

Chapter 10

Making the Commitment

“Throughout most of human history...hardly anything changed for centuries at a time...the future was the past” Perelman (1992). Now, students prepare for futures that will be different from the past because we are in an information revolution and live in the information age. It is imperative that we look closely at how educational practices prepare students for the future.

MAKING A PHILOSOPHICAL CHANGE

It seems obvious that learning is natural, but have we built that logic into learning environments at the college level? Is learning natural when large numbers of students assemble and a professor tells them what he or she knows? Is learning being respected as a natural event when professors give assignments as isolated entities without considering connections to other courses, other time commitments, and other legitimate life experiences of students?

Professors will quickly point out that it is impossible to make assignments while giving consideration to all of the other activities in a student's life. This is true, but the main point of the previous paragraph is missed if that argument is used. Professors cannot make all the connections and consider all of their student's life experiences that enter into the educational process. *The alternative is to turn more of the responsibility for learning and for time management over to the students.* They are the ones who are in a position to make these considerations, and students will soon learn that, in a pluralistic society, they cannot have their own way.

They must learn how to learn, and learn how to work with others. *“To have any hope for a genuinely productive restructuring of learning systems, the learner as consumer [my emphasis] must be the overriding focus”* (Perelman 1992). How should we prepare the next generation of social human beings for successful lives in the information age?

Professors have few models to follow other than the text-lecture-test teaching method. Research shows, however, that exclusive use of the lecture constrains students' learning (Bonwell and Eison 1991). Little attention is given to that conclusion when course enrollments and contact hours are used to distribute teaching assignments in colleges and universities. *Movement away from professor-student ratios toward more student-centered learning is movement in the direction of more effective learning.*

Student-centered learning models are the exception rather than the rule in higher education. Would a thorough long-term economic analysis show that lecturing is the most cost-effective model? Learning cannot be adequately evaluated by thinking of teaching as a production line job that is finished when a course ends and grades have been assigned. Rather, learning should be evaluated in relation to *the costs and benefits that accrue during a lifetime.*

A New Way of Thinking

The lecture approach has been effective in the past and information delivery by lecture can be even more effective with the use of dynamic visualizations. But is using the lecture approach as the main method of instruction by college teachers good enough for the future? The possibilities for change are real; Fogarty and Bellanca (1992) describe the new lecture as a myriad of interaction patterns

that take the focus off the lecturer and put it squarely on the learner.

Schools and colleges were almost totally isolated from the information revolution that began a few years ago, according to Perelman (1992). While that statement was made 10 years ago, there seems to be considerable truth in it now since lecturing by professors and note-taking by students continues as it traditionally has. Using computer projections instead of slide projectors while giving a lecture is not an information revolution. The information revolution is not about making lectures better. *The information revolution is about information processing, creative thinking and computer-enhanced problem solving at levels that could not be imagined a few years ago.*

I began imagining the potential for dramatic changes in education when the personal computer appeared in the 1980's. I have been wrong about that potential many times, and it has always been in the direction of underestimating the potential. From 10 megabyte hard disks to gigabytes...64K RAM to 16 megabytes...\$15,000 to \$1,000 for a computer...50 pounds to 5 pounds...students can do things now that were beyond our wildest dreams a few years ago. My undergraduate and graduate education has served me well, but the higher education that prepared me for the last one-third of the 20th century is not good enough for students who will work in the first half of the 21st century.

Think of changes in information access with the growth of the World Wide Web, in communication speed and in our ability to accumulate, evaluate, and use information to produce new knowledge and enhance understanding. Changes in technology mandate changes in the characteristics of a relevant education, not for the sake of technology but for the effective use of technology in the future.

New approaches to higher education shouldn't just be better, they should be much better because students today will work in a much more complex world tomorrow. There is so much more information rapidly available because of electronic access to library resources and communications, and more access requires more careful discernment of the value of the information. The value of legitimate information increases when it is connected to other information and the connections between information becomes more real with each increase in information processing power. The last generation dealt with a mechanical revolution and *horsepower*. *We are dealing with an information revolution and mousepower.*

Reasons for Changing

Efficiency in teaching should not be our goal; effectiveness in learning should be. They are measured by different standards. "*Education is the only business in which the consumer does the essential work*" (Perelman 1992), and he continues with "...the productivity of the student or learner—not teachers or administrators—is what really counts."

Efficiency in teaching has been measured by such things as student-faculty ratios, credit hours taught, and the number of students graduating compared to the number of students entering. Efficiency measured by these standards can be enhanced by having professors teach several large courses, and by having students graduate as soon after matriculation as possible. Admitting transfers at the junior level enhances that statistic for a university.

Efficiency in learning is measured by criteria that are more difficult to assess than faculty:student ratios. Those who learn the most in a four-year course of study should be

the most successful later in life. But how is success measured? Measurements of success may have to wait years for results; success is not an instantaneous event but a sequence of life-long occurrences. No wonder it is easier to make a calculation at the end of a school year and distribute statistics about an institution's educational efficiency by focusing on teaching! *Improving efficiency in teaching is not the same as improving efficiency in learning.*

Should we even “teach?” No, if teaching is the “delivery of information.” Yes, if teaching is interaction with students who are learning how to assume responsibility for their own learning. *We should provide an environment that maximizes learning, and that requires a psychological change by both teachers and students.*

MAKING A PSYCHOLOGICAL CHANGE

Making a philosophical change is easy relative to the psychological changes necessary for implementing a more student-centered learning environment. Part of the reason for the difficulty lies in the strength of past and present models.

Giving up Center-stage

Professors have a captive audience and can be on center stage not only to educate but also to entertain, with considerable freedom of expression. Are some of us teachers because we were not good enough to be actors and actresses? Maybe not consciously, but center-stage teaching can be ego satisfying. Maybe some of us are teachers because we want political power. Teachers can impose their viewpoints on captive audiences with little fear of

backlash because opportunities for negative responses can be easily controlled.

Hopefully, most of us are teachers because we feel rewarded when helping others learn. And how can we help our students the most? *By giving up center-stage and focusing not on how much we teach but on how much our students learn.*

Giving up Power

Giving up center-stage may cause teachers to feel that they are also giving up power while still being held responsible for their courses. Teachers like to be in control, to have students do what they are asked to do, and to have their students view them as an authority figure. The ideal students just “do their work” without complaint. Or do they?

Giving up center-stage does not mean that control is lost or that respect for authority decreases. Rather, it means that teachers transfer meaningful responsibilities for learning to students, which increases their respect for teachers. If students do not feel responsible for their own learning, they will not only continue to look to teachers for guidance but will also place the blame on teachers when something goes wrong. Giving up power and transferring responsibility for learning to students does not mean that the learning process is uncontrolled (Cohen 1994); students know that they are ultimately accountable to the teacher. *The paradox in a well-designed cooperative learning environment is that while the teacher appears to give up power, the power actually increases when teachers become problem-solvers with the students and create an expectation of learning by the students.*

Having a genuine setting for sharing authentic rewards with students is also very important. Such rewards may be a

smile at the right time, a word of encouragement, meaningful congratulations on a job well done...students are quick to recognize and appreciate these rewards. Thus teachers increase their influence in a cooperative learning environment because they do not make students learn, but create an environment in which students want to learn. The former requires authority, the latter requires influence. *When a class or a course is over, authority dissipates while influence can last for a lifetime.*

WHERE DO WE LOOK?

Suppose a college professor is interested in making the commitment to more dynamic, natural, interactive, problem solving teaching. Where should one look?

Don't Look Back

There are many obsolete learning models from the past and fewer models suitable for the future. We may have our favorite professors from a generation ago, and they were undoubtedly fine people and effective teachers, but they were not educating students for the 21st century. Technology has changed, and *the way information is accessed, evaluated, and integrated in relation to how students learn, solve problems and make decisions is different now.*

Look for Logical Learning Premises

If learning is natural, then there must be some logical learning premises. One, humans are biological organisms with a number of innate rhythms, genetic blueprints, and social beings who are almost always engaged in some form

of group dynamics. Two, individuals have their own mindsets and are typically egocentric, enjoying recognition and rewards. Three, individuals are conditioned by their environments, which means that they can be conditioned by manipulating their environments. *The teacher who develops a cooperative learning environment is promoting positive changes in the effects of environment on student learning.*

Look to Students

One of the less likely places that professors look for knowledge and direction is the students. Professors know more about some things than their students do but a professor's role is not to prove he or she knows things that they do not know, but rather to share what is known with them. The students, in turn, can share what they know with the professor and with each other because students are collectively more knowledgeable than professors because they are more current in many subject areas and they are many, and many minds are better than one. For example, I studied plant physiology 30 years ago. Some of my students were studying it while enrolled in my course. I remember only a little of what I learned then, and what I remember may be irrelevant now in light of current knowledge. Learning with my students as we worked together on ecological questions that involved plant physiology benefited us more than if I had limited their thinking to my knowledge of plant physiology.

Students are readily available sources of knowledge and intellectual creativity and professors should capture these intellectual resources and share them in a larger knowledge domain, not only in our courses but also in related areas of study. *There is no shortage of potential connections between*

the knowledge domains of students and professors who work together in a cooperative learning environment.

THE NET COST OF INNOVATION

Making the transition from the traditional to a cooperative learning environment in college may seem like an expensive proposition. Actually, one gets “more for less” when moving in this direction (Moen and Decker 1998). Since the technology used for information processing is changing rapidly, innovation in education is necessary to prepare students for the future.

The Main Challenge

The main challenge facing innovating educators is getting “more for less.” More knowledge, more understanding, more problem-solving power...in less time because we can process information faster and at less cost by maximizing the efficient use of human resources. Having students help each other maximizes the efficient use of human resources. The professor cannot do it all alone! Having students publish their work on a local area network or on the Web makes it available for others to learn from in the future; this is maximizing the use of human resources. Writing a term paper and throwing it away after it has been graded is a waste of human resources. To summarize, *having students actively involved in their own learning and sharing with others maximizes the efficient use of human resources.*

The Net Cost

More learning for less financial investment reduces the net cost of innovation. How does one reduce the financial investment? By changing the learning environment so

students help rather than compete with one another, by establishing a group of undergraduate student teaching assistants who help the students each day and also edit their writings, by spending professorial time helping students become life-long learners rather than passive listeners...none of these cost any extra money! They are behavioral changes that can be made within the typical higher education setting. The undergraduate teaching assistants who had such a central role in the success of the Cooperative Learning Center contributed the equivalent of about \$25,000 worth of time each semester while earning academic credit rather than dollars for their efforts. *Most importantly, they became better students, a wise investment in their future.*

FOLLOWING UP ON THE COMMITMENT

No matter how sincere our commitment as teachers may be or how determined we are to make the learning environment for our students more natural and interactive, there will be frequent doubts because of the slow pace cooperative learning seems to take at times. *One can cover the material for the students much more quickly than one can uncover the material with students.*

It is easy to doubt the value of cooperative learning activities when students grope for answers that professors have already. It is easy to doubt the value of small discussion groups trying to define a word when the professor could quickly tell them the “right” definition. The value of learning groups designing their own experiments will be doubted when all of the students could be assigned to do the same experiment. The value of problem solving by learning groups will be doubted when professors could tell them the answer and “save a lot of time.” But what are we trying to

teach our students? What do we want them to learn? *Do we want them to remember an answer without learning how to ask the question, or do we want students to learn to ask questions and solve problems they have not dealt with before?*

A recent graduate who had been on the job for less than two weeks told me “*You are on your own on the job; you have to figure things out for yourself.*” How could I know in advance what she needed to know in her job when I had no way of knowing what job she might have? *Investing time in developing thinking abilities is about as risk-free as one can get.*

CONCLUDING REMARKS

Participation in higher-order thinking and problem-solving skills in a cooperative learning environment is the best investment of time by learners preparing for careers in the 21st century. Parts of my knowledge domain became part of the students’ knowledge domains when we worked together, and the students produced many resources for other students to use. The students were not limited to what I knew, nor did they drift in a world of vague ideas searching for ways to cooperate. They had meaningful experiences while working together and they learned about each other, about different subject areas, and about themselves. *Most of my students did not go on in my subject area, so the extent to which I helped them conceptualize, think, and solve problems was more important to their future success than the academic content of my courses.*

A Course Continuum