

THE CASE STUDY

The Bee and The Groundhog

Lessons in Cooperative Learning—Troubles with Groups

Clyde Freeman Herreid

*You've got trouble. Right here in River City.
Trouble with a capitol T and it rhymes
with G*

And that stands for groups!

—With apologies to Meredith Wilson

I'm thinking of two animals, the bee and the hedgehog. The bee is the essence of cooperation in song and fable; the groundhog has had little press except when February 2 rolls around and an ersatz groundhog is rolled out into view in Punxsutawney, Pennsylvania, as a rodent soothsayer to ponder the coming of spring.

The lack of media coverage for groundhogs is understandable for they are solitary beasts, not just during the winter somnolence, but during most of the rest of their lives as well. They are loners.

Here are two extremes of interactions: on the one hand, there is the bee whose entire life is involved with communal feeding, nest tending, and communication among her sisters who have completely given up their privilege to mate so their mother can reproduce. (Is this altruism or what?) On the other hand, there is the groundhog, a veritable recluse, who stakes out his territory and will not stand for interlopers in his world.

Between the two extremes of cooperation and competition, humans fit in somewhere. Homo sapiens live, work, and thrive together as gregarious beings, but they fight, fuss, and maim one another at the drop of a hat. The tension is legendary. Humans build together what they could never build

alone, yet their individualism threatens to destroy any cooperative enterprise. So it is no surprise that when groups of humans get together, this polarization is often evident.

In the microcosm of the classroom the tensions are hardly a titanic struggle of nations for the control of continents, nor battles to sway the hearts and souls of millions, but they are no less real to the combatants. Let us look in at a typical group of students struggling to survive a general biology course taught with case studies using cooperative learning.

Here is Anju, an average student whose heart is in the right place, who wants to cooperate and get a good grade, but is struggling with the material. She would probably get a "D" or an "F" in a normal lecture course. She is usually on time and tries to do her share but her work is invariably average or worse.

Then there is Heidi, a pretty good student who has a strong Puritan strain running through her veins. She is friendly and tries mightily. Essay questions demanding that she use her knowledge give her difficulty. She is always on time. She is probably a "B" student in a lecture course. In her group she is totally dependable; she has hopes for medical school.

And there is William. He is a theater major taking this course for general education credit. He is laid back, pleasant, and bored to tears with the course material. He falls asleep whenever there is a lull and almost certainly would fail or slip by with a "D" in a

normal semester.

Margaret is an older student in the group. She is working a full-time job as an accountant. By her own admission, she is a loner, an independent learner who likes to be given a job and left alone. She is bright, articulate, and "no nonsense." She is an "A" student and cannot abide laziness. She is taking this course because she has decided to go to medical school. She is highly skeptical of group projects because she has been burned in the past.

Finally, there is Raoul, a Puerto Rican, good looking, and bright. He is working two jobs. He is brash, verbal, and he too wants to go to medical school. He cuts corners whenever possible, faking and bluffing his way through discussions. Within two classes his group has caught on to the fact that they cannot depend upon him. He could get an "A" in the class, but chances are he would end up with a "D" if it were not for his teammates.

There you have them: Anju, Heidi, William, Margaret, and Raoul, locked into a relationship not of their own choosing because the instructor has followed the time-honored protocol of cooperative learning to form diverse groups.

Clyde Freeman Herreid, editor of JCST's "Case Study" department, is Distinguished Teaching Professor in the department of biological sciences, State University of New York at Buffalo, Buffalo, NY 14260-1300; e-mail: herreid@acsu.buffalo.edu.

THE CASE STUDY

This is one of many groups that I have faced in the last several years: a problem group. One that struggled throughout the school term with Margaret gritting her teeth and doing the brunt of the work; Raoul thinking he was getting away with his meager performance; William not caring much because he only needed to pass the course but giving a much needed spark of levity to the group meetings when tensions ran high; Anju, clinging to Heidi for support as she slipped further behind in course load while Heidi struggled valiantly with high anxiety to get her "A."

Case study teaching in many of its incarnations relies on groups. Indeed, the best-known case study strategy, Problem-Based Learning, is totally dependent on group success. In its classical form in medical school, tutors are used in every group to help solve interpersonal problems as they arise. But the normal cooperative classroom that relies on groups has no such luxury. The professor is alone, faced with the dilemma of controlling, cajoling, and corraling the efforts of many groups and personalities, the equivalent of herding butterflies.

What are the problems that groups face as they go through their evolution from "forming, storming, norming, and performing." Thinking about the problems of groups, I am reminded of the opening words of Tolstoy's *Anna Karenina*, "Happy families are all alike, every unhappy family is unhappy in its own way." So too with groups; the problems are particular, unique, and sometimes painful.

Let's take a closer look at Raoul's group. What was the problem here? It was not a gender issue, nor a racial one, nor a struggle for group dominance. It was the unevenness or inequity in the individuals' contributions to the group enterprise. It was Anju who tried and wasn't always up to the task intellectually. It was William who did not try or care for he only needed



OFFICE OF PUBLICATIONS, SUNY AT BUFFALO

Students at the State University of New York at Buffalo working together in a biological sciences laboratory. Interpersonal problems that arise in groups can be eased using peer evaluations.

a "D" to pass. It was Raoul who always just slid by, sure he was fooling everyone, doing reasonably well in his individual work but failing miserably in group projects. Heidi and Margaret were left picking up the pieces.

Some practitioners of cooperative learning argue that group work should not be graded. There are strong reasons to accept their wisdom. But others, myself included, believe that group projects if they are constructed correctly have great value. The instructor must have a method for ensuring that "hitchhikers" in the group get their just desserts if they do not deliver and see to it that the "workhorses" are rewarded. There must be justice.

I think I bypassed many of the problems that arise in group work. I did not make assignments that required the groups to meet outside of class. This is almost impossible in today's classrooms where commuters are common and work schedules and family commitments intervene. Group activities should be exclusively in the classroom.

The Problem-Based Learning model is ideal. Students working in permanent groups are given a case or a problem to solve. They analyze the prob-

lem, discover what they do and do not know. They divide up the work load and go off to the library or the internet to seek out the necessary information that will be shared the next class period. This is where Raoul's group ran into trouble.

At this point you may ask, what would possess any instructor to follow the cooperative learning mode? I leave that question for another column, but here I address the problem by asking, how often do we see problem groups? Is this a rarity—the social equivalent of an asteroid crashing through our atmosphere causing the dinosaur's extinction—or is it more like the number of beetle species in the world, pervasive, ubiquitous, and overwhelming? (J.B.S. Haldane, a prominent British scientist, when asked what, if anything, had he learned in his long and distinguished career answered, "God has an inordinate fondness for beetles." I do not believe God would say the same about problem groups.)

My curiosity piqued, I asked several hundred faculty who are experienced in cooperative learning to estimate the percentage of groups that develop problems. Their answers ranged from

THE CASE STUDY

five to 50 percent. But, the average seems to be around 20 percent. That seems about right to me: one in five. When I have asked the follow-up question, "What percentage of that number are fixable?", the answer seems to be about 95 percent. That's good news. Most problems can be patched up if not solved all together.

How to deal with problem groups depends, doesn't it? The drastic solution of permitting a group to "fire" a nonparticipant has few supporters. What would the outcast do in a cooperative classroom? A "divorce and re-

groups as a follow-up. Johnson and Johnson, gurus of cooperative learning, argue that frequent discussions are essential to group cohesiveness. They document that academic achievement rises with group feedback (*Cooperation and Competition*, 1989, Edina, MN: Interaction Book Company).

▲ Use peer evaluations. These ask each group member to assign a given number of points to teammates based upon their relative contribution to the group. Say, in a group of five people, each person would have 40 points to distribute among their teammates. If

school term was over and the groups had established certain patterns of interactions, I handed out peer evaluation forms telling students that this was a practice for the kind of evaluation they would have to complete for their teammates at the end of the semester. Their evaluations would be kept confidential and they were encouraged to be honest in their appraisal so that if any problems existed, everyone would be warned in time to correct their errant ways.

I then collected their evaluations and calculated the averages. In Raoul's group the consensus was clear: Anju, Heidi, and even William ended up with about a 10 average. (Students are amazingly forgiving if they sense a positive attitude and a willingness to try). Margaret received over a 12 and Raoul near seven. There was indeed trouble in River City.

I gave out cards to the students with their personal averages written down and delivered a speech reminding them of what the numbers meant. After class I pulled Raoul aside for a heart-to-heart talk. Now I had his attention. After the usual remonstrations, Raoul agreed that he had better mend his ways. So with gnashing of teeth, he was off.

Now I'm not going to tell you that all was suddenly right in River City or that Margaret, Heidi, and Raoul are running an HMO together. But I am going to tell you that things got better and livable for the rest of the semester. Margaret and Heidi got their "A's"; Anju her "C+"; William his "C"; and Raoul squeaked out a "C-." Along the way, they learned some biology and something about teamwork.

Humans are not bees laced with altruistic DNA, nor are we groundhogs, solitary and reclusive. We are something in between. It isn't always easy but there are times we need one another. Jane Howard said it clearly, "Call it a clan, call it a network, call it a tribe, call it a family. Whatever you call it, whoever you are, you need one." ■



OFFICE OF PUBLICATIONS, STATE UNIVERSITY OF NEW YORK AT BUFFALO

Group projects, if they are constructed correctly, have great value. But the instructor must have a method for ensuring that "hitchhikers" get their just desserts and the "workhorses" are rewarded.

marriage" where a person leaves one group and goes to another is equally unattractive. No, the problem must be dealt with.

Here are two generic solutions:

▲ Be sure and have many classroom moments when groups must analyze their process of working together. This can be accomplished many ways. Classroom assessment forms can be used to ask the students to rank how well their groups are doing and explain how things can be improved. Summary discussions can be held within

all team members are contributing equally, each would end up with an average of 10 points. If a student ends up with an average of eight points, he/she is clearly doing too little according to the teammates. If he/she receives an average of 12, that person is doing too much. I go so far as to tell the students that if they receive a score of seven or below, they will fail.

I used both of the above approaches in dealing with Raoul's group, but it was peer evaluation that had the greatest impact. After about a third of the