** 1 HR 15 MIN

**Objective:** #3

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<tr>
<td>10:15 AM</td>
<td>TELL: THERE ARE 5 BASIC ELEMENTS IN A COOPERATIVE LESSON. THESE ARE DESCRIBED ON PAGE 65 IN YOUR NOTEBOOK. THE 5 ELEMENTS ARE:</td>
<td></td>
<td>FLIP CHART # 3</td>
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<tr>
<td></td>
<td>1. POSITIVE INTERDEPENDENCE.</td>
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<td></td>
<td>2. FACE-TO-FACE INTERACTION.</td>
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<td>3. INDIVIDUAL ACCOUNTABILITY.</td>
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<td></td>
<td>4. INTERPERSONAL AND SMALL GROUP SKILLS.</td>
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<td></td>
<td>5. GROUP PROCESSING.</td>
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<td></td>
<td>DISCUSS EACH ELEMENT AND KEY PHRASES ON FLIP CHART.</td>
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<tr>
<td></td>
<td>1. POSITIVE INTERDEPENDENCE + &quot;SINK OR SWING&quot; TOGETHER</td>
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<td>FLIP CHART # 4</td>
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<tr>
<td></td>
<td>+ MUTUAL GOALS</td>
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<td>+ JOINT REWARDS</td>
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<td></td>
<td>+ SHARED MATERIALS AND INFO</td>
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<td>+ ASSIGNED ROLES</td>
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## LESSON FRAME A

**Course Title:** CL W8  
**Date:** 5/21/89  
**Frame Name:** BASIC ELEMENTS  
**Frame Number:** 3-2  
**Author:** SOMERS  
**Total Time:** 1 HR 15 MIN  

### Objective: #3

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</table>
|      | **2. FACE-TO-FACE INTERACTION**  
+ VERBAL EXCHANGES  
+ ORAL SUMMARIZING  
+ GIVING EXPLANATIONS  
+ ELABORATING |      |      | FF |
|      | **3. INDIVIDUAL ACCOUNTABILITY**  
+ ASSESS INDIVIDUAL LEARNING  
+ GROUP SUPPORT AND HELP  
+ RANDOM SELECTION FOR ANSWER |      |      | IA |
|      | **4. INTERPERSONAL AND SMALL GROUP SKILLS**  
+ COMMUNICATION  
+ LEADERSHIP  
+ TRUST  
+ DECISION MAKING  
+ CONFLICT MANAGEMENT |      |      | FLIP CHART 0 6 |
|      | **5. GROUP PROCESSING**  
+ ANALYZE GROUP FUNCTIONING  
+ FEEDBACK |      |      | FLIP CHART 0 7 |


**Objective:** #3

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<td>10:45 AM</td>
<td>ACTIVITY: IDENTIFY 5 BASIC ELEMENTS WORKSHEET</td>
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<td>#3 C.L. ACTIVITY WORKSHEET</td>
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<td></td>
<td>PAGE 65 IN YOUR NOTEBOOK. THE 5 ELEMENTS ARE:</td>
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<tr>
<td>11:10 AM</td>
<td>DIRECTIONS:</td>
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<tr>
<td></td>
<td>1. DESIGNATE GROUPS OF THREE EACH.</td>
<td>(X)</td>
<td>SMALL GROUP</td>
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<td>2. DISTRIBUTE WORKSHEETS.</td>
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<td>3. READ DIRECTIONS ON WORKSHEET.</td>
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<td>DISCUSS ANSWERS ORALLY.</td>
<td>ASK</td>
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COOPERATIVE LEARNING ACTIVITY

DIRECTIONS: In each of the cooperative activities described below, identify the following:

A) Positive Interdependence
B) Face-to-face Interaction
C) Individual Accountability
D) Interpersonal and Small Group Skills
E) Group Processing

1. Have students in groups of three drill each other on the facts they need to know until they are certain all three know and can remember the facts. Give bonus points on the test if all members score above a certain percentage.

A) 
B) 
C) 
D) 
E)

2. Each person reads and studies part of a selection with a partner, practices teaching the section with a new partner (student studying same section from another group), then teaches what he/she has learned to the other members of the group. Each then quizzes the group members until satisfied that everyone knows all parts thoroughly.

A) 
B) 
C) 
D) 
E)

3. Have students compare homework answers discuss any they have not answered similarly, then correct their papers and add the reason they changed an answer. They make certain everyone’s answers agree, then staple the papers together. You grade one paper from each group and give group members that grade.

A) 
B) 
C) 
D) 
E)
**Objective:** 2

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<tr>
<td>10:30 AM</td>
<td>BREAK FOR LUNCH (1 HR 30 MIN)</td>
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**Measurement:**

PARTICIPANTS WILL IDENTIFY IN WRITING THE 5 BASIC ELEMENTS OF COOPERATIVE LEARNING FOUND IN EACH OF THREE CLASSROOM ACTIVITIES.

**Transition:**

NOW THAT YOU ARE FAMILIAR WITH 5 ELEMENTS OF A COOPERATIVE ACTIVITY, YOU'LL BE READY TO BEGIN DESIGNING YOUR OWN ACTIVITIES AFTER WE BREAK FOR LUNCH.
<table>
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<tr>
<th>TIME</th>
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<tbody>
<tr>
<td>1:00 PM</td>
<td><strong>Distribute handout of Johnson &amp; Johnson Best Advice and Display on OH</strong></td>
<td></td>
<td>J&amp;J</td>
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<td></td>
<td><strong>Review 5 components and where they fit in Johnson &amp; Johnson format.</strong></td>
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<td><strong>Directions for designing 4 activities:</strong></td>
<td></td>
<td>OH #9 and Handout #4</td>
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<td></td>
<td>1. Divide participants into groups of 4 each.</td>
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<td>2. Distribute Johnson &amp; Johnson forms, 1 each, to each participant.</td>
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<td>3. Direct each group to design 4 learning activities of their own choice appropriate for freshmen level math courses.</td>
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# Objective

- **Objective:** #4

## Lesson Frame A

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<td>BREAK</td>
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<tr>
<td>2:45 PM</td>
<td>CONTINUE DESIGN ACTIVITY</td>
<td>©X</td>
<td>SMALL GROUP</td>
</tr>
<tr>
<td>3:45 PM</td>
<td>COMPLETE ACTIVITY</td>
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</tbody>
</table>
I DECISIONS:

LESSON: Start with a short lesson, something you feel comfortable with.

GROUP SIZE: Start small, a pair or a threesome (with larger groups more skills are necessary to be successful).

ASSIGNMENT TO GROUPS: You can randomly choose or assign students depending on the group's task. It is your choice.

MATERIALS: Give each student materials or the group can have one set of papers. One group set helps create interdependence among members.

II SET THE LESSON
WHAT IS/ARE:

<table>
<thead>
<tr>
<th>Academic Task:</th>
<th>Criteria for Success</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearly state what you want students to do: make a mural, complete the worksheet, answer the questions</td>
<td>State how they will know they have been successful with the task:</td>
</tr>
<tr>
<td>*Positive Interdependence The groups need to know they have to be concerned with each other's learning. They sink or swim together</td>
<td>90% Fantastic (A)</td>
</tr>
<tr>
<td>Individual*Accountability Each student should know they are responsible for knowing the work--this can be done by testing each one</td>
<td>80% Very Good (B)</td>
</tr>
<tr>
<td>*Expected Behaviors Specify how you want them to behave while they work. Name specific, observable, describable behaviors</td>
<td></td>
</tr>
</tbody>
</table>

III *MONITORING: Start with the teacher as the observer to model how observing should be done.

WILL BE DONE BY: Teacher _ Teacher/Student _

FOCUS WILL BE ON: Whole Class _ Individual Groups _ Individuals _

OBSERVATION SHEET INCLUDES THE BEHAVIORS OF: Start small with just two or three behaviors. They should be positive behaviors you asked them to try, pointing out positive behaviors you noticed.

IV PROCESS/FEEDBACK: Take time to give feedback to your students. Refer back to the behaviors you asked them to try, pointing out positive behaviors you noticed.

*Essential elements of cooperative groups
ADAPTATION

Changing lesson plans include cooperative interaction can be time-consuming at first. Here is a quick lesson plan worksheet which can be used initially to ensure all the critical elements of cooperative learning are incorporated into your lessons. As you use groups more often, this form can be used as a quick self-check.

SUBJECT AREA: ____________________________

I DECISIONS

LESSON: __________________________________

GROUP SIZE: _____________________________

ASSIGNMENT TO GROUPS: __________________

MATERIALS: _______________________________

II SET THE LESSON

<table>
<thead>
<tr>
<th>Academic Task:</th>
<th>Criteria for Success</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Positive Interdependence *Individual Accountability *Expected Behaviors

III *MONITORING

WILL BE DONE BY: Teacher ___ Teacher/Student ___

FOCUS WILL BE ON: Whole Class ___ Individual Groups ___ Individuals ___

OBSERVATION SHEET INCLUDES THE BEHAVIORS OF: ____________________________

IV PROCESS/FEEDBACK: _________________________________________________

*Essential elements of cooperative group
### Objective:

#4

<table>
<thead>
<tr>
<th>TIME</th>
<th>CONTENT/NARRATIVE</th>
<th>METHOD</th>
<th>AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:45 PM</td>
<td>COLLECT 4 ACTIVITIES FROM GROUP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Measurement:**

EACH GROUP OF FOUR PARTICIPANTS WILL DESIGN FOUR COOPERATIVE MATH ACTIVITIES FOLLOWING THE JOHNSON AND JOHNSON FORMAT APPROPRIATE FOR FRESHMAN LEVELS. INSTRUCTOR WILL COLLECT COMPLETED FORMS AND DUPLICATE COPIES FOR ALL.

**Transition:**

THIS HAS BEEN A PRODUCTIVE AFTERNOON. I WOULD LIKE TO DUPLICATE COPIES OF ACTIVITIES SO EVERYONE HAS A SET OF THEIR OWN. I HAVE ONE LAST REQUEST BEFORE WE FINISH. I NEED YOUR FEEDBACK.
**Objective:** #5

<table>
<thead>
<tr>
<th>TIME</th>
<th>CONTENT/NARRATIVE</th>
<th>METHOD</th>
<th>AIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3:45 PM</td>
<td><strong>DISTRIBUTE EVALUATION FORM.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>PARTICIPANTS COMPLETE FORM IN WRITING.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>INSTRUCTOR (OR THE PARTICIPANT) Duplicates activities and punches holes in copies for each participant.</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

[Image of EVAL HANDOUT #6]

[Image of XEROX MACHINE]

[Image of 3 HOLE PUNCH]
COURSE TITLE: COOPERATIVE LEARNING WORKSHOP FOR MATHEMATICS TEACHERS (CL WS)

INSTRUCTOR: SUZANNE SOMERS

COURSE EVALUATION FORM

1. Briefly describe strengths of workshop.

2. Briefly describe weaknesses of workshop.

3. What was the most valuable experience for you in the workshop?
**LESSON FRAME B**

**Course Title:** CL MS  
**Frame Name:** EVALUATION  
**Date:** 5/21/89  
**Frame Number:** 5-2  
**Author:** SOMERS  
**Total Time:** 15-30 MIN  

**Objective:** #5

<table>
<thead>
<tr>
<th>TIME</th>
<th>CONTENT/NARRATIVE</th>
<th>METHOD</th>
<th>AIDS</th>
</tr>
</thead>
</table>
| 4:00 PM  | COLLECT EVALUATIONS.  
DISTRIBUTE COPIES OF ACTIVITIES DESIGNED BY GROUPS.                          |        |      |

**MEASUREMENT:**

PARTICIPANTS EVALUATE THE WORKSHOP IN WRITING. INSTRUCTOR COLLECTS COMPLETED EVALUATIONS.

**TRANSITION:**

THANK YOU FOR ALL YOUR EFFORTS TODAY. I HOPE YOU'LL FEEL READY TO BEGIN IMPLEMENTING COOPERATIVE LEARNING ACTIVITIES IN YOUR CLASSES TOMORROW.
APPENDIX B

Implementation and Evaluation Tools
Learning Partners: Ask the students to turn to a neighbor and ask him/her something about the lesson, to explain a concept you’ve just taught, to explain the assignment, to explain how to do what you’ve just taught, to summarize the three most important points of the discussion, or whatever fits the lesson.

Reading Groups: Students read material together and answer the questions. One person is the Reader, another the Recorder, and the third the Checker (who checks to make certain everyone understands, agrees with, and can explain the answers). They must come up with three possible answers to each question and circle their favorite one. When finished, they sign the paper to certify that they all understand, agree on, and can explain the answers.

Bookends: Before a film, lecture, or a reading, have students summarize together what they already know about the subject and come up with questions they have about it. Afterwards, the trios answer questions, discuss new information, and formulate new questions.

Jigsaw: Each person reads and studies part of a selection with a partner, practices teaching the section with a new partner (student studying same section from another group), then teaches what he or she has learned to the other members of the group. Each then quizzes the group members until satisfied that everyone knows all parts thoroughly.

Drill Partners: Have students drill each other on the facts they need to know until they are certain both partners know and can remember them all. This works for spelling, vocabulary, math, grammar, test review, etc. Give bonus points on the test if all members score above a certain percentage.

Reading Buddies: In lower grades, have students read their stories to each other, getting help with words and discussing content with their partners. In upper grades, have students tell about their books and read their favorite parts to each other.

Worksheet Checkmates: Have two students, each with different jobs, do one worksheet. The Reader reads, then suggests an answer; the Writer either agrees or comes up with another answer. When they both understand and agree on an answer, the Writer can write it.

Homework Checkers: Have students compare homework answers, discuss any they have not answered similarly, then correct their papers and add the reason they changed an answer. They make certain everyone’s answers agree, then staple the papers together. You grade one paper from each group and give group members that grade.

Test Reviewers: Have students prepare each other for a test. They get bonus points if every group member scores above a present level.

# CUMULATIVE INTERACTION FORM

<table>
<thead>
<tr>
<th>DATE:</th>
<th>GROUP</th>
<th>OBSERVER</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>BEHAVIOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>POSITIVE</td>
</tr>
<tr>
<td>EMOTIONS</td>
</tr>
<tr>
<td>SHOWS SOLIDARITY</td>
</tr>
<tr>
<td>SHOWS TENSION RELEASE</td>
</tr>
<tr>
<td>AGREES</td>
</tr>
<tr>
<td>GIVES SUGGESTIONS</td>
</tr>
<tr>
<td>GIVES OPINIONS</td>
</tr>
<tr>
<td>GIVE ORIENTATION</td>
</tr>
<tr>
<td>TASK</td>
</tr>
<tr>
<td>ASKS FOR ORIENTATION</td>
</tr>
<tr>
<td>ASKS FOR OPINIONS</td>
</tr>
<tr>
<td>ASKS FOR SUGGESTIONS</td>
</tr>
<tr>
<td>NEGATIVE</td>
</tr>
<tr>
<td>EMOTIONS</td>
</tr>
<tr>
<td>SHOWS TENSION</td>
</tr>
<tr>
<td>SHOWS ANTAGONISM</td>
</tr>
</tbody>
</table>

**Johnson and Johnson**

**Joining Together**
**OBSERVATION SHEET**

**DIRECTIONS FOR USE:** (A) Put names of group members above each column. (B) Put a tally mark in the appropriate box each time a group member contributes. (C) Make notes on the back when interesting things happen which are not captured by the categories. (D) It is a good idea to collect one (or more) good things that each group member does during the exercise.

<table>
<thead>
<tr>
<th></th>
<th>STUDENT A</th>
<th>STUDENT B</th>
<th>STUDENT C</th>
<th>STUDENT D</th>
<th>STUDENT E</th>
<th>TOTALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. CONTRIBUTES IDEAS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. DESCRIBES FEELINGS</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>3. PARAPHRASES</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>4. EXPRESSES SUPPORT, ACCEPTANCE, AND LIKING</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. ENCOURAGES OTHERS TO CONTRIBUTE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. SUMMARIZES</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. RELIEVES TENSION BY JOKING</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. GIVES DIRECTION TO GROUP'S WORK</td>
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</tr>
</tbody>
</table>

**Totals**

**T历史上：** 1,2; **Trustworthy-Acceptance:** 3,4; **Trustworthy-Reciprocation:** 1,2; **Leadership-Task:** 1,2,6,7; **Leadership-Maintenance:** 3,4,5,8; **Communication:** 1,2,3 (and, technically, all the rest); **Conflict Resolution:** 1,2,3.
Missing
STUDENT EVALUATION FORM

The following analysis of you and your group's effort to complete the assignment is designed to help you analyze your behavior in relationship to others'. The process of planning and working together is complete only when there is "social processing" of the effort upon completion. (Johnson and Johnson, 1988).

Directions: Respond by rating each item on a scale of 1 to 5.
(1 = to a great extent; 5 = to no extent)

1. I was able to learn from the group members, regardless of their experiences and personal characteristics.

| High | 1 | 2 | 3 | 4 | Low | 5 |

2. Each of the group members contributed equally to the completion of the task.

| High | 1 | 2 | 3 | 4 | Low | 5 |

3. Throughout the completion of the task, I was consistently able to recognize and respect the strengths of the group members.

| High | 1 | 2 | 3 | 4 | Low | 5 |

4. I was consistently able to separate the personal worth and the level of competence for each of the members of my group.

| High | 1 | 2 | 3 | 4 | Low | 5 |

5. I contributed significantly to the success of my group.

| High | 1 | 2 | 3 | 4 | Low | 5 |

Please make any comments or recommendations that would be helpful to the instructor in future planning. Use the back side of this sheet.
GLOSSARY
GLOSSARY

Cohesion: Complex of forces which bind members of a group to each other and to the group as a whole.

Communication: The act of giving or receiving messages, information, etc.

Competition: Achievement of one's goal through winning, at the expense of other people achieving the same goal.

Cooperation: Achievement of an individual member's goal is contingent upon other members achieving their goals.

Decision Making: Process of selecting among several alternatives.

Feedback: Message transmitted to indicate some level of understanding and/or agreement to a stimulus or verbal message from another.

Goal: The objective or end result that a group or an individual seeks to achieve.

Group: A collection of person in face-to-face interaction, each person aware of his own membership, each aware of the membership of others, and each getting some satisfaction from participating in the activities taking place.

Individual: A single person function in isolation.

Listening: The selective process of attending to, hearing, understanding, and remembering aural symbols.

Nonverbal Communication: All communication forms other than the written or spoken word which impart meaning to an individual or a group.

Task: An act, or its result, that a small group is required to perform, either by itself or with someone else, to accomplish goals.