

A CHANGE IN PURPOSE FOR HIGHER EDUCATION

K. Patricia Cross

Distinguished Research Scientist
Educational Testing Service

Higher education in most of the developed nations of the world is facing a crisis of purpose. It will be my contention today that the familiar and accepted practices and procedures of higher education are no longer compatible with our new purposes.

Within easy memory of most of you are the years when the mission of higher education was to seek out and educate for positions of leadership, those young people judged to be the future leaders of society. As recently as the 1950s, higher education had the rather delightful assignment of choosing from a generous surplus of applicants those who would be easiest to teach and most likely to succeed in the colleges as they existed. College prestige was measured in terms of entering admissions test scores, the number of National Merit Scholars, and the selectivity ratio of numbers accepted to numbers rejected for college admission. Academic excellence was the slogan, but in the 1950s version, the academic reputation of the college depended more on the ability of the admissions office to select an outstanding class than on the ability of the teaching faculty to create one.

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Emerging in the latter half of the 1950s, but making itself felt in the 1960s, was the dramatic shift in social priorities that was to affect higher education so profoundly. There was a none-too-subtle shift in society's assignment for higher education. The task was no longer to educate an elite few for positions of leadership, but rather to educate the masses.

In the 1960s there was an upsurge of enrollments in postsecondary education in all of the developed countries in the world, but the increase was especially dramatic in Canada and the United States (Squires, 1978). North America now leads the world in the inevitable march toward the post-secondary education of the masses.

In the short span of two decades, postsecondary education, led by the community colleges, has replaced a comfortable homogeneity of selected students with an uncomfortable diversity of college students who are 20, 30, and even 70 years of age; black, brown, white, yellow and red; females seriously preparing for lifetime careers; faltering students unsure of their academic skills; hopeful students, the first in their families ever to attend college. Having waged a vigorous campaign for equal access throughout the 1960s, the society of the 1970s and 80s expects colleges to go beyond mere access to make college for the masses something more than a hollow victory. Educators are clearly being challenged now to move beyond access for all toward education for each.

But there is a problem. While the purpose of higher education has changed markedly, educational practices--specifically those related to classroom instruction--have changed very little. As Clark Kerr (1976) has aptly observed, "You could go back to the University of Bologna in the 12th century and feel more or less at home." Even the invention of the printing press did not stay faculty members from their appointed rounds of disseminating information through the pre-print format of academic lectures.

Today I want to take a look at how the organization of education would change if colleges were to accept the mission of helping each student to learn as much and as well as possible.

Our educational system is based on three fundamental practices. Most instruction is delivered to groups of students for a fixed time period such as a term or a semester, and students are evaluated by comparing their performance with that of their classmates. Those three practices--classes, semesters, and grades--are sacred traditions in education. Our system is built upon them and organized around them, and I suggest that all three are counterproductive to the goal of maximizing student learning.

I suppose any one of these sacred traditions could be singled out and analyzed for its contribution to learning. They are, of course, interdependent. Grading practices reflect better than anything else our philosophy of education. If you doubt the truth of that statement try engaging anyone in a discussion of grading practices without learning a great deal about what that person thinks the purpose of education is. Do grades serve as

motivators for student learning? As threats to coerce student responsibility? As protectors of academic standards? As indices of promise to graduate schools and future employers? All of the above? If the common practice of grading on the curve has contributions to make to the education of students, how well does it do the job?

The universal practice of grouping students into classes seems to have a simpler rationale than that for grading. It reflects largely economic considerations or what many people think of as fiscal realities. It is assumed that teaching 30 students as a group is cheaper than teaching 30 individuals. Whether it is more cost-effective raises new questions, as does the potential of new technologies and the possible redistribution of faculty time.

Finally, the rationale for the practice of fixed time boundaries or the semester is tied to what might be called administrative realities--record keeping, counting credits, computing faculty load, etc.

Ironically, the three educational practices which form the backbone of our system of education must be defended largely on grounds other than those related to student learning. To put it bluntly, they exist to meet administrative and fiscal requirements, not to enhance student learning. Indeed, I doubt that anyone would undertake to defend grades or semesters or group instruction as practices designed to maximize student learning. It would be hard, for example, to argue that even the most dedicated and

skillful teacher could maximize learning for individuals reading at the 6th, 8th and 15th grade levels through treating them as a class of learners who read at the 12th grade level. Similarly, it would be hard to defend grades as motivating devices for learning when it is the students who least need motivating who receive the greatest rewards of As and Bs, while those who most need encouragement and motivation receive negative rewards of Ds and Fs. Finally it is hard to defend the notion that blowing the whistle on learning at the end of the semester maximizes learning for either faster-than-average or slower-than-average learners. In other words, if student learning were to become the major purpose of colleges, dramatic--yea truly revolutionary--change would have to occur in the traditional practices of education.

There is no doubt in my mind that those changes will occur. They will occur because education cannot accomplish its new purposes with its old practices; and change will occur because the knowledge and the technology now exist to handle administrative and fiscal realities in a manner that is consistent with student learning.

In the past two decades, we have made significant progress in our understanding of the human factors in learning, but we have made revolutionary breakthroughs in the development and cost of computer technology.

Now what I am about to say about the new technology may initially seem at odds with my major premise of wanting to give more, not less, attention to the learning needs of developing human beings, but the

computer is the greatest boon to individualization that has appeared on the scene since Mark Hopkins gazed at the lone student on the other end of the legendary log.

The cover story of the February 28, 1978 issue of Time magazine was entitled "The Computer Society." Its message is that the invention of the incredibly cheap and versatile microelectronic chip will transform society. To me the most vivid picture of the society of the future was contained in this paragraph:

The computer might appear to be a dehumanizing factor, but the opposite is in fact true. It is already leading the consumer society away from the mass-produced homogeneity of the assembly line. The chip will make it possible some day to have shoes and clothes made to order--the production commanded and directed by computer--within minutes. The custom-made object, now restricted to the rich, will be within everyone's reach.

If we can individualize the fit of shoes, surely we can individualize the fit of education. I'm not talking here about any very sophisticated use of the computer for interactive instructional purposes. Rather I'm referring to the quite simple use of the computer to remember the learning capabilities and preferences of individuals and to keep records on progress. Individualization via computer is already in use at Miami-Dade Community College. Their computer-managed system known as RSVP (Response System with Variable Prescriptions) can identify patterns of errors in student tests. Then, instead of merely informing

students of total test scores or items missed, RSVP generates an individualized letter analyzing concepts misunderstood and prescribing action. It does this with an infallible memory for the student's learning preferences, work schedule, physical handicaps, and anything else that may have a bearing on the student's learning capacity.

Miami-Dade's experience in using RSVP with off-campus students provides convincing evidence that this use of computers is very popular with students and faculty alike (Kelly and Anandam, 1976). So successful in fact that Miami-Dade has extended the use of RSVP into their learning laboratories for students working on basic skills. Learning specialists at Miami-Dade are enthusiastic about their ability to diagnose learning problems quickly, but even more exciting is their realization that RSVP enables them to use the full range of learning materials. Whereas teachers used to assign one of the two or three resources that they were familiar with and could remember without stopping to check, RSVP will enable them to make maximum use of a variety of learning materials--as many as 3000 individual assignments. It is only necessary for a faculty member to analyze the student's capability, weaknesses, and preferred mode of learning once. RSVP will remember, as most of us cannot, to make the assignment as conditions warrant (see Kelly and Anandam, 1978).

The technology already exists to individualize education, and of course, the lowering cost of computers is the revolution that is occurring right now. Time refers to the "supercheap chip" as the "miracle of the

microcomputer." What does not yet exist is experience on the part of human beings with a reconceptualization of the organization of education. Faculty members will have to learn how to redistribute their time to emphasize those things that only human beings can do--to understand individual learning problems, to offer personal warmth, encouragement, and inspiration. Administrators will need to find new measures which are less dependent on hours spent and more related to learning productivity on the part of both teachers and learners. State legislators and budget officers will need to invent new funding formulas that reflect more accurately the new mission of higher education which is quite simply to help students learn.

Much remains to be learned, but already our experience with the use of computers to manage individualization is pulling the rug out from under the defense of group instruction and semesters on grounds of fiscal and administrative necessity--which is not necessarily to deny that group instruction may have its own contributions to make to some forms of student learning. But the fact is that it is no longer necessary for economic or administrative reasons to organize education into semester-long courses taught to classes of students. We now have the freedom and the obligation to reassess the usefulness of our organization of education for its contribution to student learning.

I want to address the issue of change in educational practices as a human issue however rather than a technological one. Clearly, human beings

will make the decisions about educational change; computers will do what they are told. If human beings decide that there are better ways to help students learn, then we can rest assured that technology stands ready to do our bidding. There is no war between technology and human beings. Indeed, the appropriate use of technology is a powerful aid to humanizing learning. It frees human beings from doing mechanistic things and permits us to act fully human.

And now, I would like to return to my original question. How would colleges change if student learning were to determine educational practices?

The goal of maximum learning for individuals is probably best captured by the concept of mastery learning. For those of you who are bothered by the perfectionistic connotations of the term "mastery", you might wish to think of competence-based learning as a rough equivalent. Both mastery learning and competence-based education assume effective individualization and both use criterion-referenced as opposed to relative evaluation of student performance. And those are key concepts in the goal to create optimum learning conditions for individuals.

Mastery learning, accompanied by variable credit, is a simple concept in which the number of credits accumulated is a direct reflection of the amount learned. At present everyone who completes a course satisfactorily receives the same amount of academic credit--despite the fact that some

students learned a lot and received A's while others learned little and received D's. In other words, we permit achievement to vary from A through D while holding credit constant, at say three hours per semester course. Mastery learning with variable credit would reverse that. Achievement would become constant, and all would study the subject matter until they learned it. Credit, however, would become variable; some people would accumulate more credit in a year than others.

Mastery learning requires every student to demonstrate mastery of the learning task in order to receive credit. Thus if a student earns three credits, we can assume that he or she knows the material well; what we do not know from the transcript is how long it took him or her to learn it. The tradeoff is whether we would rather have students who know what they know well or whether the time it took them to learn it is somehow more important. Actually, the contest between learning something well and learning whatever is possible in the time allotted reflects our value judgment of the importance of the learning. We would not dream of having a student learn airplane landings as well as possible in a semester; practice would continue until the student knew how to land safely every time. But if the learning task is English or history, then we seem to say that whatever can be learned in a semester is good enough.

Benjamin Bloom (1971), Distinguished Service Professor of Education at the University of Chicago, claims that 95 percent of the population can learn the school curriculum to mastery if given enough time and appropriate help. He cites research to show that instruction presented

under conditions of mastery learning enables about four-fifths of the students to reach a level of mastery attained by less than one-fifth under non-mastery conditions (Bloom, 1976).

The advantages of mastery learning are both cognitive and affective. Moving a D student who has failed to master the fundamentals along at an administratively convenient time such as the end of a semester practically guarantees failure in sequential learning. It is highly unlikely, for example, that a student will ever become proficient in algebra if he or she hasn't mastered arithmetic. Ironically, however, the student who earned an A in arithmetic has more time to devote to learning algebra than the D student who must continue to struggle with arithmetic while trying also to learn the new subject of algebra. Research (Colman, et al., 1966) shows that as children progress through school, poor achievers fall farther and farther behind high achievers--not because they are dumber or even slower than their peers, but because they lack the skills to approach each successive learning task effectively.

Even worse than the cognitive handicaps wrought by traditional education's notion that everyone should move along at administratively convenient times is the affective damage done to young people who are offered no alternative to doing poor work. A school lifetime of doing a job half-way because the student never has the time to master the task must surely take its toll in feelings of frustration and, by the time they get to college, in feelings of indifference and loss of self-confidence.

Many of the students entering open-door colleges these days, and many entering selective institutions as well, exhibit little pride in academic accomplishment because, I suspect, they have had little opportunity to experience the satisfaction of doing school work as well as they could do it. That state of affairs is as true for the top third of the class as for the bottom third. Under the prevailing constant-credit, variable-quality methods of traditional education, the bottom third of the class never reach their potential, while the top third stop short of their full capacity for learning. Neither group achieves the satisfaction of maximum accomplishment.

Gearing credit to amount learned rather than the time served is especially important as we move into lifelong learning. Poor or mediocre academic performance, measured in traditional ways is done and cannot be improved. A "C" transcript cannot be turned into an "A" record. But measures geared to units mastered can be accumulated over a lifetime of learning. A young person may have 200 credits to an active older learner's 400. The difference, however, lies not in the quality of the learning but in the amount.

There is little doubt that mastery learning with variable credit helps to establish conditions permitting maximum learning for individuals. But it also has some other advantages. It raises rather than compromises academic standards by insisting that students know what they are certified as knowing. It offers positive rather than negative rewards through

permitting all students to reach maximum achievement. And it provides strong motivation through demonstrating to all students that they are capable of good work.

Under the concept of competence-based education, the measure of learning resides, not in what was taught in the classroom, but in what was learned by the student. If it is true that education will move increasingly toward individualization, why aren't educators preparing for an educational revolution that would help students learn and teachers teach?

Ultimately I think we will face up to the idea of revolutionary change in education because we are simply unable to solve some of today's most pressing problems in the framework of an organizational structure that works against learning. But change is complicated, especially conceptual change. Colleges seem to be able to handle procedural change such as changes in electives or modifications in the academic calendar--although goodness knows anyone who has ever lived through either of those changes on a typical campus knows how time-consuming and difficult even inconsequential change can be in academe. But shifting the purpose of education from teaching semester courses to producing student learning is a conceptual change of major proportions. Let me illustrate the complexity of such change through the use of an analogy.

My story is about a furniture company that is organized like a college. Just as education is geared to completing semesters rather than learning tasks, so this company is geared to completing days rather than chairs. It is the day that determines the work cycle of packers, shippers, billers,

and all of the administrative officers of the furniture company. Chairs are sent along at the end of each day in states of completion that approximate the normal curve. A few chairs are nicely finished; most chairs have a weak rung or a missing screw here and there; some chairs are missing critical elements such as a leg or a backrest; and a few chairs are non-functional because the seat is missing. But the company is organized to produce a large number of average chairs, and its obligation to customers is to label the quality of their chairs--which is an admittedly different goal from producing quality chairs.

Now one fine day a new president comes to the furniture company. It is her notion that the goal of the company is to turn out quality chairs. To do this she realizes that the whole organization will have to be redesigned. Completed chairs will henceforth be the goal, and chairs will be sent to inspectors, packers, and billers when they are completed rather than at the end of each work day.

Well, when the new plans were announced, there were massive complaints throughout the furniture company. The first to complain were the inspectors and graders, and their complaints were numerous. In the first place, because of the individual differences in the rate of work of the carpenters, chairs would be coming along every 15 minutes instead of 30 at the end of each work day. Even though it was perfectly possible for the billers to post bills as they came along, they had been batching for so long that they really believed that it was less efficient to maintain a steady pace throughout the day than

to cope with their present peaks and valleys of workload. The inspectors were the next to complain. Having 30 chairs all at once, of course, permitted them to make comparisons so that they could tell a good chair from a bad one and thus fulfill their responsibility to the customers to clearly label the relative quality of their chairs. Then too there was the problem that inspectors could not be expected to make a new test for each chair as it came along, but if they used the same test continually, the word would be passed along and soon everyone would discover the criteria for grading chairs. Eventually everyone would be able to produce quality chairs, and that wouldn't be fair. It is a little hard to understand why it would be unfair to make known the test used by inspectors to grade the chairs, but I think it had something to do with straining public credibility by producing too many good chairs. As everyone knows, most chairs produced by any given company must be average--otherwise you have inflationary standards.

The next problem in the reorganization of the furniture company was a policy issue that was presented to the Carpenter's Senate for resolution. Since some chairs required more work than others, either because missing parts had to be individually tailored or because some woods were harder to work with than others, some chairs would cost more to complete. The question was, How could they justify spending different amounts on different chairs, especially when there was no assurance that the most costly chairs would bring the highest prices in the market place? While the subcommittee report pointed out that in the current market, incomplete chairs were not selling at all well and that in the long run the extra money required to complete

chairs would be more than justified because chairs could be used rather than assigned to the scrapheap, the simple fact was that most carpenters didn't like to work with difficult chairs because they usually required more ingenuity and longer hours. And so the Carpenter's Senate passed a fine-sounding resolution about the justice and fairness of the old system which gave equal amounts of time to each chair.

And so the fable of the furniture company ends. The public is still unhappy with unfinished chairs, even though the unfinished chairs are clearly labeled and they don't cost as much initially. The innovative president of the furniture company became very controversial. Among other things, it all goes to show that affirmative action may be asking for trouble when it brings people into the system who don't understand how or why the old system works. Since so much furor had been raised over the bold experiments, the furniture company had to do something innovative to show that they were not opposed to change per se, so the furniture inspectors decided to raise standards by increasing the number of warning labels on their unfinished chairs. To further demonstrate their concern, they decided to lobby for legislation that would prevent chairs deemed not sound enough to sit on from bearing the seal of the company that produced them.

The moral of the story is that it may be easier to found a new furniture company than to change an existing one.

Despite my tongue-in-cheek analogy, I remain optimistic that new alternatives will prove themselves and that practices in education will become more consistent with our new purposes.

Now I would like to turn to a second question. How would education change if colleges treated adults like adults? College students are becoming older. One third of all degree-credit undergraduate students today are over the age of 21. The average age of community college students in the United States is 28 and rising. Since colleges were originally designed to serve a primarily adolescent and dependent clientele, it appears that substantial changes are needed if we are to serve the learning needs of adults. What should higher education be thinking about on this eve of the lifelong learning movement?

For starters, we might consider some distinctions between pedagogy (education for children) and andragogy (education for adults) (Knowles, 1969). One important distinction between adult and child learners concerns self-concept. Children perceive themselves as inexperienced people without much responsibility for decisions at home, in school, or in the community. They expect school authorities to make the decisions, and they expect to learn more or less what they are told to learn. Adults, in contrast, see themselves as decision-making members of family and community groups. The school experience that casts students in subservient roles seems incompatible with an image of responsible adulthood.

Many adults are finding college classes an unsettling experience because the school situation carries lingering images of obedience and dependency. The internal conflict is between images of how students should behave in school and recent experience with how adults are expected to

behave in society. Thus colleges will need to learn how to accept into full partnership adults who wish to share in the decisions about what and how they shall learn.

A second characteristic of adult learners, documented time and again in the research, is their pragmatic approach to learning. Adult learning is motivated primarily by the desire to solve immediate and practical problems. They are interested, not so much in storing knowledge for use at some future time, as in applying knowledge to life goals that seem important to them.

Some very important research initiated in Canada by Allen Tough (1968; 1971) showed that most adult learners who were engaged in independent learning started their learning project because of their desire to use the learning directly in order to do something, produce something, or decide something--in short in order to take action. Ranking quite far down the list on adult reasons for learning was academe's traditional reason for teaching--to aid students in understanding. Fewer than one-third of the adult learners indicated that they were strongly motivated to undertake their learning project in order to understand better what they were reading, hearing, or watching.

The third characteristic of adult learners that differentiates them from children is their reservoir of life experiences. New learning for adults has to be incorporated into an existing framework of learning and experience. Adults don't come to school with a blank slate waiting for it

to be filled by teachers. They want to know how new knowledge relates to their own thoughts and experiences. This, of course, has both advantages and disadvantages. It means that there are more pegs on which to hang learning that is meaningfully related to past knowledge and experience. At the same time, it may mean that some things have to be unlearned because the new learning is not compatible with the old. Unlearning the child-dependent role of subservient student is a good example of past experiences that interfere with learning a new role of self-directed learner. One educational theorist (Ausubel, 1968) puts it this way, "The most important single factor influencing learning is what the learner already knows. Ascertain this and teach him accordingly." Easily said, but not very easily done, especially in the case of adults where surprising gaps in learning may exist alongside amazing sophistication.

The research showing that adults are a more diverse collection of individuals than younger college students (Knox, 1977) is easily comprehended when we contemplate the variety of experiences of adults as they move through life. Teaching such diversity as though it were a group with common backgrounds and common expectations is both foolish and wasteful.

And so I return to my question, what would happen if higher education were to treat adults like adults? First, we would take official recognition of the motivation of adults to learn in order to use their knowledge and skills. We would acknowledge the fact that most want to become more competent people in order to do something better or to make more informed

and better decisions about the things that matter in their lives--their jobs, their families, and their communities. Our practice of stopping learning at the end of a semester in order to grade the learning accomplishments of adults is so irrelevant to their needs that the practice simply does not exist in any form of adult education except that done in traditional schools and colleges.

If competence is the goal, then it is essential to start with the learner rather than with the course. The diversity among adults is so great, both with respect to backgrounds and goals, that lockstep education makes no sense. Individualization is every bit as important for adults as for young people--probably more so. Adults need individualization in curriculum as well as individualization with respect to pace and methods. By individualization, please remember that I mean to make room for people to learn in groups where group interaction is a deliberate strategy designed to promote learning rather than a necessity dictated by administrative or economic considerations.

And now I've come full circle. The answer to my two questions about the future of community college education merge. What would happen if student learning were to become the major purpose of education is not very different from what would happen if colleges were to treat adults like adults.

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