Introduction

WHY COOPERATIVE WORK GROUPS?

A Story: Designing an Ecosystem

Ms. Johnson was developing her "ecosystems" curriculum for her science class. As a means of synthesizing the material and concepts at the end of the unit, she developed a project where her students would create their own ecosystem. She decided that a cooperative work group experience would be the most successful and efficient way of implementing this design.

At the beginning of the project, Ms. Johnson gave the following scenario to her class:

"The world is rapidly becoming overpopulated, and adequate living space is becoming increasingly scarce. You do not want to have rain forests cleared for human habitation, because of the negative consequences to the environment. Living under the oceans is not feasible, because the technology does not yet exist for this to occur. Therefore, we are going to determine whether or not humans can create a self-sufficient area on land that is underutilized, and that would not negatively impact the global environment.

"You will create a self-sufficient ecosystem in the desert of the Southwest United States. The civilization you create should address all of the necessities of human life, so as to be self-sufficient without any need for physical contact with the outside world."

Ms. Johnson then provided the students with an actual map of approximately one hundred square miles of uninhabited desert in the American Southwest, ensuring that the selected area did have some farmable land and water available.

As the first step, the class worked as a unit to discuss how to approach their project. They determined that they would break into six different research groups to study material in their area and then report back to the class as a whole. The students decided on the basic direction of each of the individual groups. Ms. Johnson then assigned students to each of the groups, based on her knowledge of the students, and the requirements of the proposed group tasks.

The following is a description of the six groups, significant factors in their organization, and a brief summary of their basic research and work:

Culture: The Arts

The class determined that every civilization had a particular culture, and that their new environment required the same. This group specially included some students with a high multiple intelligence in the spatial, bodily-kinesthetic, and musical areas. Using the Educational Resources page of the general education

Internet site, TEACHERS HELPING TEACHERS,[1] they investigated the cultures of the American Southwest, including Native American, Hispanic, and Western culture. Using this information, they created some original music, art, and drama, integrating the material they developed with their own cultures.

Culture: Everyday Life

Other aspects of everyday culture—besides food and clothing—were integrated into this group's research. This consisted of aspects of everyday life including the life of children, and areas of recreation not covered by the other culture groups. The students used the Internet sites researched by the "Culture: The Arts" group, in addition to literature concerning life in this area over the past few hundred years. The heavy literature component required that this group include students with a high linguistic multiple intelligence.

Geography

The primary responsibility of this group was determining exactly where to construct their "community." The students focused their investigation on the physical features of the land, available water resources, and climatic variations in the region. The group deliberately included students with high logical-mathematical and naturalist multiple intelligences. For data, they closely studied the area, incorporating maps that they located on the Internet. They also incorporated a number of online sites found on the general education site, TEACHERS HELPING TEACHERS.

People of the Region

This group investigated the lifestyles of people who had inhabited this region. They concentrated on how humans adapted to this particular environment, including types of clothing worn, and food grown and consumed. They incorporated material from the general education Internet site cited above, as well as usable material at specialized Internet sites such as DESERT LIFE IN THE AMERICAN SOUTHWEST.

Shelter

These students studied the cultures investigated in the "People of the Region" group, in addition to other unique adaptations humans made to survive in extreme climates, by using a number of the Internet sites incorporated by the other groups. The group specifically included students with a high spatial multiple intelligence, for they analyzed and synthesized the material that they discovered to design buildings and living areas for their "community" that would be efficient and adaptable to an extreme and harsh climate.

Wildlife/Food

This group investigated the multifarious types of animals and plants of the region, to determine which could be used as food sources. Furthermore, they also studied the role played by the various forms of wildlife within the desert ecosystem, so as not to disrupt the ecosystem. The students used numerous Web sites incorporated by the other groups, plus a number of science-related sites located on TEACHERS HELPING

TEACHERS. Students with a high naturalist multiple intelligence were especially included in this group.

The final result of this extended cooperative work group project was a self-sufficient prototype community in the Southwestern United States desert that synthesized the various ideas and information accrued by Ms. Johnson's students throughout their unit on ecosystems.

THE NEW CLASSROOM BATTLE: WHAT TODAY'S BUSINESSES WANT VERSUS TRADITIONAL TEACHING

Although not very "research based," popular sentiment of "life in corporate America today" is demonstrated in a comic strip called Dilbert (©United Feature Syndicate, Inc.). The feature regularly includes a number of employees (engineers) in cubicles, working on tasks. A central theme of the comic strip involves the individuals coming together and working as a unit on a common project—in other words, they are required to function as a cooperative work group.

Individuals working together in groups on long-term projects are fundamental in today's work society. The situation is also diametrically opposite to the way students are usually taught. The primary mode of instruction in K-12 educational institutions around the country is still overwhelmingly frontal teaching by the instructor (or through a lesson presented in a passive text book), followed by individual practice of the curricular material.

Whereas these teaching methodologies may prepare the students with the specialized curricular knowledge necessary to succeed on standardized testing, unfortunately they do not ready students for successful employment in the twenty-first century. No longer is the individual seen as a "cog in the system," as portrayed in the Scientific Management school of thought.[2]

Today's businesses want workers who can function both independently and within groups, who can successfully and productively collaborate with coworkers on projects, and who can view themselves holistically within the overall organization (see Carnevale, 1991, 1996, 2002; Carnevale, Gainer, & Meltzer, 1990; Carnevale & Porro, 1994). In addition, in the past decade there has been a growing trend toward worker participation in management. Such units within the business world are commonly referred to as self-managing teams, self-directed work groups, quality circles, autonomous work groups, or cross-functional teams, and reflect this move toward collaborative-styles of management (Jacobs & James, 1994; Kozlowski, 1995).

Businesses have become increasingly aware of the inability of workers to function in this type of cooperative environment. In turn, business schools have been pressured to emphasize in their programs the communication processes necessary for success in this type of corporate setting, and to provide their students with experiences in which they can practice these critical skills (Wayne et al., 1992; see also Barker, Gilbreath, & Stone, 1998). It follows that a logical place to start teaching these basic interpersonal work skills is in the K-12 educational system.

Unfortunately, cooperative working skills are not included on standardized tests, and are not emphasized, or even mentioned, in local or state educational standards. In today's political climate, where the value and success of the educational process is directly linked to publishable test scores, cooperative work experiences are either

de-emphasized or ignored. This creates a learning environment that is diametrically opposite to that which is required in the work world.

It is critical for teachers to ensure that their students are prepared for the challenges of the twenty-first century workplace. The emphasis on standardized testing results is not expected to diminish any time soon—especially with the tremendous emphasis on test results espoused by contemporary politicians. But it is the concept of cooperative work groups that addresses the basic educational need of the students as they prepare for their entrance into the work force.

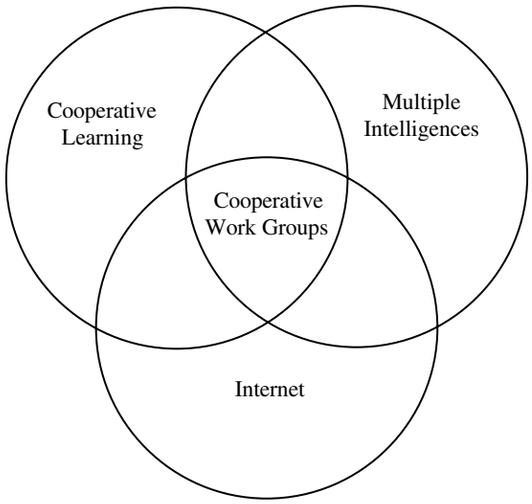
COMPONENTS OF THE COOPERATIVE WORK GROUP CONCEPT

The cooperative work group concept modernizes the standard cooperative learning methodology for today's business environment. It involves the integration of three basic areas of education in an attempt to holistically develop the student to be an effective contributing member of the twenty-first century work force. The three basic components of this educational concept are

- *Cooperative Learning:* How the learning environment is constructed and how students work with others
- *The Multiple Intelligences* (brain research): How students can be assisted in reaching their full individual potential
- *The Internet:* How the information age can be integrated into the curriculum

These three components are intertwined within the cooperative work group concept (see Figure 1.1). Up to now, all three have been regularly taught or implemented in the school as separate entities, with minimal connectivity. In today's working place, however, all three are critical if our students are to be successful. A brief description of these three core components of the cooperative work group concept follows:

Figure 1.1 The Three Components of the Cooperative Work Group Concept



Cooperative Learning

This teaching methodology in its more advanced forms (Sharan, Shachar, & Levine, 1999; Sharan & Sharan, 1992) exemplifies the cooperative working environments found in today's business workplace better than any current teaching methodology (see Joyce, Calhoun, & Hopkins, 2002, and Joyce & Weil, 2000, for descriptions of the major models of teaching currently in use). Through the use of cooperative learning techniques, students learn how to accomplish curricular tasks, how to acquire high-level information and material in a positive, collaborative, interactive environment.

The Multiple Intelligences

Brain-based research—how students best learn—has become one of the most promoted topics in today's educational world (see Checkley, 1997). One of the most popular and useful manifestations of this research is the concept of the multiple intelligences (Gardner, 1999, 1993). The multiple intelligences examine how students best learn—how their brains efficiently acquire curricular material. By studying multiple intelligences, teachers can adapt their learning environment to make the learning process more efficient for each individual, thereby increasing a student's knowledge in a shorter period of time. If students with particular learning styles are matched to the tasks of the group, the requirements of individual work groups can be met better and more efficiently.

The Internet

The world is in a technological age. Today one needs to know not only how to operate this technology, but how to integrate its vast resources directly into one's work environment. In other words, one must acquire a degree of literacy in the digital world (Glister, 1997). Information and curricular material that once took hours, days, or weeks to acquire is now accessible electronically within seconds or minutes. In the information age it is incumbent upon both teachers and students to know how to locate and access that material quickly and efficiently and how to integrate it directly into their work.

COOPERATIVE WORK GROUPS

The cooperative work group concept integrates cooperative learning, the multiple intelligence, and the Internet into a learning environment that

- Prepares the students for the twenty-first century workplace
- Emphasizes the students' best individual learning style
- Integrates the newest technology into the students' work

John Dewey (1933, 1959) was the first to stress the importance of active student participation in learning experiences—an idea that became a central component of his philosophy. Ralph Tyler, elaborating on this concept when writing his curricular framework, stated, "Learning takes place through the active behavior of the student; it is what he/she does that is learned, not what the teacher does" (Tyler, 1949, p. 63). This is the core philosophy of the developers of cooperative learning.

Cooperative learning, although developed in the 1950s by Herbert Thelen (1954), has been widely implemented and researched only since the 1970s. In this methodology, students' active learning time in a cooperative learning unit or lesson exceeds that of most "traditional" methods of teaching (Slavin, 1995)—an important variable in student educational success (Fenstermacher, 1985; Harnischfeger & Wiley, 1976, 1985). Cooperative learning's successes have been well documented, showing how this method holds significant potential for improving student performance, peer group and interracial relations, and self-esteem (Johnson & Johnson, 1986, 1999; Sharan, 1994; Sharan et al., 1984; Slavin, 1995).

The methodology has also been shown to be extremely effective in teaching students higher-level skills (Joyce, Showers, & Rolheiser-Bennett, 1987). This is especially true when one wants students to think divergently, work together to generate and test hypotheses, reason causally, master complex bodies of information, and analyze social situations, and to develop flexible social skills—all crucial abilities for success in today's business climate (Joyce, 1985; Joyce & Calhoun, 1996, 1998).

It is important to note that the cooperative work group concept is *not* a rehashing of the cooperative learning emphasized throughout the educational world in the 1980s and 1990s. Rather, it draws important components from that teaching methodology and builds upon them in order to construct a new learning environment for today's students. Unlike most traditional cooperative learning lessons presently used (see Johnson & Johnson, 1986, 1999; Kagan, 1989; Slavin, 1995; Slavin, Madden, & Stevens, 1989), cooperative work group projects are long-term events. The overall learning experience will normally last anywhere from a few days to a few weeks—very similar to real life in the modern business world, where most projects tend to be conducted on a long-term basis.

The cooperative work group differs from the normative cooperative learning group in that it is not just a group of students arbitrarily placed together for a specific limited lesson. Rather, a cooperative work group takes on a "culture" of its own that allows it to work successfully and productively over an extended period of time, for example, teacher long-term committees or study groups. Over a period of time, the group begins to function as a particular entity, where the work dynamics and relationships become "standardized." The members act, communicate, and work together in certain ways, many of which eventually become predictable. As these mores become established, a lasting group becomes productive in its own right. Long-term student cooperative work groups evolve in much the same fashion.

An extensive amount of research into the function of groups was conducted in the 1970s and 1980s in the business community (see Hackman, 2002, and Hackman, Lawler, & Porter, 1983). Much of this literature is directly pertinent to features of the cooperative work group process.

For instance, Hare (1976) concluded that there are five basic characteristics of cooperative work groups that distinguish them from typical cooperative learning groups:

- The members of the group are in *interaction* with one another.
- They share a common *goal.*
- They share a set of *norms.*
- They develop a set of *roles.*
- They develop a network of interpersonal attraction, which serves to differentiate them from other groups. (p. 5)

Hare's basic assumptions are relevant to cooperative work group experiences today. These five important characteristics, when taken together, create a productive, functioning, long-term working group. The following section looks at each characteristic individually:

The members of the group are in interaction with one another. The members of a cooperative work group interact on a continuous basis, discussing options and ideas, planning for future actions, and sharing material and experiences together as a unit. Cooperative work group members are not simply students sitting together as individuals working on an assignment. Nor are they students who are tutoring one another in a way where information flows in one direction, from one student to another.

They share a common goal. In a well-functioning cooperative work group, the members share common goals. They are working together on a project, or on an aspect of it, the performance tasks of which have been agreed upon by all the members. For the most part, they share the same motivation—extrinsic or intrinsic—which assists them in reaching their goals.

They share a set of norms. Cooperative work group members share a set of norms. As the group begins to function on a long-term basis, certain behaviors—working and communicating—are accepted or rejected. Norms are established. These norms may be explicitly stated or, more often, implicitly implied. These norms change from group to group and project to project, depending on the individual composition and dynamics of that particular unit.

They develop a set of roles. Cooperative work groups develop naturally a set of roles within the group. This is in direct opposition to the traditional concept of distributed leadership and roles within cooperative learning groups (a topic discussed in Chapter 4). Group leadership naturally develops, and the members begin to fill certain "niches" in the group's dynamics.

They develop a network of interpersonal attraction, which serves to differentiate them from other groups. Probably the most important aspect of cooperative work groups is that over time, the members develop a network of interpersonal attraction that serves to differentiate them from other groups. The group begins to assume a "personality" of its own, one that is different from every other group that is working on the same project, or that works together at other times. The individual members become "seasonings," where each individual's unique personal characteristics (seasoning) when "mixed" together with those of the others in the group creates a special, highly unique "entree" that is different from all others. In a well-functioning cooperative work group, there is a noticeable change in the group dynamics of a work session whenever a member is missing—regardless of who that member might be.

All successful cooperative work groups have these five characteristics. The degree to which they are fully developed and manifested within the confines of the classroom curricula is determined by the special skills and planning of the particular teacher.

Cooperative work groups are designed to function productively on long-term projects—those covering days or even weeks. Consequently, the teacher needs to be considerably more attentive to the composition of the groups—much more so than

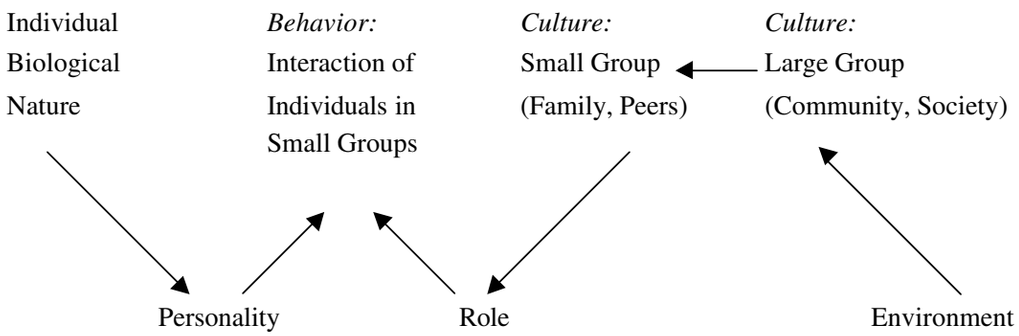
for a typical, short-term, one-day cooperative learning project. As in the adult business world, the individuals in the groups need to be able to work together in reaching the project goals.

Hare (1976) pointed out that in order for a group to survive over time as a functioning, useful unit, it must meet four basic needs:

- The members must share a common identity and have a commitment to the values of the group.
- They must have or be able to generate the skills and resources necessary to reach the group goals.
- They must have rules that allow them to coordinate their activity and enough feeling of solidarity to stay together to complete the task.
- They must provide enough leadership and control to be effective in reaching their goal. (p. 17)

Inherent in these basic survival needs are various elements of social interaction. The interaction of the personalities of the group members, in conjunction with the environment in which the group operates, has a direct relationship to the way the group functions as a unit. Hare put these various factors together in graphic form:

Figure 1.2 Personality and Environmental Influences on Groups



SOURCE: Hare, 1976, p. 4

A large amount of research in the business world has also been conducted concerning the various roles that individuals take when they are operating in a small group. Beebe and Masterson (1999) reported that depending on one's personality, and on the requirements of the group at that specific time, there are various roles that people naturally assume within the group. They published a comprehensive list of the possible roles that manifest themselves during the course of the group's work. Beebe and Masterson categorized them into three sections (see Figure 1.3. For a detailed explanation of the functions of each role, see Beebe & Masterson, 1999).

The group process is extremely complicated, especially when dealing with long-term projects such as those promoted in the cooperative work group concept.

Figure 1.3 Roles in Small Groups

	Group Building and	
Group Task Roles	***Maintenance Roles***	***Individual Roles***
Initiator-Contributor	Encourager	Aggressor
Information-seeker	Harmonizer	Blocker
Opinion-seeker	Compromiser	Recognition-seeker
Information-giver	Gatekeeper & expediter	Self-confessor
Opinion-giver	Standard-setter	Playboy
Elaborator	Group observer	Dominator
Coordinator	Follower	Help-seeker
Orientor		Special interest pleader
Evaluator-critic		
Energizer		
Procedural technician		
Recorder		

SOURCE: Beebe and Masterson, 1982, pp. 59–61

Not every individual can, or does, fit every role. There are other outside variables that determine not only the roles one takes in a group, but how one operates within that role, at that particular moment in time.

Hare (1976) wrote that small-group research in the business community most often reports on the existence of six major areas and their factors that influence the group process:

- *Personality:* Intelligence, adjustment (anxiety), extroversion-introversion, dominance, masculinity-femininity, radicalism-conservatism, interpersonal sensitivity. (pp. 181–199)

- *Social Characteristics:* Age, sex, physical attractiveness, physical handicaps, social class, ethnicity, friendship group, birth order. (pp. 200–213)

- *Group Size:* Optimum number is five (strict deadlocks can be avoided and members can shift roles quickly); problems with groups of three, even-number groups, and larger groups. (pp. 214–231)

- *Task:* Kind of task (goal), criteria for task completion, rules (or roles) that must be followed, method of imposing the rules, amount of stress on the members, consequences of failure or success. (pp. 232–259)

- *Communication Network:* Seating patterns that lead to communication patterns that subsequently enhance or hinder each individual's communication contribution. (pp. 260–277)

- *Leadership:* Depends on the needs of the group and the personalities of the members; potential leaders usually receive higher ratings than others on *traits* such as intelligence, enthusiasm, dominance, self-confidence, and social participation. (pp. 278–303)

Hare maintained that the greatest problems facing groups were those dealing with the balance between group and individual concerns. Once these are all adequately

dealt with (and no extenuating circumstances arise in any of the factors listed above), one usually develops an effective group.

Much of the previously cited research from the business community is directly applicable to the cooperative work group concept in the classroom. The development of the group as a specific, functioning unit, and the role of individuals—their personalities, abilities, and characteristics—directly influence the success of the cooperative work group experience. How a teacher deals with, and plans for, these student and environmental variables is discussed in the following chapters.

THE SCOPE OF THIS BOOK

This book is designed to assist current and future teachers with the planning and implementation of successful cooperative work group experiences from kindergarten through twelfth grade, in all core subjects (Language Arts/English, History/Social Studies, Science, and Mathematics). In order to attain this goal, the material has been organized in this fashion:

Part I: The Way Students Accomplish Tasks deals with the characteristics of cooperative learning, particularly group investigation, that are integrated into the cooperative work group concept. The chapters begin with a discussion of how cooperative work groups use an advanced, contemporary form of cooperative learning. This latest classroom research is then applied in a scenario of a teacher dealing with the most important components of the methodology: group formation, the leadership variable, acquiring curricular materials, and the teacher's role—promoting critical thinking implementing good classroom management and assessment techniques.

Part II: The Way Students Learn Effectively and Efficiently discusses the concept of the multiple intelligences and how to implement them in the classroom. The chapters begin with a discussion of this current form of brain research. The discussion then turns to how, in general terms, use of the multiple intelligences can be beneficial to teachers. The chapters then become more specific by actually planning the use of the multiple intelligences in one's present curriculum, to reviewing how to integrate them into cooperative work group experiences, plus how to use this new, modern philosophy in solving student learning problems.

Part III: The Internet as the Ultimate Teacher Resource Center starts with a discussion of the concept of digital literacy, which entails the need to become literate and comfortable in today's technological, information-based world. The chapters discuss the societal pressures that teachers address when implementing technology within their curricula in an environment with limited educational funding. The chapters conclude by reviewing the practical, easy, and efficient ways a teacher may locate virtually any curricular material on the Internet, and integrate it into the cooperative work group experience, even when there is limited Internet access within the school environment.

Part IV: Some Practical Examples of Cooperative Work Groups in Action contains a number of lessons created by classroom teachers that exemplify the material and concepts presented in this book. These lessons cover all four core subject areas and grade levels, and are meant to demonstrate how to pattern one's own planning and initial use of the cooperative work group concept.

The book ends with a number of Resources and References to further help the present or future teacher in creating and implementing successful cooperative work group experiences within the present classroom curricula.

NOTES

1. All Internet sites within the text (unless they are a direct quote from an online source) are represented in capital letters, with their URLs listed in Resource A. This saves the text from being cluttered with the long lists of letters and numbers common to Internet addresses.

2. See Nelson and Watras, 1981, for a review of the scientific movement in education in the early twentieth century and its origins in the scientific management and industrial efficiency theories of Frederich Taylor.