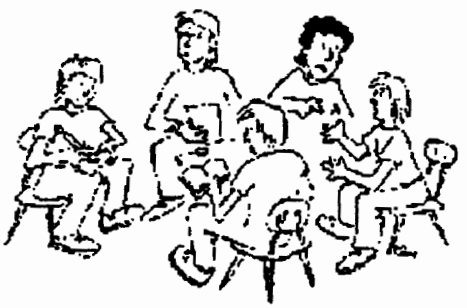
The Key to
Harnessing the Power of Small Groups in
Higher Education

Building Learning Teams



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Building Learning Teams:

The Key to Harnessing the Power of Small Groups in Higher Education

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This paper defines Team Learning, a comprehensive, group-based instructional format originally developed to facilitate active learning in large classes, but has subsequently proven to be effective in a wide variety of instructional settings. The authors identify the structural differences in the roles that instructors and students play in a Traditional Learning vs a Team Learning environment. Essential conditions for effective Team Learning are defined. New tools for integrating course design, classroom management, group composition and performance evaluation are described.

The past decade has produced a growing body of evidence that small group-based instructional methods can be used to promote the achievement of a wide variety of desirable educational outcomes in higher education. These include the development of higher level learning and problem solving skills (Curves, 1988), enhancing the effectiveness of computer-based instruction (Light, 1990; Wojtkowski & Wojtkowski, 1987), eliminating the basis for stereotypes based on race, gender and physical handicaps (see the review by Johnson, Johnson & Maruyama, 1983) and reducing drop-out rates for accounting students (Wilson, 1982) and science majors (Tobias, 1990).

In spite of this evidence, however, the use of small groups in college classrooms is still much more of a novelty than a common practice. Frequent faculty concerns about adopting group-based teaching methods can be easily understood in terms of the roles that instructors and students play in the Traditional Learning Model.

TRADITIONAL VS. TEAM LEARNING

The Traditional Learning Model defines the instructor primarily as a dispenser of information, solely responsible for ensuring that learning occurs. The student is defined as a passive receiver of information

and few if any of the resources they bring to the classroom are incorporated into the learning process. Subject mastery is primarily determined by testing individual students.

It is not uncommon for an instructor, defined in this manner, to feel that the only way to ensure that students are exposed to course concepts is by personally going over the material in class. Thus, the vast majority of instructors genuinely feel that using class time for group work results in a reduction of the amount of material they can cover.[1] In addition, very few college educators have received formal training for their teaching roles. Fewer still have been trained in the use of groups. It is little wonder that instructors, if they use groups at all, employ strategies that are often so narrow in scope that the results are self-limiting and may even be self-defeating. Dissatisfaction with the process by both students and instructors soon follows. Small group instructional methods are deemed to either be ineffective or not to work at all. Instructors return to their previous methods vowing never to try small groups in the classroom again.

More often than not, reported failures of using small groups stem largely from a misconception of what "groups" really are. Instructors often make the assumption that the act of assigning a set of individuals to work together automatically means that they will function as a team. Becoming a team is a process not an event. Unless instructors facilitate the transformation of groups into teams, their success in using small groups is likely to be limited at best.

TEAM LEARNING DEFINED

The first step in understanding Team Learning (Michaelsen, 1992; Michaelsen,, 1994; Michaelsen, Watson, Cragin & Fink, 1982; Michaelsen, Watson & Schraeder, 1985) is to realize that the primary issue this approach addresses is one of Empowerment in the sense that empowerment means, "to give the means, ability, or opportunity to do".

First, Team Learning "empowers" both instructors and students by redefining their primary roles and responsibilities in the learning process. The instructor is redefined as a course designer and the manager of the overall instructional process. This is only possible because the performance evaluation system and instructional activities employed in Team Learning create conditions in which the vast majority of students willingly share in the responsibility to ensure that learning occurs.

You might ask, "why would instructors, who have always seen themselves as being responsible to ensure that learning takes place, be willing to rely on students to accept responsibility when there is little or no evidence that they would be willing or able to accept it?" Or for that matter, "Why would students accept such a responsibility?" Realistically, the answer is that, in a traditional classroom setting, neither instructors nor students would likely agree to even partially switch their roles To understand how this role change can take place, a second part of the concept of empowerment must be understood.

Empowerment also means, "to make feasible or operational." So, just redefining roles and responsibilities does not go far enough to make the Team Learning Model complete. Instructors and students must have some incentive to accept these new roles and responsibilities. Both instructors and students must also have some assurance that the quality of educational outcomes obtained using the Traditional Learning Model will not be compromised.

The second and most visible step of the Team Learning Model involves the use of new and essential operational tools. These tools, when used together with proper course design, provide a

[1]This conclusion is based on data collected from over a thousand faculty participants in"Geting the Most out of Groups" workshops on nearly 100 college and university campuses world wide.

modified learning environment within which new instructor and student roles and responsibilities can be successfully carried out.

Course Design might be thought of as a creative process in which the instructor establishes a strategic framework that serves as a basis for ensuring that individual course components are mutually supportive. As a course designer (see Figure 1) , the instructor:

- defines course content,
- identifies what students should be able to do with course concepts,
- establishes acceptable performance standards for individuals and groups and
- develops group assignments and class activities through which students can master the essential concepts of the course.

Classroom Management, Student Group Composition and Development and Performance Evaluation make up the operational learning environment within which previously designed course will be administered. In fact, it is this new operational structure that provides incentives for instructors and students to adopt their new roles as Team Learning defines them. In the remainder of this paper, each of these four tools will be discussed individually and as essential parts of the Team Learning Model.

Team Learning = ***Course Design +***
Classroom Management +
Student Group Composition +
Performance Evaluation

COURSE DESIGN

In the Traditional Learning Model, the instructor is primarily a dispenser of information to passive student receivers. From the point of view of course design, the instructors spends much of their time preparing lectures and trying to make presentations more interesting and exciting. In the process, students become dependent on the instructor. In the Team Learning Model, courses, and the activities employed in them, must be designed to give students opportunities and incentives to accept responsibility for ensuring that learning occurs. Further, the instructors must focus on creating two very different types of instructional activities. One type must focus on building a sound student understanding of basic concepts. The other is to design activities that focus on building students' higher level thinking and problem solving skills. Further, the two are linked together. The former must effectively diagnose student readiness to participate in the related activities that follow. As a result, the most difficult new skill for many instructors is learning to support student work groups in their struggles to become effective without making them dependent on outside help.

Answering Key Course Design Questions

Many of the key strategic decisions required in designing a course for Team Learning can be made by answering four questions (see Figure 1). These include:

1. What do I want students to be able to do when they have completed this unit of instruction (or course, program of study, etc.)?

Team Learning: Key Course Design Considerations

The order of events in the Instructional Activity Sequence (IAS) drives the manner in which an instructor should design a course. Individual students prepare, the Readiness Assurance Process (RAP) helps diagnose student preparation for application activities, instructor clarifies concepts, and then students apply concepts. Using this sequence of activities in the classroom requires the course designer to work backward. "What behaviors would students be demonstrating if they could apply course concepts?", (IAS #6.) drives IAS #1 ("What will students have to known?") and IAS #2-#3 ("How to tell what students know?").

Desired Educational Outcomes

(1) What do I want students to be able to **do** *when they have completed this unit of instruction?*

Course Content

(2) What will students have to **know** *to be able to accomplish the objectives in # 1?*

Readiness Assurance

(3) How can instructors tell what students have already learned on their own or from each other so they can build from there (rather than assuming that they don't know and starting from scratch)?

Application of Course Concepts

(4) How can the instructor tell whether or not students can **use** *their new knowledge?*

This question guides the development of activities and exams that increases students' higher level cognitive skills by requiring them to deal with the kinds of problems they will face in subsequent course work and/or future jobs.

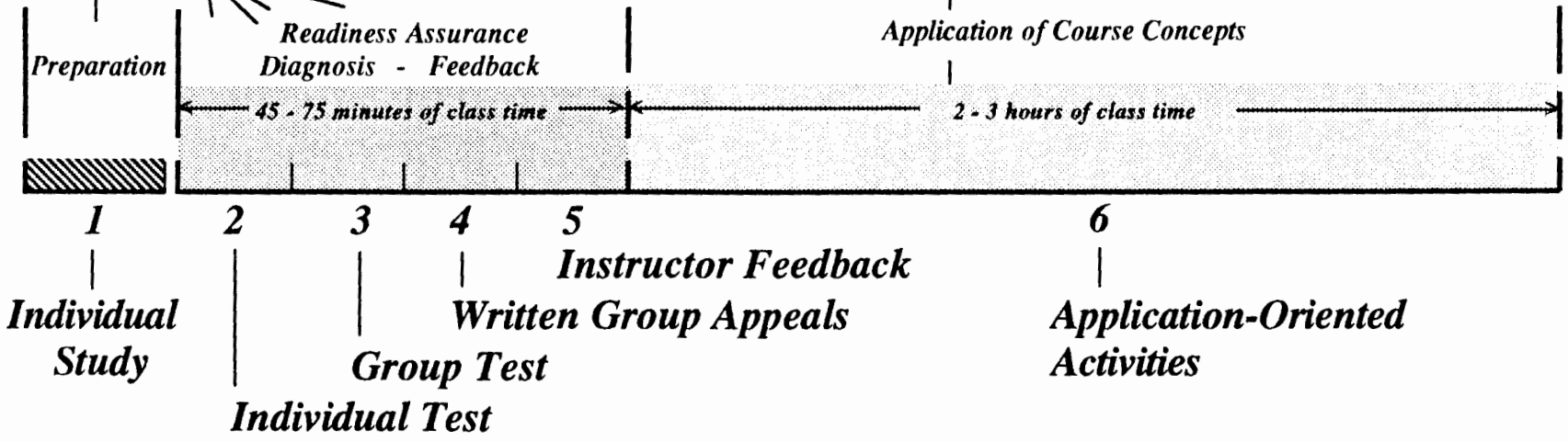


Figure 1

This question identifies the desired outcome(s) of the instructional process and also the nature of the activities that can be used to develop and assess students' higher level cognitive skills (Bloom, 1956). Some examples might include being able to read lab reports of blood and urine analyses and describe the chemical processes that might have produced the observed outcomes (for an organic chemistry course in a first year medical school curriculum), or being able to isolate and rationally weigh the relevant factors when confronted with a "buy/lease/rent" decision (for a course in financial management).

2. What will students have to know to be able to do #1?

This question defines the content that must be covered in assigned readings or in other ways.

3. How can I tell what students have already learned on their own or from each other so I can build from there (rather than assuming that they don't know anything and starting from scratch)?

This question guides the development of the assessment components of the Readiness Assurance Process (i.e., individual and group readiness assessment tests -- see Figure 1).

4. How can I tell whether or not students can effectively use their knowledge?

This question guides the development of projects and exams that increase students higher level cognitive skills by requiring them to deal with the kinds of problems they will face in subsequent course work and/or future jobs.

Once the course objectives and content are set, it is then possible to design the operational aspects of a course so that they will also be mutually supportive. These include decisions with respect to classroom management, student group composition and development and, performance evaluation. Further, unless these aspects of a course design are completely compatible, the discordant elements will detract significantly from students' willingness and/or ability to accept responsibility for ensuring that learning occurs.

CLASSROOM MANAGEMENT

In the Traditional Learning Model, the classroom management tool is lecture. The instructor dispenses information to passive students. Since the Team Learning Model redefines the role of instructor and student, a new tool must be used to replace lecture.

To accomplish this, the Team Learning Model uses a sequence of six steps called an **Instructional Activity Sequence (IAS)**. In the Team Learning Model, IAS replaces lecture and allows the instructor t0 act primarily as *a manager of the learning process. The IAS makes it possible to focus the vast majority of class time on helping students develop the ability to use course concepts as opposed to simply learn about them.*

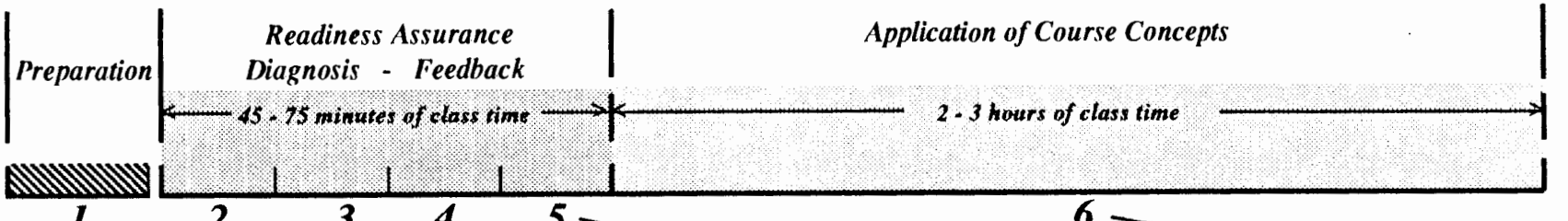
An overview of the Instructional Activity Sequence is shown in Figure 2.

Using a Readiness Assurance Process to "Cover" Content without Lectures

Perhaps the most unique feature of the IAS is that there are no formal presentations by the instructor until students have studied the material and completed the individual and group readiness assessment tests that are part of in the Readiness Assurance Process (RAP) -- steps 2-5 in the IAS sequence (for further information see Michaelsen et al., 1985; Michaelsen, Fink & Watson, 1994). The RAP, which takes approximately 3/4 - 1 1/4 hours to complete allows instructors to virtually eliminate time that is often wasted in covering material that students could learn on their own. In addition, the RAP greatly increases the instructor's knowledge of students' level of understanding of course concepts.

Team Learning Instructional Activity Sequence

The Instructional Activity Sequence (IAS) is a Classroom Management tool composed of six steps that make it possible to focus the vast majority of class time on helping students develop the ability to use course concepts as opposed to simply learn about them. The IAS allows the instructor to adopt the role as a manager of the learning process as opposed to being primarily a dispenser of information. The IAS is repeated for each major unit of instruction (5 - 7 times in a typical course).



Individual Study

Purpose - ensure that students prepare before class by studying assigned reading material.

Instructor Feedback

Purpose - respond to students remaining questions or issues which need additional explaination prior to the application of course concepts.

Written Group Appeals

Purpose - increase learning and group cohesiveness. The process galvanizes a group's negative energy from having missed questions into a focused review of potentially troublesome concepts.

Application-Oriented Activities

Purpose - help students grow in self-confidence and build a sound understanding of concepts and to experience ways of using them. Steps 1 - 5 are taken to ensure that students are properly prepared to complete the activities performed during this step. The application activities, group projects and exams employed should look and feel like the kinds of things you hope students would be able to do individually once they have completed the unit of instruction.

Group Test

Purpose - ensure group accountability and peer teaching. This is the same set of questions that make up the Individual Test. Groups complete the test prior to receiving their scores on the Individual Test. The Group Test should be scored immediately so appeals can be prepared. The Group Test also provides immediate feedback to both the instructor and students.

Individual Test

Purpose - ensure individual accountability. A diagnostic tool to help the instructor know if students are prepared for the application activities that make up the remaining class time. Composed of 15 - 20 multiple choice and short answer questions over assigned readings and/or homework type problems. The test should be scored while the group test is being taken. This will provide immediate feedback to both the instructor and students for this unit of instruction.

Figure 2

Two principal factors contribute to the success of the RAP in ensuring that students master basic course concepts:

- It creates opportunities and incentives for students to accept responsibility for their own learning instead of reinforcing a dependency on the instructor. Students who complete their assigned homework are rewarded by higher scores on the individual tests and by their contributions to the success of their group.
- Students are exposed to, receive feedback on and, broaden their understanding of key concepts through engagement with the material at least six different times and in very different ways (see Figure 3) as follows:
  1) In most instances, the students are initially exposed to concepts through assigned readings.
  2) The additional exposure during the individual test helps reinforce their memory of what they learned during their individual study (for a discussion of the positive effects of testing on retention see Nungester & Duchastel, 1982).
  3) During group tests, students benefit from receiving oral input from their peers that often broadens their understanding and also gain from acting in a teaching role (for a discussion of the cognitive benefits of teaching see Bargh & Schul, 1980; Slavin & Karweit, 1981).
  4) During the appeals process, students engage in a focused restudy of particularly troublesome concepts.
  5) This is followed by oral feedback from the instructor that is specifically aimed at resolving any remaining misunderstandings revealed by the three previous steps in the process.
  6) Subsequently, students are exposed to the concepts again as they try to use them while working on application-oriented activities and exams.

Providing Immediate Feedback

In our judgment, when using true/false and multiple choice questions, the most effective way to handle test scoring is by using optically scanned answer sheets and scoring them on the spot, using a portable mark-sense scoring machine[2]. This minimizes scoring errors and, at the same time, allows instructors to provide immediate feedback on both the individual and group exams. In instances where the readiness assessment tests consist of problems or short answer essays, we recommend having students put their individual answers in a clear plastic folder during the group test (so that they can see it but won't be tempted to change their individual answers) and hand both the individual and group answers in at the same time. We would then recommend giving groups a solution or list of key points that should have been covered which can be prepared and duplicated prior to class.

Appeals

The appeals process (see IAS Step #4, Figure 2) is a very effective way of increasing both learning and group cohesiveness. When properly managed, the appeals process galvanizes the students' negative emotional energy from having missed an exam question into a focused review of potentially troublesome concepts.

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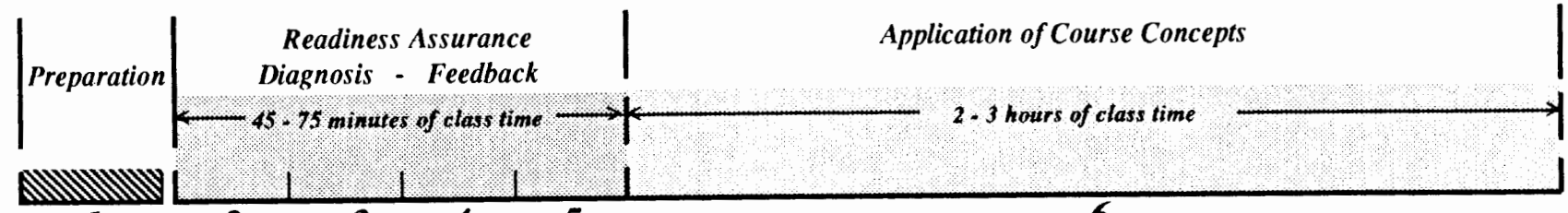
[2]We use a portable scoring machine made by Scantron Corporation. They provide the equipment free of charge -- as long as you purchase a minimum volume of forms on an annual basis -- for more information call (800) 421-5066 extension 650.

How The Instructional Activity Sequence Reinforces Learning

The IAS helps reinforce learning by involving students with course concepts in six ways and by using the resources that they bring to class. This allows students to share the responsibility for the learning that occurs. Instead of primarily dispensing information, the instructor can use time in class to diagnose student readiness to apply course concepts, clear up remaining troublesome concepts and manage the application activities themselves. For instructors, the IAS lessens the dependency that students have on them and frees time to become a manager of the learning process. All in all, the IAS prepares students to succeed at learning.



Individual Study

Students are first exposed to course concepts through assigned reading and homework.

Individual Test

The individual test helps students reinforce the memory of what they learned during individual study.

Group Test

During group tests, students exchange information with their peers. Acting in the role of teacher and learner, a students' understanding of course concepts is often broadened.

Written Group Appeals

During the preparation of written appeals, students engage in a focused discussion of troublesome concepts.

Instructor Feedback

The Instructor provides information and examples specifically aimed at resolving any remaining misunderstandings identified in IAS Steps #1 - #4.

Application-Oriented Activities

Students review and expand their understanding of course concepts again as they try to use them while working on application-oriented activities and exams.

☑ ***The instructor's control of the educational focus and quality of the course occurs during the design stage when the application activities, tests and reading material were structured. During class, the instructor <u>manages</u> the IAS.***

☑ ***The energy for learning during class comes almost entirely from student preparation and interaction at each step in the IAS. The instructor supports groups in their efforts to become effective without making them dependent on outside help.***

Figure 3

After having used and/or observed a number of approaches for managing the appeals process, we recommend the following:

- Attach a written explanation of the appeals process and instructions for preparing and submitting them on the inside of the group folder. During the first individual readiness assessment test, have the first person who finishes the individual exam in each group read over the instructions so that he or she can coach their group through the appeals process.
- Insist on written appeals. Requiring groups to put their thoughts in writing forces students to formulate their reasoning in a systematic way and also gives the instructor the opportunity to evaluate their arguments in the privacy of his or her office and avoid a public debate about the merits of the appeal. We recommend using an appeals form that asks students to specify the question involved, their preferred correct answer, the basis for their appeal and the evidence that supports their point of view.
- Accept only **group** appeals. Individual appeals are detrimental in two ways. First, individual appeals are a barrier to group cohesiveness because they remove an important source of interdependence between group members (i.e., If individuals could get credit on their own, without having to challenge others' ideas, there is no incentive for working to achieve agreement as a group.). Second, individual appeals reduce the learning that normally takes place as groups develop a rationale for the appeal.
- When an appeal is granted, give the appropriate number of points to both the group and each individual in that group but not for members of other groups. This increases learning by both encouraging appeals and enhancing group cohesiveness because it forces each group to act on its own behalf.

Instructor Feedback

Instructor feedback should be very focused and brief because both the instructor and the students already have a substantial foundation to build on. By this point in the process (see IAS step #5), most groups have successfully developed a sound understanding of the vast majority of content covered in the RAP. If not, however, this is the instructor's opportunity to resolve any student misunderstandings that still exist. We typically remind students that the reason for the tests is to prepare them for the application-oriented activities and projects that are to follow and ask them to identify any of the questions about which they would like additional discussion before moving on to the next activity or the next unit of material. In addition, this is the time when we typically present any related material that may not have been adequately treated in the readings.

One caution is in order with respect to this phase of the RAP. Students who have convinced their peers to accept an incorrect answer will often try to save face by trying to orally defend their point of view. This creates problems for two reasons. First, they are often so emotionally involved that they do not listen very well. Second, the majority of the class usually does not care one way or the other and will feel like time is being wasted if the discussion lasts for any substantial length of time.

When faced with students who appear to be orally defending an appeal, the problem can be minimized by:

- Reminding the class (and yourself) that the purpose of the RAP is to make certain that they understand the concepts before they are asked to apply them.
- Focusing the discussion on the concepts rather than the questions (e.g. saying something like "The issue that this question was getting at was...").

- Making it clear that you cannot and will not make a judgment on their appeal at this point because you would not be able to do a thorough job of evaluating the appeal until you have the opportunity to consider both the evidence they provide and the context from which it was taken. As a result, they [the argumentative student] will have to wait until you have the chance to consider the appeal in the context of the assigned reading material.

Additional Benefits of the Readiness Assurance Process

The individual and group tests in the RAP are more diagnostic than evaluative in nature. Although individual tests count a modest amount toward a course grade (see Performance Evaluation), their primary purpose is to ensure that students are intellectually prepared for the group work that will take place in class. The group tests provide opportunities for peer teaching and for the instructor to detect misconceptions that need to be corrected before students are expected to tackle in-class activities designed to build their ability to apply course concepts.

In addition to ensuring that students develop a sound understanding of course concepts, the RAP also accomplishes four other important objectives with respect to the management of the instructional process:

- The RAP ensures that individuals are accountable for completing their assigned homework. If they fail to prepare for class, their performance (and their grade) on the individual test will be low. In addition, their lack of preparation will be evident to their peers during the group test.
- Data from comparisons of individual and group scores provide immediate feedback that helps the groups become more effective (see Watson et al, 1991). The immediate feedback allows students to be aware of situations in which the group failed to capitalize on the knowledge of one of their peers. Groups learn very quickly the importance of ensuring that no one dominates. Thus, over time, more vocal members typically talk less, listen more, and encourage quieter members to participate in the discussions.
- The RAP is extremely effective at building group cohesiveness which, in turn enables instructors to rely on group norms to provide motivation for individual study and class attendance.
- The RAP is such an efficient way to expose students to conceptual material that approximately 70 - 80% of class time can be spent on application-oriented class activities.

Application-Oriented Activities

One of the greatest challenges of using Team Learning is designing activities and assignments that are appropriate for developing students higher level cognitive skills (see Bloom, 1956). In part, this is because most instructors have traditionally focused the majority of their teaching on simply "covering" content. Because of the efficiency of the RAP in helping students master basic concepts, however, new users of the Team Learning Model face a very different problem. Instead of rushing to make sure everything gets "covered", instructors have a great deal of class time available for helping students learn to use the concepts. Most instructors have had little experience in designing activities that accomplish this.

On the other hand, instead of carrying the entire burden for learning (i.e., the "Atlas complex" -- see Finkel & Monk, 1983), instructors who use the RAP to cover course content have two additional assets to work with:

- First, students already have a sound understanding of the key concepts (i.e., groups typically score 90% or better on the group readiness assessment tests).
- Second, the groups are both cohesive and quite effective at utilizing their members' intellectual resources (e.g. 97% of the groups will score higher than their best member on the same tests. See Michaelsen, Watson & Black, 1989). Thus, with the support of their groups, students can

successfully tackle problems that are far too difficult for even the most talented individuals working alone.

Guidelines for Developing Group Assignments and Activities

A key element in the success or failure of any group-based instructional approach, including Team Learning, is the nature of the group assignments. To be optimally effective, group assignments, whether graded or not, should be designed and managed to simultaneously accomplish four important objectives:

1) Promoting learning of essential concepts or skills,

2) Building group cohesiveness

3) Ensuring individual accountability

4) Teaching students the positive value of groups.

Activities that sacrifice one (or even possibly two) of these objectives can still be used, however. The key is maintaining an overall balance. For example, activities that primarily promote learning are perfectly appropriate if they are interspersed with activities that build group cohesiveness and individual accountability. Otherwise the groups will deteriorate to the point of ineffectiveness.

Characteristics of Effective Group Assignments.

Not all assignments, however, are equally helpful in building either students' higher level cognitive skills or their interpersonal and group interaction skills. The nature of the tasks that groups engage in has a tremendous effect on the quality of the learning experience they provide. In order to work well, application-oriented group assignments:

- Must require the groups to produce a tangible output. Otherwise, neither the instructor nor the students will have any idea about whether or not students have developed the ability to use the concepts effectively.
- Must be impossible to complete unless students understand course concepts. Otherwise, students are likely to see them as irrelevant "make work" projects and neither the instructor nor students will have any idea how well the concepts are understood.
- Must be difficult enough that very few, if any, of the students can successfully complete the assignment working alone. Otherwise, the majority of group members will sit back and watch the better students do the work.
- Should allow the groups to spend the majority of their time engaged in the kinds of activities that groups do well (e.g., identifying problems, formulating strategies, processing information, making decisions) and a minimum of time engaged in activities that individuals could do more efficiently working alone (e.g., creating a polished written document). In fact, the greater the length of required written documents, the <u>less</u> students are likely to learn from the assignment. (i.e., when groups are assigned to produce a lengthy document, the only thing that is likely to be done by the group is deciding how to carve up the project into manageable pieces -- the rest will be individual work.)
- Should give students the opportunity to practice dealing with the same kind of issues and problem situations they will encounter in later course work or in future jobs. Being able to see how the concepts apply to realistic problems is a tremendous asset to both motivation and learning.
- Should be interesting and/or fun.

PERFORMANCE EVALUATION

In the Traditional Learning Model, an individual student primarily demonstrates performance by taking one or more tests. The test scores become an indication of the extent to which learning did or did not take place. In this setting, performance evaluation is a terminal event. Regardless of whether learning took place or not, as measured by test scores, the process ends. In the Team Learning Model , which requires students to accept greater responsibility for ensuring that learning takes place, a performance evaluation system based solely (or even primarily) on individual test performance would put the success of the entire course at risk. Unless, the reward system is specifically designed to ensure individual accountability and include incentives for participating in group work, it will significantly reduce the willingness of students to engage in the kinds of behavior that are needed for successfully implementing any group-based instructional approach.

In the Traditional Model, grades are based primarily on individual test scores. By contrast, Performance Evaluation (PE) in the Team Learning Model is based on a grading system containing three essential components (see Figure 4).

- ***Individual Performance***

The individual readiness assessment tests provide a basis for individual accountability for completing the reading assignments or other homework. In addition, since a primary objective of Team Learning is the development of each individual students' higher-level thinking skills, an essential component of the performance evaluation system is an application-oriented exam or project that will provide data on their ability to use course concepts.

- ***Group Performance***

The group performance component provides incentives to support the development of group cohesiveness and to justify putting effort into group work.

- ***Peer Evaluation***

The peer evaluation solves two important motivational problems. One is providing an incentive for participating in group discussions. The other is that it tends to remove students' fear that they will have to choose between getting a low grade on the group assignments and having to "carry" group work (when other group members fail to do their fair share). The final decision on the weight of each of these components (i.e., Individual Performance vs. Group Performance vs. Peer Evaluation) should be a function of three factors:

- Each of the components should be given enough weight so it is clear to students that the instructor thinks it is important.
- The instructor must be personally comfortable with administering the chosen grading system.
- The grading system must be responsive to student concerns for fairness and equity.

In our classes, we involve students in the development of the grading system through an exercise called "Setting Grade Weights" (see Michaelsen, Cragin & Watson, 1981). This is an exercise, in which we set limits for the class and representatives of the groups then negotiate to reach a mutually acceptable set of weights for each of the grade components. Over the years, it has proven to be a highly effective way to accomplish a number of important objectives. These objectives include:

- clearly demonstrating that the roles of both the instructor and student will be different from most other courses,
- building group cohesiveness, and
- ensuring that both group performance and peer evaluation are seen by the students as an integral part of the grading process.

Performance Evaluation And The IAS: Key Components

In Team Learning, the Performance Evaluation and the Instructional Activity Sequence mold groups of ordinary students into high performance learning teams. Performance Evaluation addresses both instructor and student concerns for fairness and equity. As a result, students accept responsibility for their own learning without becoming dependent on the instructor. Students who behave in a responsible manner achieve higher test scores and effectively contribute to their teams success.

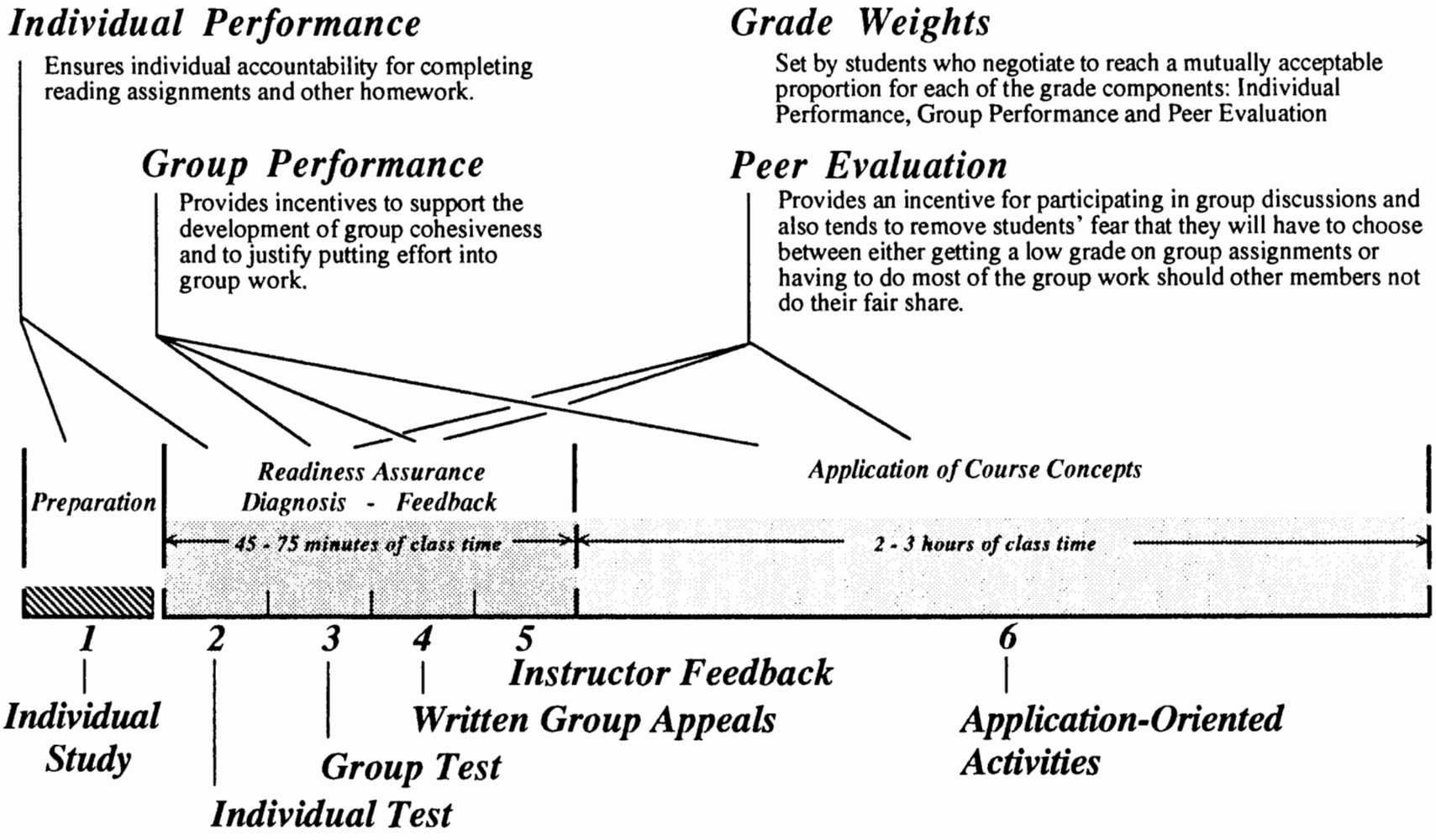


Figure 4

FORMING AND DEVELOPING LEARNING TEAMS

In the Traditional Learning Model, passive students receive the information dispensed by the instructor. The instructor, being responsible for ensuring that learning takes place, is the primary resource upon which students depend. The success of the Team Learning Model relies on shifting some of the responsibility for ensuring that learning takes place from the instructor to the students. For this shift in responsibility to take place, students must be removed from their passive role.

To accomplish this the Team Learning Model relies on the group dynamics that naturally develop in properly managed, permanent and purposefully heterogeneous Learning Teams (LT's). As the LT's become more cohesive over time, their norms provide an increasingly powerful source of motivation to prepare for and attend as well as class and participate in group work. The development of LT's is key to successfully increasing students' willingness to accept responsibility to ensure that learning occurs (See Michaelsen, Jones & Watson, 1994). The level of commitment necessary to make this shift is rarely achieved by occasional group activities or adding a group assignment to a course that is primarily taught through the Traditional Learning Model.

Key Principals in Forming Learning Teams

- Student assets should be evenly distributed among the groups. Instructors should ask themselves, "What would make a difference in how students are likely to perform?" Student assets typically include such things as work experience, previous relevant course work, access to perspectives from other cultures, etc.
- Groups should be formed in a way that avoids unnecessary barriers to group cohesiveness. Barriers to group cohesiveness include previously established relationships between a subset of the members in a group (e.g. boyfriend/girlfriend, fraternity brothers, sorority sisters). Such relationships can form the basis for a cohesive subgroup from which other members are likely to feel excluded for the entirety of a course. As a result, allowing students to form their own groups practically ensures the existence of potentially disruptive subgroups and also asks for trouble for a variety of other reasons (see Fiechtner & Davis, 1985).
- The group formation process should be as visible as possible. This alleviates student concerns about any ulterior motives the instructor may have about the eventual composition of the groups. An effective and practical approach to forming the groups is to orally gather data about students' backgrounds on the dimensions important to group success. The groups can then be formed by:
  1) deciding on the total number of groups you want to form (we usually have 6 to 7 people per group),
  2) asking students possessing a specific asset to stand (taking the rarest and/or most important category first),
  3) having those standing "count-off" by the total number of groups and repeating steps #2 and #3 with different categories of students until everyone in the class has been assigned to a group.

Ensuring the Development of Performance-Oriented Group Norms

Much of the effectiveness of Team Learning, is dependent upon the development of norms that motivate individual members to attend class and be prepared for team work. Such norms, however, will only develop if students:

- can see a clear relationship between individual member behavior and the success or failure of their team,

- can monitor the extent to which members are complying with the norm that controls the behaviors that are essential for the teams to be effective (e.g. unless students have a way of knowing whether the other members of their group are preparing for class, it is highly likely that the group will develop a norm that encourages completion of homework assignments) and,
- have mechanisms through which they can provide feedback on team performance and to individual members if they fail to comply with group norms. Instructors simply and effectively empower teams in this way when they:

A) Provide comparisons to other teams. When teams have access to ongoing and detailed information about their teams performance relative to the performance of other teams, is important for two reasons. One is that it adds a great deal of meaning to the data they receive with respect to their own performance. As a result, when we hand back a team exam, we also give students a summary sheet that shows each teams' score an every question. The other reason for providing comparisons to other teams is that doing so supports the development of inter-team competition. For example, we have students post their group readiness assessment test scores on the board . This invariably results in cheers when groups do well and groans when their scores are low. As a result, "doing well" inevitably becomes a key group objective and thorough individual preparation, upon which the team's success or failure depends, is highly likely to emerge as a team norm.

B) Require a peer evaluation. Peer evaluations serve a number of functions within the groups. For example, basing part of the grade on a peer evaluation provides both tangible data on how much each member contributes to the group and largely alleviates the students' fears that others will fail to do their fair share of the work. Depending on the nature of the tasks one assigns to the groups, we recommend conducting the peer evaluation in one of two ways. One is by having students submit an assessment of members' contributions on a project-by-project basis (e.g. Abelson & Babcock, 1986). With this approach, individual scores are typically generated by multiplying the group score for the project by the average of the ratings received from the other members in the group. The other approach is having students provide an overall peer evaluation. In either case, it is important to use a scoring system that differentiates within, but not between, groups. Grading peers is difficult and if students have the option of giving everyone in their group a high grade, that is exactly what they will do.

C) Have students keep a record of attendance and performance. Another effective way to encourage development of group norms for class preparation and attendance is to provide the groups with data on how their members are doing. We ensure that they have access to this data by attaching a form to the front of a group folder that is handed out each time the class meets. The form itself contains spaces where students fill in their own scores on the individual and group tests and other group assignments. This alerts groups to two kinds of information that are key to the development of performance oriented group norms (i.e., members who have information but aren't being listened to in the discussions and members who are failing to complete the assigned homework). Even though the scores are shown according to a student ID number rather than names, the performance is public enough to support the development of strong group performance-oriented norms. Groups also record the number of member absences and whether or not the absence was known in advance. We have found that students are much more likely to attend class when they are aware that their team will need to record the fact that a team member was absent and whether or not the absence was known in advance. In addition, recording whether or not any absences were known in advance also encourages members to keep in touch so that they can work out scheduling problems that may arise.

BENEFITS OF THE TEAM LEARNING MODEL

Using groups, even in a casual way, produces benefits that cannot be achieved with students in a passive role (see Bargh & Schul, 1980; Fiechtner & Davis, 1985; Slavin & Karweit, 1981). On the other hand, Team Learning allows the achievement of important outcomes that simply cannot be obtained with temporary groups or occasional group activities (e.g. see Michaelsen et al., 1993; Watson et al. 1991) These include: being able to develop students' higher level cognitive skills in large classes, providing social support for "at-risk" students, promoting the development of interpersonal and group skills, and building and maintaining faculty members' enthusiasm for their teaching role.

Teaching Large Classes Effectively

A key advantage of developing Learning Teams is that they can be used to offset many of the disadvantages of large classes (e.g. Michaelsen, et al, 1982). For example, developing and using learning teams may be the only means of building students' higher-level cognitive skills in large classes (see Kurfiss, 1988). Temporary groups can provide a valuable aid in small classes where the instructor's physical presence is sufficient to ensure that no one "escapes" (either physically or mentally) and that students are actually working on assigned tasks. In large classes, however, the situation is very different. Unlike Team Learning groups, temporary groups simply cannot exert enough influence on their members to do such things as motivate attendance, handle discipline problems, and engage members who would benefit from group work but, given the opportunity, would rather work alone (e.g., see Light, 1990).

Increased Social Support for Various Types of "At-Risk" Students

The influence of groups used in a supplementary way typically ends when the class period is over, whereas students in Team Learning classes have a social support base that is beneficial in many additional ways. For example, group-based instructional approaches have been shown to reduce stereotypes of racial and ethnic minorities and physically handicapped students (see Johnson, Johnson & Maruyama, 1983) and increase self-esteem (see Johnson & Johnson, 1983). In our classes we often find that the social interaction which is a natural part of Team Learning provides benefits to students who often do not feel at ease in a traditional classroom. For example, international students find lasting friendships and grow in their understanding of a new culture; older students discover that their accumulated life awareness is an appreciated and valuable asset; students who are at risk of dropping out form working relationships that assure them of help in future assignments and other classes; and students who are having difficulty maneuvering their way through the campus bureaucracy have a ready source for answers to their questions and concerns.

Development of Interpersonal Skills

Students also benefit from interacting in a situation in which group work really counts. Unlike temporary groups where tough interpersonal issues can be avoided simply by waiting until the end of the class period, students in Team Learning classes cannot easily escape the problems they encounter in their groups. As a result, many learn lessons about themselves that allow them to be more effective and productive when they finish school and enter the work force. For example, students who are intellectually capable but socially unskilled, learn through being exposed to more positive role models and through input from peers who have enough at stake that they are willing to give them helpful (but not always positive) feedback. In addition, because students have to learn to work together, they develop the understanding and skills they need to work productively as task group members. Finally, part of effective group work is believing that the benefits of working in groups outweighs the costs. Unlike groups used in

a supplementary way, the vast majority of Team Learning groups provide solid evidence of the tremendous potential of effective groups.

Building and Maintaining an Enthusiasm for Teaching

Probably the greatest benefit of Team Learning is that it has a tremendous positive impact on the instructor. Being responsible for creating enthusiasm and excitement about basic, but essential, material is a burden that few are able to carry for long without burning out. As a result, even the most dedicated and talented instructors are likely to try to find ways of reducing their teaching load. With Team Learning, however, the groups handle most of the aspects of teaching that, for most, are simply drudgery. For example, the instructor almost never has to go over basic concepts or answer simple questions. The RAP handle that task with ease and most of the remaining questions, even in basic courses, are challenging enough to be interesting. In addition, instructors rarely have to worry about attendance problems. Students come to class because they want to.

Another reason that Team Learning builds enthusiasm for teaching is that most of the necessary changes are structural in nature. Instead of trying to make one's presentations more interesting and exciting, the major emphasis is on designing courses to give students opportunities and incentives to accept more responsibility for ensuring that learning occurs. Thus, the focus of the instructor shifts from, "How should I teach?" to, "How can students best learn?" and the challenge for instructors has to do with designing courses and group activities with that new and different perspective in mind.

Finally, Team Learning also produces instructor enthusiasm because it taps into the energy that is released as the student groups develop into learning teams. Although there are typically some initial struggles, most groups' capabilities steadily improve to the point that students behave more like colleagues than "empty vessels." This is because the natural outcome of empowering groups by structuring them so that they have needed resources, using appropriate performance evaluation systems and having them engage in meaningful and challenging assignments is that the vast majority students willingly share responsibility to ensure that learning occurs. As a result, teaching with Team Learning is simply more fun.

REFERENCES

Abelson, M. A. & Babcock, J. A. (1986). Peer evaluation within group projects: A suggested mechanism and process. The Organizational Behavior Teaching Review, 10(4), 98-100.

Bargh J. A., & Schul, Y. (1980). On the cognitive benefits of teaching. Journal of Educational Psychology, 74(5), 593-604.

Bloom, B. S. (1956). Taxonomy of educational objectives: The classification of educational goals. New York: David McKay.

Fiechtner, S. B. & Davis, E. A. (1985). Why groups fail: A survey of student experiences with learning groups. The Organizational Behavior Teaching Review, 9 (4), 58-73.

Finkel & Monk, (1983) Teachers and learning groups: dissolution of the Atlas complex. In Learning in Groups (pp. 83-98). Bouton, C. & Garth, R. Y. (Eds.). San Francisco: Jossey-Bass.

Johnson, D. W., & Johnson, R. T. (1983). The socialization and achievement crisis: Are cooperative learning experiences the solution? In Bickman, L. Applied Social Psychology Annual 4. Beverly Hills: Sage.

Johnson, D. W., Johnson, R. T. & Maruyama, G. (1983). Interdependence and interpersonal attraction among heterogeneous and homogeneous individuals: A theoretical formulation and a meta-analysis of research. Review of Educational Research, 53(1), 5-54.

Kurfiss, J. G. (1988). Critical thinking: Theory, research, practice, and possibilities. Washington, D.C.:The George Washington University, School of Education and Human Development.

Light, R. J. (1990). The Harvard Assessment Seminars: Explorations with students and faculty about teaching, learning, and student life. Cambridge MA: Harvard University.

Michaelsen, L. K., Cragin, J. P. & Watson, W. E. (1981). Grading and anxiety: A strategy for coping. Exchange: The Organizational Behavior Teaching Journal, 6(1), 8-14.

Michaelsen, L. K. (1992). Team learning: A comprehensive approach for harnessing the poser of small groups in higher education. In To Improve the Academy: Resources for Faculty, Instructional and Organizational Development, 1992. Wulff, D. H. & Nyquist, J. D. (Eds.). Stillwater, OK : New Forums Press Co.

Michaelsen, L. K. (1994). Classroom organization and management: Making a case for the small-group option. In Handbook of College Teaching: Theory and Applications. Prichard, K. W. & Sawyer, R. M. (Eds.). Westport, CT: Greenwood Publishing Group, Inc.

Michaelsen, L. K. , Jones, C. F. & Watson, W. E. (1993). Beyond Groups and Cooperation: Building High Performance Learning Teams. In To Improve the Academy: Resources for Faculty, Instructional and Organizational Development, 1993. Wright, D. L & Lunde, J. P. (Eds.). Stillwater, OK : New Forums Press Co., 1993.

Michaelsen, L. K., Fink, L. D., & Watson, W.E. (1994). Pre-instructional minitests: An efficient solution to covering content. Journal of Management Education, 18 (1), 32-44.

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.

Michaelsen, L. K., Watson, W. E. & Schraeder, C. B. (1985). Informative testing: A practical approach for tutoring with groups. The Organizational Behavior Teaching Review, 9(4), 18-33.

Nungester, R. J. & Duchastel, P. C. (1982). Testing versus review: Effects on retention. Journal of Applied Psychology, 74(1), 18-22.

Slavin, R. E & Karweit, N. L. (1981). Cognitive and affective outcomes of an intensive student team learning experience. Journal of Experimental Education, 50(1), 29-35.

Tobias, S. (1990). They're not dumb. They're different: A new "tier of talent" for science. Change, 22(4), 11-30.

Watson, W. E., Michaelsen, L. K. & Sharp, W. (1991). Member competence, group interaction and group decision-making: A longitudinal study. Journal of Applied Psychology, 76, 801-809.

Wilson, Wayne R. (1982). The use of permanent learning groups in teaching introductory accounting. Unpublished Doctoral Dissertation, The University of Oklahoma.

Wojtkowski, W. & Wojtkowski, W. G. (1987) Utilizing group learning in computer information classes. Journal of Education for Business, 62 , 347-352.