The increasing recognition that all learning is a constructive process calls into question many traditional teaching practices. Students need the opportunity to formulate questions and insights as they occur and to test them in conversation with others.

Students in Learning Groups: Active Learning Through Conversation

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The preceding chapters have described a number of programs that employ learning groups. These programs differ widely in their goals, students, disciplines, and teaching techniques. They nevertheless share some common characteristics that are basic to the use of learning groups. This chapter and the next set forth the conceptions of learning and teaching shared by those who use the learning group approach.

Simply stated, effective learning groups seem to have two major elements: first, an active learning process promoted by student conversation in groups; second, faculty expertise and guidance provided through structured tasks. That is, it is not sufficient to increase discussion among students, and it is not sufficient to replace listening to lectures with problems for students to work on. Both elements—structured tasks and interaction among peers—seem to be necessary for the true power of learning groups to be realized. This chapter addresses the active learning process engendered by work in groups. The next chap-

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ter explains ways in which faculty members can encourage and guide learning groups.

Evidence of Learning

Perhaps the first question to ask about any teaching and learning method is whether there is evidence that the intended learning actually occurs (and whether there is evidence that any undesirable, unintended learning occurs). A still small but quite remarkable body of experience and research is gradually making the case that the learning engendered by learning groups is real and important. The programs reported in this book have helped various kinds of learning to take place.

The first issue is subject matter content—specific information and disciplinary concepts. Students in learning groups seem to learn such content at least as well as students in other learning situations; also, they seem to cover as much material as other students do. Larry Michaelsen has comparative data from the University of Oklahoma about test scores of students who take the same class in learning groups and in more traditional ways that bear out both claims. Another kind of learning involves generic cognitive skills, such as problem solving and reasoning. Nearly all the authors of chapters in this book think that learning groups help to enhance these abilities. Still another type of learning involves the various interpersonal skills—leadership, communication, and so forth. Skills in this area are often mentioned in statements of the goals of liberal education, but they are rarely addressed in any direct way in traditional classrooms. Learning groups offer one way for teachers to encourage this learning intentionally. A fourth area of learning that learning groups help to promote is learning about higher education. Several authors mention the role of learning groups in helping students to find friends and to share information about life in college. But Bruffee and Maimon also discuss ways in which learning groups help students to face some of the more fundamental aspects of the higher educational community of inquiring individuals. Finally, because learning groups bring some basic learning processes to the surface, they nurture in students that most elusive of all educational goals—learning how to learn.

The reasons for these learning results become clearer when one understands how learning groups work. Some assumptions about learning common to the use of learning groups differ significantly from the assumptions of traditional teaching methods, such as lectures, discus-

sions, and laboratory sessions. First, it is assumed that knowledge is in some way "constructed" by learners. Thus, the active involvement of students in learning is emphasized. Second, learning is seen to occur in communication with others, not inside the mind of the individual student. Dialogue is essential to learning. Third, the development of skills and abilities is seen as an integral part of the acquisition of knowledge. Indeed, both the acquisition of knowledge and the ability to use it effectively depend on the development of interpersonal skills.

Learning as Construction

Traditional teaching practices seem to be based on an implicit copy theory of learning. Like the old theory of visual perceptions, which assumed that the eye transmitted a copy of the object perceived, traditional teaching assumes that a student leaves the classroom with a copy of the knowledge presented by the teacher. As the copy becomes clearer and more exact, the learning becomes more perfect. Under this assumption, attention is concentrated on the teacher's presentation.

The underlying traditional assumption is that knowledge reaches the mind of the student in essentially the same form as the teacher presents it. Of course, students miss some things and they take away imperfect copies of what was said, but they take away copies, not reconstructions or original creations. If the teacher presents the information in a logical order, nothing in principle prevents the student from assimilating it in the same form.

However inherent these assumptions are to traditional teaching methods, they conflict with an understanding of learning that has been developing over the past half century. In studies of learning, in epistemological writings, in cognitive psychology, and in the studies of college-level teaching effectiveness, there is an increasing perception of learning as a constructive process that conflicts with the traditional notion of teaching as transmission of knowledge to students.

What the student listening to a lecture actually hears is not a copy of what is said; it is a construction. Listening, like all forms of perception, is an effort after meaning. This meaning is achieved by connecting what is encountered in any situation with what the person has brought into the situation. The lecture is neither passively absorbed by students as bits of information in the same serial order in which they are presented nor is it received as an intact structure that has the same logical order. What a listener hears is a reconstruction based on the

knowledge, experience, interests, and emotions that the listener brings to the experience. In this process, the original message is altered, the logical connections change, some parts are screened out, other parts are changed beyond recognition, and even additions are made.

Students cannot simply assimilate knowledge as it is presented. To understand what is being said, students must make sense of it or put it all together in a way that is personally meaningful. Teachers implicitly recognize this in their admonitions to students to put something into their own words. Too often, however, this is seen as important only to evaluating whether learning has occurred, not as the core of the learning process. It is as if one were to teach a child to talk by having the child listen in silence to others for the first two or three years of life; only at the end of the period would we allow the child to speak. In reality, the child learns in a continuous process of putting words together and trying them out on others, getting their reactions, and revising speech accordingly. Children do not merely copy others' speech but construct their own unique utterances, which, with practice, become progressively more comprehensible to others. Students also are engaged in the process of putting something together. They know how it corresponds to what has been presented in a textbook or lecture only if they have the opportunity to express it to others, get their responses, revise, and communicate again. Traditional teaching practice virtually ignores this in its preoccupation with the presentation of knowledge—what the teacher is putting out, not what students are taking in.

Since students assimilate all new information and ideas to their existing forms of thought, the teaching process must begin there. Learning is not simply moving from ignorance to knowledge. It is giving up one conception of something for another way of conceiving of it. Unless the teacher takes account of students' perceptions, the new knowledge will be acquired as fragments without real comprehension, or it will be distorted by students' efforts to fit it to their preconceptions. Traditional teaching methods fail to provide essential information. A test of what students know about a topic will not enable a teacher to understand how they think about the subject, nor will class discussions. Given the number of students, the limited time, and the teacher's dominant role, students rarely have an opportunity to develop a line of thought. At best, the teacher gets a hint of how a few students are thinking about the material. Only by observing students as they work on problems can a teacher understand their preconceptions and the way they use new concepts and information.

Learning as Communication

The assumption of the traditional teaching method is that communication functions to transmit knowledge from those who have it to those who do not. Given this assumption, the one-way communication from teacher to student that prevails in traditional classrooms is understandable. The questions and comments of students are important, but they only influence this one-way transmission. Traditional teaching methods also assume that students receive and assimilate knowledge individually, independently of others. So basic is this assumption that the inevitable objection to group learning takes form as the question "How can one teach what one does not know?" This amounts to taking "Of what value is communication to learning unless it is communication by one who knows to one who does not?"

The premise of the learning group approach is indeed that learning involves speaking about what we do not yet know. If learning involves the active construction of knowledge, then that process requires an opportunity to speak and to hear the responses of others. Learners, like the infant who learns to talk, do not simply imitate what they have heard. Learners formulate ideas by putting them in their own words, and they must discover whether they are making sense. An optimum context for learning provides learners with frequent opportunities to create thoughts, to share thoughts with others, and to hear others' reactions. This is not possible in the traditional classroom.

On the most rudimentary levels—specific subject matter content—students in learning groups seem to do at least as well as students in traditional lecture-and-discussion and laboratory formats. This success seems due in part to the increased number of teachers, since group members learn from group conversations. Learning groups are kept small to encourage all members to ask questions and discuss answers. Students in learning groups receive assistance on issues with which they need help and immediate feedback on their learning. This is particularly important in large classes—those with between 100 and 350 students. (See Chapters One and Two in this volume.)

Learning groups also increase students' comprehension of and ability to use underlying concepts. Contrast, for example, conventional classroom discussion with dialogue in a self-led group. The group is small enough that everyone can participate actively. Individuals are sufficiently at ease to become involved spontaneously. The students have a problem to solve. They all work on the same material, and they are approximately equal in ability. There is no expert to be deferred to

or to indicate the correct solution. They must depend collectively on their own resources to solve the problem. Students are motivated to contribute what they can to a common goal. They are forced to listen to one another carefully, to discover and correct errors in what others say, to accept criticism, and to provide evidence for their conclusions. In a learning group, it is not enough to know the answer. The group member must be able to convince others. Thus, effective communication is the process through which knowledge is acquired. We only come to know something when we are able to find words that make sense to ourselves and to others. It is in learning group conversations that students first become aware of what they think and what they know.

Finally, communication in learning groups is enhanced because all participants are relatively close to one another in stage of development and level of understanding. By contrast, faculty and students are often at such different levels of understanding that they talk past each other.

Learning As Doing

Common to all the uses of learning groups described in this volume is the premise that students learn course material by doing something with it—discovering, communicating, organizing, interpreting, applying, and so on. This situation differs from that in the traditional classroom, where these activities are performed by the teacher, not by students. The active role of the teacher in the traditional classroom contrasts sharply with the passive role of students. It is not surprising that teaching is the best learning. The teacher's activity makes the traditional method a very effective method of learning—for the teacher.

How are students expected to acquire the abilities that the teacher displays? The assumption seems to be that the teacher "models" the abilities that the students are to acquire and that students will later be able to imitate what they have observed. The teacher constructs an argument, analyzes a piece of literature, exposes a logical fallacy, or computes the solution to a mathematical problem. By repeated observation, the student, it is assumed, internalizes these procedures and acquires these abilities. Rarely are students asked to do these things themselves, and, if they are, it is usually only for the purpose of evaluating whether learning has occurred.

There are two flaws in this concept of modeling. First, there is a narrow interval between what one already knows and what one cannot learn except by approach in successive stages. The teacher's perfor-

mance lies outside this range. For the student, it seems more a display of brilliance or erudition than a modeling of techniques that the student can be expected to acquire. Modeling can be effective only if the teacher is able to determine students' abilities accurately and if the teacher can confine the modeling to what slightly exceeds students' current abilities. A slightly more advanced student in a learning group is a far more effective model than the teacher can be. In addition, the traditional method provides no way for the teacher to know what students are able to do, since it gives the teacher no opportunity to observe them at work.

The second flaw in the modeling assumption is that it focuses on only part of the process. To be effective, modeling must be followed promptly by opportunities for students to practice the behavior that is modeled, and by feedback on their practice. In the traditional method of teaching, students seldom have an opportunity to practice procedures and abilities displayed by the teacher or to get feedback on their performance. There is only one way to acquire skills and abilities, and that is to practice them.

The skills taught most in traditional college classes are the skills needed to solve well-formed problems. The problem is presented to students in a very specific context and in relation to procedures for solving the problem. The teacher assigns problems that require students to master a specific procedure—for example, multiplication, analysis of character and plot in a novel, application of the marginal utility concept to economic data. Solving such tasks requires students only to recognize the type of problem and the procedures that apply to it.

Problems encountered outside the classroom are rarely so simple, and the skills taught in college courses are of little use in solving them. Such problems are frequently very ill formed. One encounters not a problem but a difficulty, and the hardest part of the task is in recasting the difficulty as the kind of problem that one knows how to solve. We do not encounter problems, but situations in which we need to discover what the problem is. Education should be able to help. But in the traditional college classroom, the teacher's orderly presentation of the material and the restriction of students' purview to one person's way of dealing with the material both ensure that students will rarely encounter a situation in which they can practice the broad problem-solving skills that are essential outside the classroom. In requiring students to respond to the variety of ways in which other group members are thinking about the problem, the learning group method introduces some real-world complexity into the learning situation. Group interaction is a process of questioning, discovery, assertion, and critique. It

exercises all the critical faculties and problem-solving skills, and the process produces knowledge that the student is prepared to use.

In addition to affecting cognitive learning, the group experience affects attitudes and behavior. Indeed, many stated goals of higher education are aspects of effective social interaction. Paradoxically, these are to be acquired in the college classroom, which provides one of the most rigid and limited forms of social interaction that we can encounter. The learning group method increases the complexity of interaction among students, and it empowers a greater range of behavior than the traditional classroom does. In addition to purely cognitive activity, a number of other functions—decision making, leadership, mutual assistance—must be performed. There are many ways in which students can contribute to the process. Consequently, students have many opportunities to develop their abilities.

Interpersonal skills cannot be dismissed as something that can be learned adequately outside the classroom. The classroom learning group provides a unique context in which students can develop interpersonal skills. The teacher can act as a neutral observer of group interaction and provide feedback to group members. The learning group provides a situation that is rarely encountered, in which members work on a task and continuously reflect on how they are working together. The situation as a whole provides a context in which individuals can both become aware of their own behavior and feel secure enough to explore and practice new behavior.

Limitations and Difficulties

The conception of student learning inherent in the use of learning groups differs significantly from the premises that underlie traditional teaching. This difference is responsible both for the advantages of learning groups and for the limitations and difficulties posed by their use. Learning groups can enhance student learning, but they do this by changing the role of the student in a radical way. Students seldom experience anything but the traditional method, so they take it for granted that that is the only way to learn. Students "know" what a teacher does, and a teacher who does not lecture or lead the class discussion is somehow not doing the teacher's job. Sometimes the teacher is suspected of withholding knowledge that he or she could simply give to students. Thus, some students feel cheated by the new approach. As one student complained, "Just when I've learned to win at the academic game, you've changed the rules."

The traditional student role can seem very comfortable and secure, while the learning group places new and unfamiliar demands on students. Students are faced with new levels of responsibility for what happens in the classroom; they become responsible for others and dependent on others. They are inexperienced in working with their fellow students, and consequently they are ineffective. They have difficulty giving and receiving criticism, maintaining their own focus on the task, and acknowledging and resolving the inevitable conflicts that arise in cooperative work. At some point in the academic term, many students feel discouraged by the demands that the new method places on them. Some students may acknowledge that they are learning more, but these students say that they still prefer the traditional method, because it is less demanding. Nevertheless, the majority comes to prefer learning groups over the traditional teaching method. However, there is always some anxiety about learning new behaviors, and consequently there is always some resistance to change. Teachers who use learning groups should be aware of this.

Student learning groups are not simply another technique that can easily be incorporated into a predominantly teacher-focused classroom. Used in this way, student groups can be useful, but the effort to incorporate them into the traditional classroom asks students to act in two very different and even conflicting roles, and it does little to change the passive and dependent behavior to which students are habituated. The conceptions on which the learning group approach is based differ from the traditional conceptions and result in very different interactions and outcomes.

For the teacher as well as the students, the learning group approach requires some fundamental changes. For many teachers, it provides an impetus for a general re-examination of their teaching goals and procedures, their identity as teachers, and the skills needed in the role.

The authors of the chapter that follows confront the assumptions and attitudes that underlie our traditional teaching and show that the limitations that they impose can be overcome.

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