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Beyond Groups and Cooperation: Building High Performance Learning Teams

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This article examines potential parallels between using teams in the workplace and in the classroom and is based on the assumption that educators may be able to learn a great deal from industry's successes using high-performing teams. This article (1) outlines the key attributes of groups affecting their ability to engage in productive work, (2) identifies management practices that have consistently resulted in high performance teams in the workplace, (3) compares these practices with the prescriptions of three widely used but different instructional approaches to group-based learning: incorporating a group assignment as a supplement to a predominantly lecture-based course, Cooperative Learning and Team Learning, and (4) discusses the implications for using small group-based instructional strategies in higher education.

Organizations throughout the world are undergoing an organizational revolution. In the private sector, competitive pressures have forced company after company into a retrenchment mode (Sherman, 1993). As many have learned, however, simply downsizing is not enough. The companies that are succeeding are doing it by finding ways to cut costs and, at the same time, better meet the needs of customers and clients (Peters, 1992). Whether the task has been to stay on top (e.g. 3-M) (Peters & Austin, 1985) or to regain lost ground (e.g. Xerox and Ford) (Dunmaine, 1991; Boudette, 1990; Levine, 1991), a major piece of the answer has been learning to harness the employees' energy and insights through the use of problem-solving teams (Sherman, 1993).

In many ways, a similar revolution is occurring in university classrooms. A widespread dissatisfaction with the skills of university graduates has led to a reevaluation of the entire education process (Boyer, 1991; Light, 1990, 1992). Increasingly, instead of listening, taking notes, and individually studying for exams, students are now finding that they learn more when they are working as members of small groups. Unfortunately, however, poorly conceived and/or executed group assignments and activities can actually do more harm than good (Fiechtner & Davis, 1985). As a result, students often voice considerable displeasure when they learn that a class will involve small group work. The key to the success or failure of group-based instructional practices is the way the teams are formed and managed and the tasks they are expected to accomplish.

This article is based on the assumption that educators can benefit from industry's experience with high-performing teams. Teams have been used successfully in settings ranging from mining coal (Trist & Bamforth, 1951) to designing computers (Machlis, 1992). In addition, just as in higher education, members of industry teams are all adults and are often highly diverse (multi-ethnic, mixed gender, mixed age, etc.). By contrast, group-based instruction is a comparatively new phenomenon in higher education and many of the small-group based instructional approaches and most of the existing empirical studies are based on experiences in elementary and secondary schools.

The primary purposes of this article are to: 1) outline the key attributes of groups affecting their ability to engage in productive work, (2) identify the management practices that have consistently

proven to result in high-performance teams in the workplace, (3) compare these practices with the prescriptions of three widely used but different instructional approaches to group-based learning (incorporating a group assignment as a supplement to a predominantly lecture-based course, Cooperative Learning, and Team Learning), and (4) discuss the implications for using small-group-based instructional strategies in higher education.

The Nature of Effective Groups

Regardless of its setting, the degree to which any group can be expected to achieve its goals is a function of three factors: the knowledge and skills of group members, the resources available to the group, and the cohesiveness of the group (i.e., the degree to which members are committed to the group). The first two determine the potential of the group; the third determines the degree to which the potential is likely to be achieved. The more cohesive the group, the greater the extent to which members will respond to goal-related group norms, such as rules of conduct for group members (Shaw, 1981; Feldman, 1984), and the greater the willingness of members to devote their energy and intellectual and material resources to ensure that the group succeeds.

Unfortunately, in many work settings, the difficulty of the tasks groups are expected to perform often creates a dilemma for managers who are trying to develop effective groups. Fostering the development of group cohesiveness and ensuring that groups have needed resources often require exactly opposite courses of action. For example, increasing the size or the heterogeneity of a group increases the resources it has at its disposal but, at the same time, increases the difficulty of developing group cohesiveness (Shaw, 1981; Watson, Kumar, & Michaelsen, 1993). Thus, as the difficulty of the task (hence the need for resources) increases, more time, effort, and planning are needed to allow groups to mature to the point that members: (1) are capable of working together synergistically and (2) will be motivated to make the individual effort that is vital for the group success (Watson, Michaelsen, & Sharp, 1991).

Characteristics of High-Performance Workplace Teams

Teams and high performance are not synonymous. In fact, just as in education, experiments with group involvement approaches like quality circles (Hoerr, 1989) have probably failed as often as they have succeeded. Fortunately, however, both the failures and successes have provided clues we have used to identify five key variables that must be managed if groups are to develop into high-performing teams. These are: 1) the nature of the team's tasks, 2) the system through which formal and informal rewards are distributed to organization members, 3) the criteria used to select individuals for team membership, 4) the processes through which a set of individuals is transformed into an effectively functioning team, and 5) the relationship between the team and higher level management.

Tasks

High performance teams are characterized by four distinct features:

- (1) The tasks they perform result in a significant, clearly-identified product or service.
- (2) Their work involves thinking, not just doing.
- (3) They receive ongoing feedback about the level of their performance.
- (4) They receive feedback about their performance in the competitive arena.

High performance work results in a clearly identifiable product or service that, in the view of team members, is of some significance in the larger scheme of things. Thus, when asked, "What does your group do?" members of high-performing teams would likely respond, "We make [a specific product]". By contrast, members of groups seldom identified as high performers more likely would answer, "We work on [a specific product]". For example, Ford's Team Taurus (Boudette, 1990) was charged with the responsibility for moving the Taurus from the drawing board to dealers' showrooms in record time and simultaneously ensuring that the quality was good enough to compete head-

to-head with the Japanese. Team members knew where they were going, understood that getting there was critical to Ford (and even the entire US auto industry), and came through with flying colors.

Tasks that involve thinking (not just doing) are likely to result in the development of high-performance teams for two reasons. First, because they are highly effective at processing information (Michaelsen et al., 1989), teams that formulate their own work strategies are likely to be doing the right things. In today's business environment, "...the ideas and judgment of production workers, as well as their efforts, are needed for success in the marketplace" (Hackman, 1989, p. 474). Second, tasks that involve thinking stimulate motivation. When team members are implementing their own decisions, they know what needs to be done and *want* to do it (Peters, 1992).

High-performance teams are likely to develop when they are performing tasks that provide ongoing feedback with respect to the level of their performance. Timely feedback is important for two reasons. First, it is impossible for groups to learn to improve unless they have a way of knowing whether they are making progress. Second, prompt and reliable feedback also aids in the team development process. The better the feedback system, the less risk is involved in experimenting with different strategies, and the more team members are likely to learn from each other. In fact, a key reason for the success of the Total Quality Management approach is its emphasis on performance measurement (Stewart, 1992). For example, teams are encouraged to deal directly with customers on an ongoing basis (Moskal, 1988). As a result, they know immediately when problems arise and are also in a position to do something about them.

Tasks that facilitate the development of high-performance teams are designed so members will have ongoing and immediate information on how well the team is performing in head-to-head competition. In many situations, the competitive arena is the market place and the competitors are teams from other companies. In other cases, the competition is based on comparisons with other teams doing parallel work in the same company and/or with the team's own performance in similar situations. In all cases, however, the data from competition serves three purposes. It makes the success more meaningful. Part of understanding how well you are doing is knowing how well others are

doing. Second, the data can be used as a means of improving performance. Finally, and maybe most important, competition is a tremendous unifying force for groups. In fact, some of the most impressive success stories of high-performance teams have come from situations in which competition proved to be the only force strong enough to support members through an extremely difficult team development process (Jacobson, 1989).

Extrinsic Rewards

Although high-performance groups are far more likely to develop around tasks that are intrinsically rewarding, extrinsic rewards also affect teams. Unless extrinsic rewards are based primarily on team performance, however individuals find themselves competing with the very people they need to cooperate with—other members of their own team. In addition, systems through which extrinsic rewards are given should provide incentives for mastering the individual competencies needed for team success (Stewart, 1992). Otherwise, team members may tend to worry about whether they will be in the unfortunate position of doing most of the work while having to share the benefits.

Although an individual can cause a team to fail and different team members make different kinds of contributions, it is clear that success in most situations is due to a team effort. Further, as long as individual contributions are evident to team members, giving extrinsic rewards to teams does not mean that individual members' performances will go unnoticed. In fact, outstanding individual contributors invariably receive very powerful intrinsic rewards through the praise and recognition of their peers within the team.

Team Formation

Some early experiments with team formation were based on groups consisting of volunteers who were a subset of the members of existing work groups (quality circles) (Hoerr, 1989). In many situations, however, these teams accomplished little and were eventually abandoned, in part, because they had neither the perspective nor the power to have a major impact on organizational performance.

By contrast, many high-performance teams have been organized around processes, (that is, the entire set of activities involved in satisfying a particular set of customers. Consequently, team members must possess a broad range of skills and perspectives. Given these membership requirements, high-performance teams virtually always are formed by management to ensure that the set of team members will have the range of skills required. In addition, such teams are often large (15-20 members) and highly diverse, resulting in a great deal of difficulty making the transition from a collection of individuals into a team. Further, the difficulty of this transition process is substantially increased when it involves the melding of previously existing subgroups.

Team Development

Managers are well aware that calling a set of individuals a team or exhorting them to work together does not produce a team. Further they have learned that the transition from a set of individuals to a high-performing team takes time. Experience also has shown, however, that although the real benefits of teamwork seldom emerge until members have worked together for at least several months, the transition process can be accelerated. The key is creating opportunities and incentives for ongoing interaction among team members. For example, a number of companies, such as National Cash Register have either removed walls or moved to new quarters so the physical work environment presents opportunities for team members to interact (Port, Schiller & King, 1990). Others like Levi Strauss, have members participate in team-building activities away from the work site (Dunmaine, 1991). When the task requires blending the expertise of a small number of highly trained professionals, a successful approach is to require organization members to work out agreements for handling potentially troublesome situations before they occur, as commercial airline crews do in preflight meetings (Hackman, 1990).

Further, another key to successfully building high-performance teams is exposing teams to data that allow comparisons with teams external to themselves. It appears the nearly inevitable consequence of having data on the "competitor" is to motivate teams to undergo

self-examination in an attempt to improve their own performance. For example, Hackman (1990) states, "Paradoxically, it appears that a team's *external* transitions may both spur and fuel its internal development. Interactions with outsiders present problems and opportunities that by their resolution can help a team clarify its own identity, elaborate its norms, and refine its performance strategies. Without such interactions, a team may be unable to keep pushing forward its own development as a performing unit" (pp. 475-476).

Relationship with Higher-level Management.

As a rule of thumb, the more management interferes with intra-team process, the less likely a group of individuals will be able to develop into a high-performing team (Houston, 1989). Hackman (1990) argues that managers have to make a choice between assigning tasks to individuals and choreographing their collective efforts, and assigning entire tasks to groups and letting the *group* decide how to get the job done. He states, "A mixed model, in which people are *told* they are a team but are *treated* as individual performers with their own specific jobs to do, sends mixed signals to members, is likely to confuse everyone, and in the long run, probably is untenable" (p. 493). Thus, once the boundaries of the task have been specified, managers would be well advised to stay out of team decisions. Otherwise, teams will not feel responsible (nor can they be held responsible) for the outcomes, good or bad, that they produce.

Managers do, however, play three extremely important roles in the success of high-performing teams. One is ensuring that the teams clearly understand what they are supposed to accomplish. In fact, Hackman says telling a group "in general terms what needs to be done and let teams work out the details," is a key reason groups fail (1989, p. 498). Another important role for managers is insisting that teams monitor their progress and have access to data that will allow them to do it. Finally, managers must ensure that team members have access to the resources (including the member skills) needed to complete the tasks they have been assigned.

Group-Based Instruction in Higher Education: How Do They Measure Up?

Group assignments and activities are currently being used in a variety of ways in college classrooms. Probably the most common approach is what most of our colleagues refer to as “trying it out.” This method consists of adding a group assignment (usually a paper, project, or presentation) to an existing lecture-based course structure. In this case, the groups are clearly a supplement. Most class sessions remain unchanged and the group work is almost always done outside of class. By contrast, Cooperative Learning (Godsell, Maher, Tinto, Smith, & MacGregor, 1992; Johnson, Johnson, & Smith, 1991; Slavin, 1983), which occupies much of the middle ground with respect to reliance on groups, advocates devoting a significant proportion of class time to small group work. Further, peer teaching is an integral part of the instructional process and the instructor’s role changes from being a “sage on the stage” to being a “guide on the side” (i.e., forming groups, creating and administering group assignments, observing and coaching group processes, etc.). On the other end of the spectrum, the approach that is most serious about using teams as an integral part of the instructional process is probably Team Learning (Michaelsen, Watson, Cragin, & Fink, 1983; Michaelsen, 1992; Michaelsen, Fink, & Watson, 1993). With this approach, the vast majority of class time is spent in group work and even coverage of basic concepts is accomplished through individual study and structured group interaction (Michaelsen, Fink, & Watson, 1993).

Given the differences among these three approaches to group-based learning, the question arises as to how well each approach meets the five characteristics of high-performance teams described above. The general answer is that the three approaches differ significantly. These differences are summarized in Figure 1 and discussed in detail below.

Supplementary Group Assignments

This approach is clearly the least consistent with the prescriptions for developing high-performance teams. Further, we strongly maintain that, although it can result in positive outcomes, this approach is

responsible for the negative student experiences with learning groups. This is because the groups are being used in ways that would be frustrating and unproductive in the workplace as well.

In our judgment, there are many problems with using groups as a supplement to lectures. The most basic is that many instructors who use this approach have no concept of what a team really is. They seem to expect that assigning a group of individuals to complete a task together means they will become a team. Consequently, instructors unknowingly establish roadblocks to teamwork. One roadblock is allowing students to self-select group membership. Unless they are very small, self-selected groups are likely to have cliques that interfere

Figure 1

**Fit Between Prescriptions for High Performance Teams
and Characteristics of Group-Based Instructional Approaches**

Industry-based Prescriptions for Developing High Performance Teams	Degree of "Fit" with Practices of:		
	Group Assignments*	Cooperative Learning	Team Learning
Tasks/Assignments: • Significant to team members • Emphasize thinking/deciding • Provide ongoing feedback • Comparisons w/other teams	Low-moderate Low-moderate Low Delayed	Mixed High High Mixed	Moderate-high High High High
Extrinsic Rewards Based on: • Team performance • Individual contribution to team	Mixed Low-moderate	Low-moderate Moderate	High Moderate-high
Group Membership: • Heterogeneous (multi-skilled) • No cohesive sub-groups	Low Low	Moderate High	High High
Support for Team Development: • Stable/permanent membership • Ongoing team interaction • Team skills/process training • Comparisons w/other teams	Mixed Low Low Delayed	Mixed High High Mixed	High High Low-moderate High
Instructor/Group Interface: • Autonomous teams • Teams judged on output • Instructor provides resources	High High Low-moderate	Low Mixed High	High High High

*Part of the requirements/activities in a lecture-based or case discussion-based course.

with the cohesiveness of the larger group. A second common road-block is taking away what is usually the only time groups can meet together—class time. In addition, instructors frequently use inappropriate group assignments such as writing a “group” paper. In doing so, they are saddling the group with a task that: (1) seldom, if ever, has any significance beyond completing an assignment for a grade, and (2) is virtually impossible for a group to complete anyway (i.e., because writing is inherently an individual task). As a result, “group” papers typically end up as the work of one group member or a series of individual contributions integrated by a stapler.

On the other hand, we have no doubt that group assignments can produce positive learning outcomes. For example, it is not uncommon for a group of students to get excited about a class presentation. In this case, the “product” is perceived as being of greater significance (for other students, not just the instructor), better suited for teams (putting together a presentation generally allows more creativity than writing a paper), and automatically focuses teams on comparisons with groups external to themselves. Unless the instructor does things like forming multi-skilled teams and allowing class time for group work, however, much of the benefit from the group assignment will be, in spite of—not because of—the instructor.

Cooperative Learning

Not surprisingly, the vast majority of approaches that fall under the umbrella of Cooperative Learning conform much more closely to the prescriptions for developing high performance groups than do supplementary group assignments (see Figure 1). Instructors who use Cooperative Learning typically believe that students can effectively teach each other through properly designed small group activities. As a result, they often devote a substantial portion of class time to small group work. Further, they have typically taken other productive steps, such as personally forming groups and designing activities with the objective of facilitating the teaching process, and being present to provide information and group process coaching when they feel their interventions are needed.

There are only a few areas in which Cooperative Learning does not fare as well (see Figure 1). With some common Cooperative Learning formats (e.g. Jigsaw — see Slavin, 1983), the significance of the task is somewhat limited. In these formats, the primary group task is ensuring that members understand the lesson content, which, in turn, means that the significance of the task is directly tied to the significance of the content itself. Another inconsistency between the prescriptions for high-performing teams and Cooperative Learning results from the fact that most Cooperative Learning approaches are designed for teams that are quite small (2-4 members)—thus the level of heterogeneity is sufficient to allow only for the completion of relatively simple tasks. In addition, many of the learning activities take place in short-term groups formed for a specific lesson or unit of instruction. Finally, because of the relatively temporary nature of Cooperative Learning groups, a number of authors (Johnson, Johnson, & Smith, 1991) explicitly advocate one or more of three practices that are clearly inconsistent with the prescriptions for developing high-performance teams: (1) assigning specific individual roles for team members (which ensures that everyone will try out new roles but also establishes a dependent relationship between the teams and the instructor and limits the opportunity for teams to learn to manage their own resources), (2) basing rewards (i.e., grades) primarily on individual performance and limiting group rewards to a modest bonus if all team members achieve a given criterion, and (3) down playing cross-group performance comparisons and inter-group competition because of the potential for conflict within the class as a whole.

Team Learning

Team Learning is clearly more consistent with the prescriptions for developing high-performance teams than either of the other group-based instructional approaches. In fact, there are only three areas in which Team Learning fails to measure up (see Figure 1). Two of the areas, the significance of the task and the rewards for individual contribution to the team, reflect the limited nature of the classroom experience as compared to the workplace (although Team Learning fares better than either of the other approaches in both areas. Even

though team learning's major objective is to move beyond concepts and focus on how students will use them subsequent to the class (Michaelsen, 1992), groups seldom have the opportunity to solve "real" problems as they fulfill their course requirements. It is one thing to recommend a course of action you think an organization should take and quite another to decide, as organization members, on a course of action and then be responsible for implementing it.

The other partial inconsistency between Team Learning and the prescriptions for developing high performance groups is low to moderate emphasis on teaching group process skills. In our judgment, this also results from differences between the classroom and work organizations. Instructors have two advantages that are often unavailable to "real" world managers. First, instructors can select problems that "fit" the groups they have to work with. By contrast, in on-the-job problems are often so complex they require groups that are both large and highly diverse. As a result, managers are often forced to invest time and effort to develop members' group process skills just to develop teams to the point that they will be able to function at all. Second, instructors who use Team Learning benefit from their control of the overall classroom environment. Thus they can have groups engage in activities that are explicitly designed to simultaneously teach concepts and build team cohesiveness. For example, minitests (Michaelsen, Fink, & Watson, 1993) inevitably stimulate an ongoing examination of the processes through which the teams make their decisions. In fact, because the minitests provide immediate feedback on individual and group performance effectiveness in relation to other groups, discussing how to improve their performance is such a natural thing that it would be difficult to keep groups from engaging in group process discussions. As a result, it is typically not necessary to have teams engage in additional activities that focus on understanding and improving group processes, as is often the case for teams in work settings.

Cooperative Learning versus Team Learning

There are many similarities between Cooperative Learning and Team Learning. Probably the most important, however, is that they both make use of class time for group work. Further, two reasons for

the in-class group work are virtually identical in both approaches: building positive and supportive relationships between instructor and students, and to ensure that students have immediate access to the instructor's task-related expertise.

Historical Origins

There are, however, a number of differences between Cooperative Learning and Team Learning. Several result from the unique characteristics of the settings for which the two approaches were developed. Cooperative Learning has its origins in elementary classrooms. Consequently, it was designed to teach specific concepts and ideas to 30 or fewer students who are together in the same room for 25-30 hours each week and who are capable of only a limited degree of self-control (Johnson & Johnson, 1983).

Team Learning, on the other hand, originally was designed to cope with the problems of large classes (120+ students) in a professional school setting (Michaelsen, Cragin, Watson, & Fink, 1985; Michaelsen, 1992). Consequently, the primary emphasis was on learning to *use* concepts as opposed to merely learning *about* them. In addition, students were in class together for a maximum of 45 total hours (many students commuted and could not meet outside of class without considerable hardship) and most were capable of a relatively high degree of self-control. In this setting, it was impossible for the instructor to be involved in the processes within the teams and, because of the need to expose students to a large volume of course content, it was not feasible to devote any substantial amount of class time to the instruction of group process issues.

Strategies for Ensuring Effective Group Work

One of the primary differences between Cooperative Learning and Team Learning is the way in which they attempt to ensure that teams function effectively. Instructors who use Cooperative Learning typically: (1) structure explicit roles for individual members (e.g. recorder, summarizer, etc.) and/or (2) coach and train with respect to group processes management issues. As long as instructors are comfortable with their role, the positive side of this strategy is that the groups

typically work quite effectively. There are, however, two drawbacks. First a significant proportion of class time must be devoted to group management issues, thus reducing the time available for content-focused work. Second, (a natural consequence of the instructor's active involvement in group management issues), a significant proportion of the teams never develop to the point that they are capable of functioning on their own. As a result, at least some Cooperative Learning advocates advise against out-of-class group work on the grounds that "Teams often have problems with off-task behavior, dominators, and sand baggers and fulfilling only the nominal requirements of the assignments rather than mastering the knowledge implied in the tasks." (Cooper & Mueck, 1992, p. 73-74).

By contrast, instructors who use Team Learning rarely use class time for teaching group process skills and almost never become involved in the management of roles within the teams. Team Learning provides enough incentives and opportunities for developing students' team management skills that the instructor's help is seldom needed. The incentives develop because: (1) a substantial part of the course grade is based on group performance, and (2) the groups receive regular and immediate feedback on how they are doing in relation to other groups, which causes students to take pride in their groups' successes. Opportunities students to develop the ability to effectively manage their group processes principally come from the minitests and from the *absence* of direction from the instructor. The minitests are important because they provide regular, concrete, and immediate feedback on both individual and group performance. Thus results, good and bad, of groups' deliberations are so clear that they invariably evaluate the approaches they use to make decisions. The autonomy is important because it allows teams to apply their problem-solving skills to the task of learning to effectively manage themselves.

Summary and Recommendations

Although adding a group assignment as part of the requirements in a lecture-based course can produce positive outcomes, without considerable planning, the costs may outweigh the benefits. Some assignments work better than others. The best ones (e.g., computer

simulations) require students to apply course material to make a series of *decisions*. The worst are group papers. Group presentations lie somewhere in the middle.

Regardless of the type of assignment, however, a key requirement for making this process work is allowing class time for group work. As the amount of class time allowed for group work decreases, two negative consequences typically occur. Students experience more of the negative aspects of group work (e.g. struggling to find times to work together, doing more than their share, or receiving a bad grade from someone else's shoddy work). In addition, their learning is likely to decrease. In the process of trying to find a way to minimize the interaction involved in completing the assignment, students eliminate the opportunity for peer teaching. As a result, instructors who use this strategy are often forcing students into such a negative experience that they will try to avoid future group work even when they could benefit from it.

Advantages of Team Learning

The choice between Cooperative Learning and Team Learning is less clear. However, because Team Learning develops groups to the point that members are willing and able to work effectively without outside intervention from the instructor, it produces a number of benefits that cannot be achieved with most Cooperative Learning approaches. Team Learning: (1) ensures that students complete their assigned homework so that they will be prepared to engage in-class group activities designed to build their higher level cognitive skills; (2) facilitates effective group work in settings in which teams have to work pretty much on their own; (3) gives students experience with the dynamics they will encounter in high-performing teams in work organizations, leaving them free to manage their processes but accountable for their outputs; and (4) provides compelling evidence that teams can accomplish things even the most capable member could not do working alone (97% of the groups score higher than their *best* member on the minitests. (Michaelsen, Watson, & Black, 1989).

Potential Disadvantages of Team Learning

On the other hand, Team Learning involves such a dramatic change in both student and instructor roles that it requires a tremendous leap of faith for first time users. Even though some of its key components, like minitests (Michaelson, Fink, & Watson, 1993), can be used with Cooperative Learning (or even as a supplement to lectures), Team Learning is not an approach that can be done half way. Just as it would be unwise to try to cross a 12 foot chasm in three 4-foot steps, adopting Team Learning requires careful planning to be sure that all key factors—the composition of the groups, grading policies and procedures, and nature of class activities—are all mutually supportive. Otherwise, groups seldom mature to the point that they are able to accept the major responsibility of ensuring that learning occurs.

Another potential disadvantage of Team Learning is that it requires a considerable up-front investment. Some of the work is in building a set of appropriate minitest questions (Michaelson et al., 1993). The most difficult part, however, is locating or designing group activities and assignments that focus on developing students' ability to use concepts as opposed to simply learning about them. Two factors contribute to this difficulty: (1) the nature of the assigned task is so important to the success of the group, and (2) because of the efficiency of the minitests in ensuring that students master basic content, the vast majority of class time is typically devoted to activities of this type.

Finally, instructors who use Team Learning need to develop procedures for (1) forming permanent and purposefully heterogeneous work groups, and (2) assigning grades that are heavily based on group performance but partly based on individual performance and peer evaluation (to ensure individual accountability to the group).

The "Bottom Line"

Is it worth the risk and the effort to adopt Team Learning? Interestingly, managers in the workplace have had (and are now having) to answer the same question with respect to develop high-performance teams. Further, the primary stumbling block is the same for instructors as it is for managers: Are they willing to trust students (workers) to: accept responsibility for ensuring that learning (work) is

accomplished. In our view, the answer is as clear in education as it is in industry. If educators do their part, students will do theirs, and the payoff is well worth the effort.

References

- Boudette, N. E. (1990, January 8). Give me a 'T!' Give me an 'E!'...In the '90s the well-oiled company will know how to spell T-E-A-M. *Industry Week*, pp. 62-65.
- Boyer, E. L. (1991). *Scholarship reconsidered: Priorities of the professoriate*. Princeton: The Carnegie Foundation for the Advancement of Teaching.
- Cooper, J., & Mueck, R. (1992). Student involvement in learning: Cooperative learning and college instruction. In A. Godsell, M. Maher, V. Tinto, B. L. Smith, & J. MacGregor (Eds.), *Cooperative learning: A sourcebook for higher education*. University Park, PA: National Center of Post-Secondary Teaching, Learning, and Assessment.
- Dumaine, B. (1991, June 17). The bureaucracy busters. *Fortune*, pp. 36-50.
- Feldman, D. C. (1984). The development and enforcement of group norms. *Academy of Management Review*, 9(1), 47-53.
- Godsell, A., Maher, M., Tinto, V., Smith, B. L., & MacGregor, J. (1992). *Cooperative Learning: A sourcebook for higher education*. University Park, PA.: National Center of Post-Secondary Teaching, Learning, and Assessment.
- Hackman, J. R.(Ed.) (1990). *Groups that work (and those that don't): Creating conditions for effective teamwork*. San Francisco: Jossey-Bass Inc.
- Hoerr, J. (1989, July 10). The payoff from teamwork: The gains in quality are substantial - so why isn't it spreading faster? *Business Week*, pp. 56-59.
- Houston, P. (1989, December). Timmberrr! *Business Month*, pp. 50-56.
- Jacobson, G. (1989, July). A teamwork ultimatum puts Kimberly-Clark's mill back on the map. *Management Review*, pp. 28-31.
- Johnson, D. W., & Johnson, R. T. (1983). The socialization and achievement crisis: Are cooperative learning experiences the solution? *Applied Social Psychology*, 4, 119-164.
- Johnson, D. W., Johnson, R. T., & Smith, K. A. (1991). *Cooperative Learning: Increasing college faculty instructional productivity*. ASHE-ERIC Higher Education Report No. 4. Washington D.C.: The George Washington University, School of Education and Human Development.
- Levine, J. B. (1991, October 25). Miles traveled, more to go. *Business Week*, pp. 70-73.
- Light, R. J. (1990). *The Harvard Assessment Seminars: Explorations with students and faculty about teaching, learning, and student life*. Cambridge MA: Harvard University.
- Light, R. J. (1992). *The Harvard Assessment Seminars: Explorations with students and faculty about teaching, learning, and student life*. Cambridge MA: Harvard University.

- Machlis, S. (1992, May 18). Sun's IPX: Big performance in a pc package. *Design News*, pp. 56-61.
- Michaelsen, L. K., Fink, L. D., & Watson, W. E. (in press). Effective minitests: An efficient solution to covering content. *Journal of Management Education*.
- Michaelsen, L. K. (1992). Team Learning: A comprehensive approach for harnessing the power of small groups in higher education. *To Improve the Academy*, 11, 107-122.
- Michaelsen, L. K., Watson, W. E., & Black, R. H. (1989). A realistic test of individual versus group consensus decision making. *Journal of Applied Psychology*, 74 (5), 834-839.
- Michaelsen, L. K., Watson, W. E., Cragin, J. P., & Fink, L. D. (1982). Team learning: A potential solution to the problems of large classes. *Exchange: The Organizational Behavior Teaching Journal*, 7(1), 13-22.
- Moskal, B. S. (1988, June 20). Supervisors, begone! Self-managed groups' payoffs widespread. *Industry Week*, p. 32.
- Peters, T. J. (1992). *Liberation management: Necessary disorganization for the nanosecond nineties*. New York: A. A. Knopf.
- Peters, T. J., & Austin, N. K. (1985). *A passion for excellence: The leadership difference*. New York: Random House.
- Port, O., Schiller, Z., & King, R. W. (1990, April 30). A smarter way to manufacture: how 'concurrent' manufacturing can reinvigorate American industry. *Business Week*, pp. 110-117.
- Shaw, M. E. (1981). *Group dynamics: The psychology of small group behavior*. New York: McGraw-Hill Book Company.
- Sherman, S. (1993, January 25). A brave new Darwinian workplace. *Fortune*, pp. 51-56.
- Slavin, R. E. (1983). *Cooperative learning*. New York: Longman Inc.
- Slavin, R. E. (1990). *Cooperative learning: Theory, research and practice*. Englewood Cliffs, N.J.: Prentice-Hall.
- Stewart, T. A. (1992, May 18). The search for the organization of tomorrow. *Fortune*, pp. 92-98.
- Trist, E. L., & Bamforth, K. W. (1951). Some social and psychological consequences of the long-wall method of coal-getting. *Human Relations*, 4, 3-38.
- Watson, W. E., Kumar, K., & Michaelsen, L. K. (in press). Cultural diversity's impact on group process and performance: Comparing culturally homogeneous and culturally diverse task groups. *The Academy of Management Journal*.
- Watson, W. E., Michaelsen, L. K., & Sharp, W. (1991). Member competence, group interaction and group decision-making: A longitudinal study. *Journal of Applied Psychology*, 3, 231-248.