

# **DESIGNING GROUPWORK**

Strategies for the Heterogeneous Classroom

SECOND EDITION

ELIZABETH G. COHEN

Foreword by John I. Goodlad



Teachers College, Columbia University  
New York and London

# 5 Planning Groupwork in Stages

Your planning process starts with a fundamental decision: How will students work together? It is this initial decision that determines the nature of the training program for cooperative skills, the second stage of planning described in Chapter 4. Cooperative training appears first only because it is the first experience of groupwork for the students.

In the third stage of planning, you create or adapt the tasks your groups will perform. In the fourth stage, you must lay the groundwork for action with great care. How are the groups to be composed? What instructions and materials must you prepare in advance? How will you physically arrange the classroom? How and when will you assign students to groups? In the fifth and final stage of planning, you decide how you will evaluate student performance.

Most of your work is completed before the students start their assignments. If your design is a successful one, you have a ready-made formula for next year's class as well as a basic format that can be repeated with different tasks for this year's class. By developing one of these designs a year, you can, before long, assemble a fine array of successful curriculum experiences as part of your repertoire.

## PATTERNS FOR WORKING TOGETHER

How students work together depends on your objective for assigning groupwork and on the kind of interaction you want to hear. First, decide whether your objective is relatively routine learning or the learning of concepts, involving higher order

thinking skills and/or creative problem solving. By routine objectives, I mean solving problems where there is a clear right answer or a standard set of procedures: recalling facts, understanding the assigned reading or your own lecture, reviewing for a test, applying an algorithm in mathematics, repeating a classical scientific experiment, drilling in spelling or vocabulary, or mastering map skills in social studies. Today, many teachers are using cooperative learning for such objectives.

In contrast, conceptual objectives include: learning for understanding, grasping an abstract idea in such a way that the student can recognize and work with the concept in a variety of settings, taking multiple perspectives on a problem, learning to communicate abstract ideas orally and in writing, creating a dramatic or artistic representation of a set of ideas, developing higher order thinking skills, developing an hypothesis, designing an experiment, investigating a topic in the library, and inventing or creating a solution to a problem that has no one right answer.

Second, decide on the type of interaction you want to see and hear when you listen in on groups. When groups are working on more routine tasks, you probably want to hear students asking questions and helping each other with careful and patient explanations. You want to see students showing each other how to do things or drilling each other in preparation for a quiz. In many cases, your hope is that the stronger students will be helping the weaker students so that they will receive attention when you cannot reach everyone who needs assistance.

Desired interaction in groups working on conceptual objectives does not consist of stronger students assisting weaker students. Instead, you want to hear an exchange in which people are stimulating each other with ideas and in which each person's contribution becomes input for any other member of the group. In many cases, you also hope to hear higher level discourse where members articulate their strategies, deductions, and general reasoning. There should be a playful quality to the interchange in which group members are creating physical models, pointing out patterns, and using their imaginations. They are willing to risk "far out" hypotheses and suggestions in order to

stimulate the thinking of others. Participants are not overly constrained by trying to find the right answer or to say what the teacher had in mind.

Once you have decided on your objectives and the kind of interactions you want to hear and see, you already have set the stage for the way your students will work together. In the case of more routine tasks, collaborative seatwork is a common pattern: Students are given an assignment that they might ordinarily do as individual seatwork, but are told to work together and help each other. This design will work *only if* students are truly motivated to assist each other and are able to give high quality explanations. Failure to meet these conditions will leave poor achievers without the help they need to complete the task (Webb, 1991). Collaborative seatwork is an example of what I call a *limited exchange model of working together*. The major need for interaction lies in supplying information on how to proceed and information on content; and the information is likely to flow from better students to weaker students.

Turn-taking is another example of limited interaction that is suitable for routine tasks. Partners may take turns in drilling each other on spelling and vocabulary. Each group member may take turns in saying what they think is the correct answer and giving reasons. Students may even take turns playing the role of the teacher and summarizing the main points of the teacher's lesson while other students play the role of the learning listener whose job it is to ask probing questions and encourage the leader to explain better. When the measure of success is how well students retain information on a test, this kind of structured oral discussion has been found to be markedly superior to simple discussion (Yager, Johnson, & Johnson, 1985).

In the case of less routine, more conceptual objectives, the pattern of working together should be based on an *equal exchange model*. To create equal exchange you will need a true *group task* where no one person could easily do the task alone. Members will find it necessary to exchange ideas freely in order to achieve the goals set by the teacher. If one person can do the task alone, then there is no motivation for a free exchange of ideas, but the only issue is whether the person who knows how to do the job will help those who don't. To achieve equal ex-

change you will also want to avoid dividing the labor among participants too sharply because if everyone has their own job to do, there is no need to talk and exchange ideas. The problem given to the group for this kind of objective is typically rather uncertain, requiring the group to create a solution.

To maintain an equal exchange, you will want to encourage as much talk among the members of the group as possible. Research has shown that when there is a group task and a problem with an uncertain solution, the success of the group depends on the amount of talking and working together (Cohen, Lotan, & Leechor, 1989). Thus you want to select patterns of working together that will not constrain the amount of interaction.

In a review of research on what makes small groups productive, I came to the conclusion that improvement in measures of learning depends on matching the pattern of working together with the desired learning outcome (Cohen, 1992). For relatively lower level outcomes, the limited exchange model, with its focus on acquiring information and correct answers, is adequate and often superior. For higher order thinking skills, the interaction must be more elaborated and less constrained. Nystrand, Gamoran, and Heck (1991) make a similar distinction between groupwork tasks that are only collaborative seatwork and tasks that permit the students to define their problem and to produce knowledge on their own. On a test of understanding of literature that included conceptual questions, they found that ninth-grade classes spending more time in cooperative groups that demanded production of knowledge scored significantly higher on the test than classes spending less time in such groups. In contrast, collaborative seatwork, the most common pattern, was distinctly unhelpful in improving students' ability to deal with conceptual questions.

### Individual and Group Accountability

Regardless of which pattern of working together you choose, the problem of accountability is central and must be solved. What are you going to do to make people relate to each other as if they were members of the same group? It is not enough to assign a single task to a group. Even though everyone

has the same goal, some people will sit back and let others do the work—what has been called the “free rider” problem. If you try to solve this problem by giving everyone an individual assignment and telling them that they should work together and help each other, it is very likely that the group will break down into individuals doing their seatwork. Another common way to solve this problem is to give each person a part of the task, telling the group that they cannot achieve the group goal unless everyone does his or her part. Although this solution has the advantage of making sure that everyone contributes to the group goal, it has the disadvantage of providing no motivation for people to help each other and not much basis for free and unconstrained interaction.

The solution to this dilemma is the necessity for both *individual* and *group* accountability. My review of the research indicates that the best results are achieved when the design for groupwork includes both these features (Cohen, 1992). Individuals should be responsible for some kind of individual product based on their participation in the group. This individual product might be created during the time the group meets together, or it can take the form of individual performance on a test based on the academic content of the group activity, or it can be homework based on the group activity. In addition to the individual product, the group must somehow be held accountable for its collective activity. One way to do this is to require the group to turn out a product of its exchange, such as a presentation to the class, the creation of a physical model, the results of an experiment, or a group report.

Slavin (1983) advocates a different method of group accountability: competitive group rewards. After reviewing 41 studies of cooperative learning that contrasted cooperative treatments of various types with traditional, individualistic learning, he came to the following conclusion: Achievement is enhanced by cooperative learning when cooperating pupils are rewarded as a group, while each pupil is individually accountable for his or her learning. In the most widely disseminated of the various models of cooperative learning developed by Slavin and his colleagues—a technique referred to as the STAD (Student Teams–Achievement Division) procedures—individuals

take a test on their own learning and receive individual grades. For the purpose of public recognition, a group score or team score is awarded that is a composite of how well each individual has done relative to his or her own past performance. Certificates of award are handed to the team with the highest score, or the winning score is published in the class newspaper, or posted on a bulletin board. Slavin's (1983) conceptualization of how cooperation leads to achievement emphasizes individual accountability as strongly as group rewards. He states: “Learning is enhanced by provision of group rewards if and only if group members are individually accountable to the group for their own learning” (p. 59).

The effectiveness of group rewards does not mean that it is impossible to hold individuals accountable or to motivate them to participate without such rewards. Group rewards are more important for the kinds of collective or collaborative seatwork tasks that I have described as examples of limited interaction, where it is necessary to motivate those who could do the task by themselves to interact and to assist those who are having difficulty. Group rewards are unnecessary for achievement when using the equal exchange model, where students are motivated to complete a challenging and interesting group task that requires everyone's contribution for a good outcome. Students care about making a strong presentation to the class. They don't want to look foolish and unprepared. Several studies have documented major conceptual achievement gains as a result of motivation by intrinsically interesting and challenging group tasks. To create individual accountability, individual reports were required or individuals were responsible for some portion of the final product (Sharan et al., 1984; Cohen, 1991).

### CREATING THE TASK

Clearly the choice of task depends on what you want the students to learn. If you are teaching social studies and want the students to experience democracy in action, then you need tasks that require the group to arrive at a collective decision after proper deliberation. If, in contrast, you want the students to un-

derstand the relationship of area to perimeter, then the tasks should allow students to discover the nature of this relationship for different shapes. If the goal is more social, such as the reduction of sex stereotyping in the classroom, then you will want to select an engaging task, such as making a videotape that will allow the group to experience a highly rewarding task through cooperation.

Tasks for the limited exchange model have more in common with ordinary classroom assignments than with tasks for the equal exchange model. When objectives are conceptual rather than routine, you will want to find or create a rich multiple ability task: a task with a wider range of intellectual abilities than conventional school tasks. A multiple ability task

- Has more than one answer or more than one way to solve the problem
- Is intrinsically interesting and rewarding
- Allows different students to make different contributions
- Uses multimedia
- Involves sight, sound, and touch
- Requires a variety of skills and behaviors
- Also requires reading and writing
- Is challenging.

I will provide more information on the concept of multiple abilities in the discussion of treatments for status problems (see Chapter 8). A task does not work well for the equal exchange model if it

- Has a single right answer
- Can be done more quickly and efficiently by one person than by a group
- Is too low level
- Involves simple memorization or routine learning.

With younger students, the group task, along with a brief orientation and wrap-up, may be sufficient to accomplish your instructional objective. For example, students can learn about map coordinates by locating where each of the members of the

group lives using the coordinates on a local map. With older students, the curriculum bears a much heavier load of background information and prerequisite intellectual skills, so that the group task cannot carry the major burden of instruction. Instead, the group activity is used in conjunction with textbooks, large group discussion, slide lectures, teacher demonstrations, and skillbuilding exercises.

The groupwork can be a culminating activity that allows students to synthesize and apply what they have learned in exciting ways. Alternatively, groupwork can be used to teach central concepts that are difficult to understand through reading, lecture, or discussion alone. For example, the concept of a system is both central and highly abstract in teaching life sciences. Students can discover the difference between a collection of objects and a system by taking apart and putting together a flashlight, by connecting animals and plants to form a food chain, or by creating a mechanism out of a pile of castoff objects. When older students have difficulty in reading textbooks, groupwork in an introductory phase can help the students learn to use the new vocabulary and to grasp the central concepts through manipulating objects and discussion. Then reading the textbook becomes much less difficult because one is not struggling with new vocabulary and strange concepts along with routine decoding.

If the conceptual objective is demanding, then no single group assignment will probably be sufficient for the students to gain a fundamental grasp of the idea. For many years, the staff of the Program for Complex Instruction has experienced success with the use of multiple tasks in simultaneous operation in the classroom. The tasks all reflect a central "big idea," but each task represents the concept with different materials and a different kind of product. For example, in a seventh-grade social studies unit on the Crusades developed by the Program, the central concept concerns ways in which historians learn about early historical periods. Different groups of students study castle floor plans and pictures of ruins, listen to recordings of Crusader songs, analyze the text of a speech by Pope Urban, and examine pictures of half-human infidels in the *Crusaders' Handbook*. Students spend several days on this project, so they experience each of the media: text, music, and art/architecture. Indi-

viduals write reports of their answers to the questions the group has discussed.

Each group presents products that require a variety of intellectual abilities. Students create their own version of a Crusader castle and show how it can be defended, write a song about current events that echoes the purpose of the music of the Crusades, and perform a skit illustrating how the *Crusaders' Handbook* was used to recruit naive villagers. As students present these products, the teacher stimulates a general discussion on the different sources used by historians.

### PREPARING THE SITUATION

Groupwork requires careful planning in advance. An orientation session focuses the students on the major concepts underlying the activities and prepares them for the challenges of working together. Specific instructions can be written on activity cards and given to each group. Before students can begin groupwork, you must decide on the size of the groups and on who will be assigned to each particular group, as well as on the physical layout of the groups in your classroom. Unless you have thought everything through in advance, you will rapidly find yourself trying to be in six places at once, straightening out the problems your lack of planning has caused. Finally, it is necessary to plan for a wrap-up that encourages students to link their experiences in groups with your instructional objectives.

#### Planning an Orientation

In a general orientation session, you might decide to introduce the central concepts with a slide lecture, with a demonstration of scientific phenomena, with a movie accompanied by a discussion, or with a teacher-directed activity that serves as a warm-up. If the students need to develop considerable substantive knowledge before they can carry out the group task, it may be wise to develop a separate lesson on these materials the day before the groupwork.

The orientation can also be used to remind students of co-

operative norms and roles that will be of particular importance for these activities. Do not include elaborate preparation for interpersonal and role skills in the orientation. The most common mistake is to try to place too great a burden on the orientation, often making it too lengthy, without analysis of which components can be done in advance and which components can be left to the written instructions or to student discovery. Remember that an orientation is only that; be careful not to preteach activities.

Orientations have still other purposes. If you have created a rich multiple ability task, this is the time to implement a status treatment (see Chapter 8) by discussing the multiple abilities required by the activities. Orientations can also motivate students through building connections to current events or to their personal concerns.

#### Written Instructions

Much of the burden of explaining what students are supposed to do can be placed on written instructions in the form of activity cards for all but the youngest children. (Written instructions work exceedingly well for second graders.) Being able to refer to written instructions, after hearing the main ideas in your orientation, allows the group to figure out what to do for themselves.

Written instructions must be clear and sufficiently detailed for the group to proceed without outside assistance. Some of the problems can be left to the group to solve. By refusing to give a quick answer to requests for help from the group and by encouraging them to solve some of the problems, you can help students learn that they have the capacity to deal with uncertainty for themselves.

The most common error in writing instructions is to provide too much detail, as if teachers were instructing an individual on how to carry out a technical task step by step. This approach, designed to provide as much certainty as possible, has a deadening effect on group discussion—there is nothing left to discuss. Also, needless confusion comes from adding too many words and alternative ways of explaining things. If you want the group

to use some trial and error and to develop some solutions for themselves, tell them to develop their own ways of solving selected problems. Even the youngest groups are quite capable of rising to that challenge. You want to pose questions for students that will stimulate them to discuss, to experiment, and to discover. Don't be afraid to use big, interesting words; as long as someone in the group can read them and as long as someone knows what they mean (or can look them up), the group can function very well. My favorite example of instructions with just the right level of productive uncertainty is taken from the curriculum, *Finding Out/Descubrimiento* (De Avila & Duncan, 1980), described in some detail in Chapter 10. One of the activity cards accompanies an inflatable model of a stegosaurus, a string, and a metric ruler. It says: "Measure the waist of the dinosaur." The young students are left to imagine where the waist of the beast might be and to discover that the only way to measure is to put a string around the "waist" and hold it up to the ruler.

In working with older students who can handle more written information, curriculum units for complex instruction often have a resource card in addition to the activity card. For example, in a unit on the visual system, students are instructed to build a better eye that will have superior capacities to that of the human eye. They are to prepare a presentation to a potential developer of this eye, describing its advantages and special features. On the resource card is information about the eye of animals and humans that may prove useful. The resource card, however, does not contain the answer to questions posed on the activity card. Otherwise the resource card will remove all the productive uncertainty from the task.

Other kinds of uncertainty are unproductive for the learners. Suppose that you have not made clear that you expect the group to prepare a presentation for the class. This lack of clarity in your instructions will lead to a serious misfiring of your plans. You can avoid many of these errors by pretesting your instructions on a fellow teacher, an aide, or a parent volunteer. If the group is to make a presentation, they will need to know the time allotted, the number of members participating, and permissible or suggested forms of presentation. The answer to these questions can become standardized for your class, so that you do not

have to repeat the information for every groupwork assignment.

Students must be strenuously encouraged to read the instructions and must not be allowed to plunge into the task without knowing what they are doing. This is especially likely when there are fascinating materials to observe and manipulate. Supply one or at most two sets of instructions; if there is one for everyone, students will try to read silently and there will be no discussion.

### Size of Groups

Groups larger than five present problems for participation in interaction. For group discussion, I have always found that four or five is an optimal size. As the group gets larger there is more of a chance that one or more members will be left out of the interaction almost entirely.

The major argument in favor of larger groups is the need for more people for a long-term project; the larger group divides into task forces to accomplish subgoals. The challenge in this design is for the committee-of-the-whole to develop consensus on what the subtasks will be and on who will serve in the various subgroups. The teacher may have to check on the process of these large decision-making groups to ensure that everyone has had their say and has a feeling of ownership over the final decision. Remember, as the group gets larger, arranging times and places for group meetings and activities becomes more and more difficult.

A group of three has some special problems. There is a strong tendency for two persons to form a coalition, leaving the third feeling isolated and left out. For certain tasks such as drill with flash cards for spelling, a pair of students is an ideal group size. The limitation of pairs is that if the task is a challenging one requiring academic and other creative abilities, there is a strong chance that some pairs will not have adequate resources to complete the task.

### Composing Groups

Groups should be mixed as to academic achievement, sex, and any other status characteristic such as race or ethnicity. This



heterogeneity can be achieved by composing groups and assigning students or by allowing students to choose groups according to their interests in special topics that the groups will be studying. The mix in any single group does not have to represent the proportion of minority students or gender balance in your class. Mechanically insuring that each group has equal numbers of males and females or one or two students of color has the disadvantage of making the basis of your decision clear to the students. They will tend to focus on their fellow members as representatives of their race or gender and are much less likely to respond to them as individual persons (Miller & Harrington, 1990). As you continue to use groupwork and re-compose groups, students will have the chance to work with everyone else in the class at least once, so the occasional group that is all female or all male will not do any harm. More important is the avoidance of groups that are homogeneously low achieving and thus lack resources for your assignment.

Allowing friends to choose each other for work partners is not a good idea. Students should think of groupwork in terms of work rather than play, and there is clearly a tendency for friends to play, rather than work, when assigned to the same group. Furthermore, some students who are social isolates will not be selected or will actively be rejected for group membership. Teachers sometimes feel that secondary school students will be rebellious if they are forced to work in groups that are not of their own choosing. This will not happen if you orient the class to the purpose of the groupwork and if you are firm and efficient in your assignments.

In composing groups, there are students whom you will view as problematic. A student who is far behind grade level in basic skills required for the task is one example. Students who have great difficulty in working with others should also be placed in groups with special care. These are often students who will attack, pester, and distract their fellow students to get attention, even if that attention is negative. At the younger ages, hyperactive children often represent a problem to classmates as well as to the teacher.

Place problematic individuals with at least one person who can be helpful. Particularly difficult hyperactive children should

be put in a group with someone who can work with them interpersonally and prevent them from disrupting and distracting. (I often suggest a "bossy big sister" for this purpose.) A student who does not speak the language of instruction will need a bilingual student who can interpret. Someone who lacks academic skills will require a fellow student who is functioning at grade level; it does not have to be the best student in the class.

As the students gain practice in reading, discussing, and writing in the group setting, you will note that some problematic students develop to the point where you need no longer worry about them. The label of "problematic student" should never be seen as permanent or as indicative of unchanging characteristics of the person. Similarly, avoid seeing some students as "natural leaders." With proper training and your insistence that people play their roles, most students should be able to perform leadership functions.

Waste no time in letting students know their group assignment. Put assignments up on the board or on an overhead transparency, along with a map of where groups are to work. Or write the group assignment on top of individual report forms given to each student. The most efficient way to compose groups repeatedly over the year is to make or buy a chart that has pockets for cards representing class members (available from many teacher supply houses). The labels on the rows and columns of the chart immediately inform the students which group they are in and what role they will play. The use of roles is discussed in the next chapter. Sort the cards into pockets and direct the students to check for their group assignments when they first enter the classroom. Figure 5.1 presents a sample chart.

### Classroom Ecology for Groups

Discussion groups need to be seated so that everyone can see and hear everyone else, preferably in a circle. Irregular seating arrangements will result in very little interaction among those who have to twist around to see each other. Station the groups as far apart as the room will permit so that they will not be disturbed by each other's discussion.

If you expect group members to work with manipulative



FIGURE 5.1: Chart Showing Group and Role Assignments

		Roles			
Group Number		Facilitator	Reporter	Checker	Materials Manager
	1	Anita	José	Megan	Trac
	2	DeJuan	Erick	Julie	Miriam
	3	Luke	Yani	Jacob	Ruud
	4	Ruth	Danisha	Hanh	
	5	Antonio			
	6				
	7				

materials or with books and written materials, you must plan space for work carefully. Group members should not be kept waiting because they have no space to work. Lack of work space can result in disengagement and general failure of the projects. If members do not have adequate room to lay out their task, they may find themselves unable to solve the problems; materials tumble off the table, students jostle each other for space, and constructions don't fit together.

Work stations require rearrangements of the tables and chairs from their usual formation. Take into account traffic flow as well as the amount of workspace required. If tables are placed so that they block the free flow of traffic, students will constantly be disturbing one another. It is a good idea to map out your

classroom arrangement and consider carefully how people will move about. (If your classroom furniture is inflexible and unsuitable, perhaps you can borrow the multipurpose room or the media center for groupwork.)

Noise is often a special problem for open space schools. If students are working at learning stations, a fair amount of noise is to be expected and is a sign of functioning groups. It is advisable to consult with other teachers who share an open space pod with you well in advance of scheduling groupwork. It should be scheduled simultaneously with their noisier activities.

All materials and tools should be pretested to make sure that they do what they are supposed to do. Avoid scissors that don't cut and magnets that don't magnetize. Although it may seem sensible to keep things like scissors and glue at a central location, it is actually more efficient to set these out at each learning station where they will be needed. With decentralized materials, there is far less rushing to and fro with its distracting consequences.

Teachers of elementary students must be concerned with the safety of sharp tools and with the use of heat and fire. The usual solution is to station an adult to supervise these activities directly. This is a costly solution in terms of using up scarce adult resources. As an alternative, discuss strategies for dealing with potentially dangerous materials in your orientation. Another solution is to appoint one of the children as a safety officer, with a clear understanding of what he or she should watch for and when to call for an adult.

Setting up work stations with instructions and materials sounds like too much work for the average busy teacher. It is! The students should be trained to do the work of setting up these stations; they should move the furniture and set out the materials needed. If the teacher lists or illustrates what will be needed on the activity card, the student in charge of setting up can get the materials from cupboards or storage areas, provided that these places are properly labeled (with pictures for non-readers). Another successful pattern is for teachers to prepare a plastic bucket filled with the materials and the activity cards for each center. The person in charge of materials can pick up the bucket, distribute the materials, and insure that everything is

returned in proper order to the bucket after the task is completed. There is certainly no excuse for teachers having to clean up after the work is done; students will cheerfully carry out these tasks if it is made clear that this is part of their job. First graders can do an excellent job of cleaning and setting up; they appear to relish the responsibility.

Students will want to read and learn more about the subject of their group task. Especially with students who need to be encouraged to dig for information and to read books on subjects that have aroused their interest, make these informational resources easily accessible. Place relevant books from the library close by the learning station where the students are working on a particular topic. If everyone will need certain reference works, like the dictionary, put these on something with wheels so groups can easily bring the heavy volumes around to the different work stations. Display pictures, maps, costumes, and objects near the work stations to stimulate students to ask questions, think more, and dig further into the subject. A great advantage of this strategy is that if one group has finished its work before the others, the materials for obvious extension of the activity are all prepared. The teacher can, with a few minutes of discussion and questioning, help the group to push the investigation further with the materials at hand.

### Planning a Wrap-Up

Wrap-up is an essential stage of groupwork. When the students make presentations based on groupwork, the whole class can share what each group has learned. When each group is doing the same task, the reports do not have to become boring and repetitive. Each group can be given a different question or aspect of the task on which to report. The teacher can weave these reports together through questions and discussion. Teachers have invented several other successful strategies. They ask the class to compare and contrast what different groups did with the same task. After each report, they use informal discussion groups to prepare questions or comments they think will be stimulating. All the reporters may convene at the front of the room as a panel of experts. Reporters are encouraged to ask

groupmates for additional and/or more specific information. Above all, *vary* the way you handle wrap-up to keep it interesting.

### PLANNING EVALUATION

When I present a session on groupwork techniques, teachers invariably ask: How can you evaluate student performance when the task is done by a group? To answer this question, it is necessary to disentangle the issue of learning from the issue of giving grades and marks. For most teachers, the need for students to receive feedback on their work is fused with the responsibility to give students grades.

Start with the assumption that groups and individuals need to have some way of finding out if they are "on the right track" in solving problems. They need to know how what they have done measures up to some set of intellectual criteria and what they can do to improve their product. This is the issue for learning and it needs to be considered quite apart from grading.

There are many ways to provide feedback for learning. Some groupwork tasks have the happy quality of built-in evaluation. Consider a task like making a device operate or an electric bulb light up. The students can see for themselves whether or not they are successful. If they are unsuccessful and consequently frustrated, you can help them, *not by showing them how to do it properly*, but by encouraging them to try some new strategies, to go back to the activity card, or to try out the ideas of all the members of the group. Don't be afraid to let the students struggle; this is the only way they will grasp more abstract concepts—people learn from mistakes.

It is not always necessary to evaluate whether students have grasped the ideas after each groupwork task. Some students may utterly fail to get the idea in one task but may suddenly begin to understand it in another setting. If you become overly concerned too early in the process with whether each student is mastering the content of each groupwork assignment, you will find yourself insisting that students get the right answer to every task, thus short-circuiting their whole process of inquiry.

If you want to know whether or not students are making some progress, you can and should examine the individual reports I have recommended for each group task. Students should receive specific feedback clearly stating what they did well or what could be improved. Give a reason why you think this is so. Avoid nonspecific phrases such as "very good," "great," or "fine." If you have chosen rich multiple ability tasks that have no simple right answer, then different students can learn different things from the same task. If the tasks have this open character, you will not necessarily use standardized criteria to provide feedback to individual students. Don't be afraid to inform students that they are confused about key concepts or are making dubious assumptions in solving a mathematical problem. Sometimes students will write two meager sentences when you expected a well-organized paragraph. You can ask the students to do the activity again or to rewrite the report. Even though students have received help from other group members in writing their report, they can be held accountable for what they have written.

Individuals may also receive feedback when you talk to the class as a whole:

"I noticed that José was able to pull the whole group together by pointing out that people were not all talking about the same question."

"When Alonso asked for help, Lila asked what she could do to help."

"I saw today that Jeremy created a model that helped the group to figure out a way to solve their problem."

How can a group product be evaluated? You can provide feedback to the group, remembering that it should always be honest, clear, and specific about what the group did well and where it could improve. General comments such as "Great job!" may make the group feel good but they will do very little to promote learning. Do not be afraid to point out important areas of confusion in the presentations. You may not want to launch into an extensive correction of their misconceptions right then,

but you can point out that there is a misunderstanding and that you expect the next group who has this group task to work out some alternative way to understand the phenomenon. If you find it difficult to listen to the presentations and to prepare your feedback simultaneously, then take notes and provide feedback on group process and products at the beginning of the next class session.

You can pick out a group that, according to its presentation, has obviously grasped the central idea or has a product illustrating an important concept, and ask members of the group to provide additional explanation of what they have learned. This has the double function of reinforcing the learners, and if you are having different groups carry out different tasks, it can prepare the rest of the class for their turn at this particular activity. Hold a discussion during a wrap-up in which group members discuss how well they have done on using cooperative behaviors featured in the training program. Remember that the class needs feedback on their group process as well as on their products.

### Peer Evaluation

During any process of group interaction, there will be a constant process of peer evaluation. This is an unavoidable part of group interaction. One of the advantages of groupwork is that many students can help extend your power to teach by providing feedback to peers. Of course, you may want to include some work on giving constructive feedback as part of your training program. Peers can be merciless with each other.

If the criteria for evaluation are clear, students can learn to evaluate group products. If each group displays its work in some way, students can be taught what criteria are legitimate and how to give constructive criticism. This strategy enables the group to obtain feedback at the same time that it teaches a valuable intellectual and social lesson to the class.

Students can also evaluate how well they have done during the group process. Use the techniques of observation and self-criticism in the section on training during groupwork (Chapter 4) for constructive peer evaluation.

## Testing and Grading

Many proponents of cooperative learning recommend giving a group grade for a group project. This has the effect of making individuals dependent on the group effort for a satisfactory evaluation. It has the drawback of making the peer evaluation process rather harsh. If one group member is felt to be incompetent at the task, the group is likely to forbid him or her to have any part in the product. The student who is perceived to have the most relevant knowledge will be encouraged to take over the task. It is therefore preferable to provide feedback on group products instead of grading them.

Many teachers feel that unless the group product is graded, students will not be motivated. If the task is challenging and interesting, and if students are sufficiently prepared for skills in group process, students will experience the process of groupwork itself as highly rewarding. Knowing that they will receive some feedback on their product will also help motivate them to complete the task.

Should groups compete with each other for grades or prizes on their group product? Competition has the effect of increasing motivation of students; for that reason many teachers cannot envision groupwork without external rewards. Offering competitive rewards, however, may have negative effects on the perceptions that team members have toward other teams, specifically causing them to be perceived as less personally attractive than when there is only cooperation without competition (Miller, Brewer, & Edwards, 1985; Johnson, Johnson, & Maruyama, 1984). In a socially and ethnically diverse classroom, the negative effects of between-group competition may well offset the advantages of within-group cooperation in improving intergroup relations (Cohen, 1992).

Competition will aggravate the problem of status within the group because low status students will be seen as harmful to the group's chances of winning, and it will encourage the students to believe that learning is not intrinsically rewarding but that one ought to be paid for such drudgery by something external to the learning task itself. If the tasks are rich, as has been suggested, there will be no need for such crutches to provide moti-

vation. If the tasks are more routine, such as those found in collaborative seatwork, the mild form of competition advocated by Slavin (1983) may well be used to solve the problem of motivation. In his STAD method, the scores of students are based on the amount of improvement individuals show in comparison to the last testing; thus the team is not penalized for members whose entering achievement level is low. On the contrary, these may be the team members who will show the most dramatic individual learning gains, not only because they have received help, but also because group pressure keeps them working.

Following any series of groupwork tasks designed to teach certain skills or concepts, you can design an examination to test the individuals' grasp of those concepts. This will provide the formal occasion for grading. Use groups to prepare for the exam; students who have worked through the tasks will be well prepared to help each other.

Never grade or evaluate students on their individual contributions to the group product. Even if it were true that a student contributed almost nothing, it is never clear that the student is at fault. Other students may have acted to exclude him or her from the process. Since the individual's lack of participation may be a consequence of a status problem, it is unfair to blame the victim for the group's low expectations of him or her. Alternatively, something about the task instructions or the group process may be at fault. It is better to look on such an event as a failure of the groupwork technique rather than as a failure of the individual student. Moreover, telling students that their individual contributions will be evaluated will have the effect of making low status students unwilling to risk active participation (Awang Had, 1972).

In review, by separating the necessity for feedback in the learning process from the grading issue, the problem of what to do becomes much less difficult. Feedback can often be accomplished by peers as well as by teachers. It can take place while the groups are at work, in individual conferences with the teacher, or during a wrap-up. Including a wrap-up each day at the close of a groupwork session is invaluable for feedback on both process and product.

Teachers can meet their responsibilities for giving grades by

evaluating some individual products of groupwork and by testing students for their grasp of the basic concepts the group tasks were designed to teach. Properly designed groupwork can produce major gains, even on standardized achievement tests.

### A WORD ABOUT TIME

After making detailed plans, it is necessary to estimate how much time each phase will take. How much time will be needed for pretraining? Will the students have time for their first groupwork experience after the orientation? If the orientation goes on too long, the students will be frustrated by having to end the groupwork too early, or there will be no time for wrap-up. Planning groupwork for 50-minute periods in middle and secondary schools is particularly challenging. Teachers often decide to devote one period to orientation and a general warm-up activity. They devote the second period to the groupwork, along with the preparation of individual reports, and the third period to presentations and wrap-up. Making a realistic time schedule for each phase (and sticking to it) is an indispensable management tool.

## 6 Giving Everyone a Part to Play

Here are two illustrations of groupwork in which students play different parts. The first is a group of five fourth-grade students from an academically and ethnically heterogeneous classroom using complex instruction. The facilitator is reading the activity card with instructions on growing a salt crystal garden.

*Facilitator:* "What kind of changes do you see? Write what kinds of changes you see on your worksheet. If the base dries up add 2 tsp. of water and 1 tsp. of ammonia." OK? Do you understand what we are supposed to do? [The group smiles and nods. The facilitator places the activity card face down.] OK. What is the name of the center? [Group laughs. Several members raise their hand, and the facilitator recognizes one girl.]

*Girl:* Salt Crystal Garden?

*Facilitator:* You got it. [Puts card back in plastic box and directs the materials manager to hand out materials. The manager lays out the materials and hands out role badges to the facilitator, the person in charge of clean-up, and the checker who checks to see if all the worksheets are done.]

*Materials Manager:* Who is the reporter?

*Reporter:* I am. [He takes the role badge offered by the materials manager. The group spends about five minutes looking at the pictures on the activity card and working with the materials.] Hey you guys, before you begin, I have to write down the answers to this question on the reporter worksheet: What do you predict will happen in this science experiment? And don't just tell me what

