DESIGNING EFFECTIVE TEAM ASSIGNMENTS: FORMULAS FOR SUCCESS, RECIPES FOR DISASTER

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A workshop for the faculty of
Xavier University of Louisiana

through the
Center for the Advancement of Teaching

October 26, 2001

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Literature in the realm of adult learning has led most instructors to believe in the value of team-based learning (e.g., the works of Gardner, Mezirow, Michaelson, Senge, et al.)[*] Team learning has the potential for helping students to learn course content as well as helping to prepare them for living in society. Designing effective team projects, however, requires special care. You CANNOT simply reassign to a group a project that you have used in the past as an individual assignment. Doing so invites some of the worst of the detrimental behaviors attendant with team assignments. The most prevalent problem of team projects is free-riding (also called social loafing). Other problems are dominating members, withdrawal, and inequitable distribution of workload. All of these behaviors defeat many of the positive aspects of team learning. The tips in this paper will give you some ideas for avoiding them or for addressing the problems when they do occur.

Team assignments can be used in any class, including chemistry, economics, math, and accounting as well as some of the more social subject areas. They can be used with any level of student. Team assignments are useful for teaching skills and processes as well as content. This is one of the strengths of having students work in teams.

FOUR KEY QUESTIONS

Not every team project can be perfect. Over the course of a semester, though, and taking all of your team assignments into consideration, you should be able to answer yes to all of these questions. As you approach the challenge of developing your own team projects, keep these questions in mind.

1. *Will this assignment promote individual accountability?*

   Individuals are accountable to their groups only to the extent that two conditions prevail: First, activities and assignments must be designed so that individual member's level of preparation is visible to the other members of the

[*] I prepared this handout borrowing heavily from the work of Larry Michaelson of the University of Oklahoma, who has done extensive research on group learning design. He also serves as a faculty development consultant to many higher education institutions, helping faculty to become more proficient in the use of group assignments for effective learning. You can learn more about his work by reading his publications on the use and design of team projects. Larry is especially fond of group tests; I have, however, used many kinds of group assignments and find them all useful, if designed with care and with specific purposes in mind.

group and/or the instructor. Second, groups must have the ability to reward members who contribute in a positive way and to sanction those who either fail to carry their fair share of the workload or who engage in behaviors that impede group effectiveness (e.g., bossiness, clowning, sulking, hijacking the project). If these conditions are not present, less motivated students will have a tendency to be social loafers (free riders)—to get by on the efforts of the other group members. Keep in mind that most students will have convinced themselves that they are doing their fair share even if they aren't.

You have to provide a way for group members to report and resolve problems and to reward performers and sanction those members who are not full participants. To the extent possible this opportunity should be provided on each and every graded team assignment. This can cause students and you to be uncomfortable. That's not a bad thing; but it is a thing that you have to anticipate and help the students to overcome. This requirement of group assignments mandates that YOU BE ACTIVELY INVOLVED IN THE MANAGEMENT OF YOUR CLASS. If you are not prepared to handle this aspect of team assignments, you should not use them for any graded project.

2. *Will this assignment facilitate learning of course content/concepts?*

When groups engage in discussion of course material, learning occurs through three very different processes: (1) Exposure to differing viewpoints and forms of expression (especially from someone whose level of understanding is not too different from their own) enhances concept understanding and retention. (2) Preparing to speak stimulates recall of information that would otherwise remain in unconscious memory. (3) Preparing to speak prompts the development of new links between previously discrete items (synthesis). Additionally, the process of interaction utilizes parts of the brain that are otherwise not engaged.

To fully engage these positive aspects of team learning, you must develop assignments that will facilitate incorporation of these three processes. One cannot simply take a problem from the back of the chapter and assign it to a group without some thought about the learning processes involved.

3. *Will this assignment build team cohesiveness?*

Cohesiveness provides a powerful source of team-member motivation. Members of cohesive teams are willing to expend a great deal of effort to ensure that their team is successful. In addition, the ability to solve complex problems

requires a level of openness and candor that exists only in cohesive teams. Trust and respect is essential. Therefore, permanent teams are more powerful than temporary teams; interdependence is more powerful than individualism.

Cohesiveness also is a source of problems, though. Cohesive teams are more likely to tolerate undesirable (from the teacher's perspective) behaviors, like covering up for each other and being unwilling to report cheating or other antisocial behaviors. This is another reason why you must be prepared to be involved in the life of your teams.

4. *Will this assignment facilitate learning about the positive potential of teams?*

Past experience with poorly designed projects has soured most students' attitudes towards working in teams. Their experiences have not introduced them to the many benefits of team learning. Our individualistic educational system creates by-products that are clearly detrimental to students. The first is a competitive secretiveness, a hoarding of knowledge out of the mistaken belief that refusing to share one's knowledge with others will increase one's own stature. They come to look on those who ask for help as weaklings, thus closing the door on their own ability to learn from others and from the act of teaching others. Another is that many come to believe that helping each other is tantamount to cheating; they often engage in discussions with their cohorts but with a sense of guilt or of breaking the rules, rarely with an attitude of co-learning and exploration. Their usual approach to working with others is of mutual exchange rather than learning. They more often than not leave the experience with a sense of having contributed more than they received. Those who see themselves as the winners often develop the sense of being imposters or, alternatively, of having staged a coup. None of these is a positive outcome. A third by-product is that many students believe that if they engage in cooperative effort, they will somehow lose out; perhaps they sense that they will no longer stand out from others on the basis of their intelligence. The last is that they fail to develop interpersonal and group skills that they will need in the future. As a result they struggle to learn on their own when they could and should be working with their peers for mutual benefit.

Unfortunately, even well meaning instructors often compound these problems by using assignments that, by their very nature, cannot be successfully completed by a group (e.g., a group term paper or a series of cases requiring a polished product). In such cases the costs of working together are too high. Students change the assignment into a collection of individual assignments, even when

they learn less or don't perform as well by doing so. When they do this, students may learn something about the content but the experience is often so painful that they are inadvertently left with the impression that group work is to be avoided at any cost.

The best group projects promote the achievement of objectives in all four areas. Group projects that sacrifice one or more of them can still be used, but you must take special care, then, to offer enough other types of projects to ensure balance among the four. If you don't provide such balance, groups will quickly deteriorate to the point that they are no longer effective and many students will get the false impression that time and effort devoted to group work is a waste. To the contrary, well-constructed group work reaps benefits for students that are not achievable through individual effort.

RECIPES FOR DISASTER

While each of us has differing levels of commitment to the use of teams in the learning environment, most of us use the concept at one time or another, with varying degrees of success. When making initial forays into the unfamiliar waters of team projects, most of us make the same common mistakes. Team assignments are appropriate for particular learning goals and are not appropriate for others. We should avoid doing the following when designing team projects:

1. DO NOT use an assignment that you have formerly used as an individual assignment. The things that individuals do well are not the same as the things that teams do well. We are tempted to simply transfer responsibility for an assignment from an individual to a team. If the assignment can be successfully completed by an average individual, it is not appropriate as a team assignment.
2. DO NOT assign a lengthy group term paper or case study. This is one of the most prevalent mistakes with teams. This is a task on which teams do poorly in almost all cases. It is not a TEAM assignment: It is an assignment given to a team that the team then turns into individual assignments. All of the problems associated with team assignments, e.g., free riding, manifest themselves on term papers. The team learning aspect of term papers and case studies occurs as the team discusses concepts, problems, application of theory or methods, and in solving problems. A straight research paper is not a team-based learning tool unless you redesign it to make it into one.

While an excellent individual learning tool, research papers and cases have many inherent hazards for teams. First, the instructor has little means of observing or assessing individual contribution, even if individual portions of the final document are attributed to the individual team members. Students who are concerned with quality are reluctant to let each part stand on its own merits and will try to make up for low performers, amassing a big store of resentment in the process. Second, both papers and cases can easily be turned into individual assignments. Because of the difficulties inherent in scheduling meetings and reaching agreement on how to approach problems, if students can figure out how to divvy up the work to individuals, they will do so. Thus, if required to produce a polished document of more than a page or two, groups will adopt one of three approaches, each of which usually has negative effects on both learning and group cohesiveness. Additionally, they tend to result in unfair division of work and inappropriate grades.

First Approach - Specialization: The majority of groups will decide to split up the writing task by assigning various parts of a paper to the member who has the highest level of expertise in each part. This improves the quality of at least some of the pieces but also increases the probability of one or all of four negative outcomes:

- Students will learn very little outside their area of expertise.
- The finished product will be disjointed and the pieces will vary in quality.
- Students will tend to see the issues from their narrow perspectives and fail to see the big picture, interdependencies, cause-effect relationships, and the merits of other points of view.
- This approach almost invariably results in free-riding.

Second Approach – Expert Writer: The group delegates the actual writing to one member of the group. This improves the flow of the paper but also increases the probability that…

- Only the writer has the opportunity to learn very much that is outside the small contribution made by the other team members.
- Only the writer has a realistic opportunity to develop a big-picture perspective.
- Failure to meet realistic deadlines by social loafers will put an undue burden on the writer and/or result in an inferior product.

- Interpersonal conflict will develop within the group because (1) the writer will resent being stuck with an inordinate share of the work and/or (2) nonwriters will be angry if their input gets ignored or the product isn't a good one.

Third Approach – Cooperative Writing: Group members will occasionally work shoulder-to-shoulder around a computer terminal and write the paper together. If successful—it usually isn't: most groups discard this method in favor of one of the above—this results in a higher-quality group product and could accidentally result in the learning of concepts. This method, though, has other negative outcomes:

- It interferes with learning because students spend much of their time talking about the wrong things (wording and sentence structure) rather than the ones for which the assignment was constructed (the concepts themselves).
- It is so inefficient and frustrating that the main thing students remember is how painful it is to work in a group.

Although the early phases of these projects set the stage for what could be an effective learning experience, unless the process is continually guided by the instructor or another facilitator, the actual research and writing tends to destroy groups and to interfere with learning. Too much time and energy is spent on talking about mechanics and attempting to deal with resentment against free-riders. Content and other learning goals are sacrificed to what students think of as efficiency.

These assignments can be accomplished effectively and meet learning goals, but doing so requires controlled circumstances that most instructors are either unwilling or unable to provide.

3. DO NOT make it easy. The very best team assignments help to push students beyond their current level of thinking. This is one of the strengths of groups. Whether discussing problems of math or ethics, group assignments should aim to move students along the continuum of intellectual development. Challenges can come in many forms: e.g., time constraints, difficulty of material, novelty of the type of application, performance standards. For instance, if you assign problems to solve, do not make the group's problems an exact replica of examples used in the book or in class: use problems that are at least one step higher or which are novel applications of the concepts. Don't tell them how to go about solving the problem. If giving groups tests, don't use only questions that are easily

answered simply by looking in the book or by memorizing. Do use questions that emphasize important concepts and higher forms of thinking.

4. DO NOT give one grade to the project which then automatically becomes the grade that all individuals receive. Develop a mechanism for giving both a grade on the final product and individual grades. The final grade that individuals receive for a team or group project should reflect the quality of the group's work but should also give a true picture of what each individual contributed (or did not contribute).
5. DO NOT do the intellectual or creative work for them. Our tendency is to answer all the questions before the students ask them. One of the goals of education is to help students learn what questions to ask. One of the strengths of groups is to help bring assumptions out into the open and to challenge them, leading to questions. Another strength is to help students learn to deal with ambiguity and to learn to cope with new situations. Groups are especially adept at innovation. If your projects are extremely well delineated and structured, if you answer all the questions that previous students have asked, if you give them too much help, they will not have the opportunity to learn. The best team assignments are somewhat ambiguous in nature and are large in scope or in the range of possibilities.
6. DO NOT engage them in work that groups do poorly (e.g., create a polished document). Groups are not good at collective writing. Student groups are not good at managing sequential task interdependence. Groups are not good for producing lengthy, polished, complex written assignments.
7. DO NOT solve the group's problems for them. The process of solving problems is part of the learning. It is also one of the things for which groups are uniquely suited. Provide a mechanism through which the group can solve it's own problems. Be available to discuss content issues or personnel issues with them; engage colleagues with special expertise in group process or management. Use peer review mechanisms and other means of getting feedback about individual performance. If you see problems, give the team a hint that you are available to help out; but allow them to struggle a bit before taking any action. Try not to design out all possible problems. First, it cannot be done; second, you are robbing them of a rich learning opportunity.
8. DO NOT let the best group members get by with trying to do all the work—DO penalize them for taking the "easy" way out. When the best or smartest or most dominant student in the group complains to you that (s)he did all the work, give them a lower grade, not a higher one. (This is, take it from me, VERY

difficult to do but is a crucial lesson.) First, the project is not as good as it could have been; if the product can be as good with one person doing all or most of the work, then it was not a good assignment. Second, part of the grade is for working together as a team. Third, it is against the rules of group work.

When this happens, every student on the team learns the wrong thing. The good student learns that no one else is good enough to work with him/her and will learn that groups are terrible. The other students learn that they can get by with doing little or nothing and that they should try to be on the same team with the good student in the future. Little content learning is accomplished by anyone on this team. Make your position clear when you give the assignment: Individuals who take on an inordinate proportion of the work will NOT receive extra credit; they will, in fact, be docked for breaking the rules of the assignment.

FORMULAS FOR SUCCESS

When designing top-notch team projects, make sure that you design it for a group of students, not for one good student. Goals of team-based learning include:

- To make learning nonthreatening
- To get access to the right brain (where creativity, innovation, and synthesis take place)
- To use as many of the nine (this number keeps changing) learning modes as possible
- To work at as high a level of the Learning Hierarchy as possible
- To move students toward the highest level of intellectual development
- To use as many senses as possible
- To use affect
- To associate new material with old knowledge and with experience
- To get students to "experience" the material
- To help students recognize and understand what it means *to learn*

Check your own assignments against this list:

1. DO develop assignments that focus the energy of the group on processing information and that minimize the energy devoted to the mechanics of reporting

the results of the work. Thus, written products should be short (one or two pages only as an individual assignment to report the results of the team's work) or should be in the form of lists or outlines.

2. DO require in the assignment that the groups do one or more of the following:
   - Innovate
   - Apply concepts
   - Identify assumptions
   - Solve problems
   - Develop alternatives
   - Evaluate alternatives
   - Set priorities among alternatives
   - List criteria
   - Prioritize criteria
3. DO develop assignments that are complex enough that one or two students cannot complete them successfully. Individuals or pairs usually have difficulty completing a good team assignment successfully. A rich and complex assignment will quickly show which teams had full participation and which ones had loafers. A team test, for example, should be very challenging, pushing students to new uses of concepts, not merely a fact-based test of memory.
4. DO require groups to produce a visible product, one that could be graded. Team assignments with no product or with a product that simply calls for verbal class participation are invitations to social loafing and desultory participation. A visible product motivates most students to action. They do not want to fail their team in front of others.
5. DO cause students to engage in group discussions that are specifically focused on using concepts that you want them to come to understand. In a group discussion learning occurs through the three processes mentioned above. Design the discussion around questions that will tap into these processes. Ask for examples from their own experience, for instance.
6. DO develop projects that allow students to practice using concepts to solve problems similar to those that they will face **after** the class has been completed. Knowing that they are working on real problems increases the commitment of individuals to the work of the team and facilitates the learning of concepts that may otherwise seem esoteric to young, inexperienced students.

7. DO require students to make choices and decisions. Discourage voting, which can result in tyranny by the majority. One of the strengths of groups lies in the improved decision-making. In simulation after simulation, teams make superior decisions over individuals in all but a small percentage of cases. Further, the heightened affect present in decision situations results over time in improved team cohesiveness and learning.
8. DO promote individual accountability. Provide mechanisms appropriate to the assignment that allow for evaluation of individual contribution. Peer review is one way to accomplish this on long-term projects. If you are giving a team test, having the individual team members fill out the test first is one way to make individual member's knowledge and preparation visible. Be aware that cohesive teams tend to see their members' performance in an ever-increasingly positive light, regardless of the reality of the situation. Thus, balancing team projects with individual work is important over the course of the semester. Also helpful in promoting honesty in reporting are: requiring team members to be very specific about the contribution of each team member, asking pointed questions about negative aspects of performance, and requiring members to sign a pledge or oath of truth when doing peer reviews. Make sure that students understand that it is NOT their responsibility to make sure that teammates get good grades, graduate on time, remain eligible for scholarships, etc. It is the responsibility of the person whose life will be affected. Take strong action against those students who cheat in this system, just as you would on individual assignments.
9. DO require members to engage in tasks that groups do well (e.g., innovate, process information, deal with complexity, etc.). Such assignments meet most of the previous eight criteria. They also promote group cohesiveness, provide a sense of accomplishment, and facilitate learning about the positive potential of groups. Some can be accomplished within ten or fifteen minutes of class time. When asking teams to work together in unmonitored situations, it's important to provide the team members with a mechanism for reporting performance data, making individual performance, or lack thereof, visible to each team member and to you.
10. DO promote group cohesion.
11. DO facilitate learning about the positive potential of teams.
12. DO give the teams the necessary resources for being productive.
13. DO expect to manage the process. You cannot be an absentee landlord. As the instructor you should be prepared to be available to assist teams who request

help with process or management issues. Not every instructor is equally talented or comfortable with this aspect of team projects. If you would not make a competent consultant on such issues, enlist the aid of a colleague who can coach your student teams when they run into trouble with the management of the team process.

14. DO provide groups the opportunity to demonstrate that they have learned from mistakes. If a team has made some of the probable errors, give them a chance to redeem themselves and to show that they have learned from the experience. A series of graded team assignments, with the final ones weighing more heavily, is one way to address this issue. This method gives them practice in peer review and in learning to manage team problems with little or no penalty. It gives them incentive to take care of free-riding early. It gives them a sense of efficacy as the semester passes and they show that they can learn from and overcome problems.

Some examples of successful assignments are:

- Learning assessment tests (quizzes and exams). These must be challenging to be worthwhile. Should not mirror questions/problems/ examples from class or in the book.
- Short Position Paper. One or two pages only. Should require application of concepts. These can often be in the form of individual papers after group consultation. The issue should be somewhat complex, with many possible answers.
- Group presentation. The assignment must be challenging and complex and should be designed so that it requires creativity. A group presentation that is merely a multi-part lecture is another form of the major term paper—not appropriate for the team; it is too easy for one or two team members to do all of the research and writing and give parts to the others. It should require application of course concepts. Assessment must include a method of evaluating individual contributions.
- Group project. Must be challenging and produce a visible product. The product can be individual in nature, such as individual papers that result from the project experience. Must include reporting mechanism so that individual performance is made visible. Examples are: (1) the formation of a service project to benefit the department or (2) a computer-based decision simulation. To be effective the project must be sufficiently

complex to require several problem-solving opportunities, each needing a different theory base.

- Problem Sets: Must be challenging, going beyond examples presented in the book or in class. If done outside of class, should include mechanism for assessing individual preparation and contribution.

GRADING TEAM PROJECTS

Grading team projects requires innovative approaches, too. Giving every individual on a team the same grade, without assessing contribution, is patently unfair and encourages free-riding, thus teaching students exactly the wrong thing about working in teams. Your grading system should, as a minimum, take the following considerations into account:

- Provide for a way to assess individual responsibility and contribution. One way to do this is to require the team to turn in a list of the responsibilities of each team member so that you can assess individual performance. Another approach is to have the team submit periodic reports on behaviors, such as attendance, participation, and preparation, which will give an indication of performance. A third approach is to develop a peer assessment process. The best approach is to include all three. Attempt to figure out a way to apply theory from your discipline to this problem.
- Your grading system should make special provisions for team members who are identified as free-riders or as dysfunctional (lack of attendance, lack of preparation, lack of participation, aggressive and domineering). Student teams should not be required to be more adept at dealing with unproductive or dysfunctional members than professional managers are. A star performer, for instance, might be allowed to job hunt, i.e., transfer to a different team if the original team seems to be riding along on the coattails of one student. You might want to provide for "firing" unproductive "workers." In this instance you will have to provide for a grade penalty. Under no conditions should quitting a team or being fired from a team be made to be an advantage. That is, students who do not want the inconvenience of working with others should not be *de facto* rewarded for antisocial behavior by letting them work alone without some sort of serious penalty in an area of personal self-interest, namely, the grade. Merely requiring them to complete the assignment on an individual basis is not an adequate method of handling this situation. Remember: the assignment, if you've designed it well, will be too difficult for an individual to accomplish alone. You will let yourself open

to giving massive concessions to students whom you allow to work alone unless you change the scope of the assignment. If you make a substantial change, it is not fair to the other students. Part of the learning from the assignment is gained from working **with a team**. To get a good grade, they should be required to complete that part of the assignment along with producing a product.

Team assignments are not a way of making the job of teaching and grading easier. Just as the students are faced with new challenges in completing the assignments, instructors are faced with unique problems when using them.