

Perspectives on Student Learning

K. Patricia Cross
Distinguished Research Scientist
Educational Testing Service

It does not take much reading of the professional press these days to recognize the necessity for your conference theme--"The Focus is Students: Keeping the Perspective." As educators, we have an unfortunate way of losing our perspective as the spotlight of attention focuses on a host of issues, ranging from faculty bargaining rights to institutional survival. Students have not received much attention since the late 1960's when they forcibly called our attention to themselves through tactics such as sit-ins and non-negotiable demands. With campuses returning to what some call "the new seriousness" and others call apathy, it is time for us as educators to get our priorities in order and remind ourselves that high schools and colleges are in the business of educating students.

Whatever additional goals educational institutions may set for themselves, they must ultimately be judged by their capacity to help students learn. Someone said it long ago, "We can no more say that something has been taught when nothing has been learned than that something has been sold when nothing has been bought."

As a nation we are suddenly upset over the discovery that students have not bought much of what education thought it was selling. Declining

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test scores on conventional measures of academic aptitude are the subject of newspaper and TV editorials and national study commissions. The blame for this state of affairs, as far as the general public is concerned, is widely spread, ranging from "new-fangled" teaching methods in the schools, to parents who let kids watch television instead of reading, to tests that do not measure relevant skills anymore, to inflated grades given by teachers with lowered expectations. Since most educational institutions give more attention to assessing the skills of entering than of graduating students, it is easy for the educational pecking order to fault the teachers at the level just below the level of the speaker-- and of course all previous levels. High schools blame elementary schools; community colleges blame high schools; four-year colleges blame community colleges; and now there are complaints from the graduate schools that students cannot write. The advantage of the pecking order is that it permits every educator to recognize that something is seriously wrong, yet avoid any personal responsibility for righting it. If the job had been done earlier, we all say, there would not be a problem. Perhaps not, but surely each educator must accept personal responsibility for the learning progress of his or her students.

Perhaps then it is not surprising that there is a new flurry of attention being given to the improvement of instruction at all levels of education. Elementary and secondary school teachers have always been somewhat more sympathetic and amenable than college professors to experimentation with teaching approaches. Unfortunately, many college professors have considered the subject of teaching methods to be beneath their dignity and have treated the subject with disdain and

sometimes outright hostility. Clark Kerr (1976) aptly observes that there have been no changes in college teaching methods for hundreds of years. "You could go back to the University of Bologna in the 12th Century," he says, "and feel more or less at home."

But there is a new seriousness in education these days about the mission of teaching students. At latest count there were more than 1000 institutions of higher education in the United States that said they had either a program or a set of activities designed to help faculty members improve their teaching (Centra, 1976). Some are sophisticated programs, encompassing the broad range of personal, instructional, and organizational matters associated with the improvement of teaching, whereas others may be fairly simple approaches such as the creation of a media center or the provision of funds for instructional innovation. Attention to the improvement of teaching is a rather recent phenomenon at the college level. Most faculty development programs or offices of instructional improvement have been instituted since 1970.

At the elementary and high school levels, the national clamor for attention to teaching and learning has also been picking up speed. More than a dozen states have already passed legislation calling for minimum competency standards for graduation from high school. And there is now serious talk about the federal government devising a national competency test in order to assure that all high school graduates will be able to cope with a world that requires basic competencies in the communications skills. (Education Summary September 1, 1977).

There are a number of reasons for thinking that all of the recent attention to the improvement of teaching is more than a passing fad. In the first

place, there is a genuine concern on the part of the public that children and young people of this generation can neither read nor write as well as their predecessors. There is also the tacit recognition on the part of both school systems and the general public that now that schools and colleges are no longer consumed by the problems of dealing with the explosive growth brought about by the baby bulge pushing through the school system, educators should be able to turn their attention to teaching and learning. Accountability, used in the sense that educational institutions should be held responsible for student learning, is a word that is used with great seriousness these days. The New York Times has observed that there is a good chance that the slogan of accountability will become more than mere rhetoric in the years ahead (Maeroff, 1976).

Thus the first, and probably primary, reason for the new attention to teaching methods at all levels of education is that the public is concerned about the learning accomplishments of young people, and is ready to hold educators accountable.

A second reason for the recent attention to the quality of instruction is related to world-wide efforts to expand educational opportunity. These efforts have brought two new kinds of students into colleges and universities. On the one hand, there is a group of new students who need good teaching, and on the other hand, there is a group of new clientele who demand good teaching.

The students who need good teaching are the low achievers that I have called "New Students" to higher education (Cross, 1971). These

are students of any age, sex, or color who have not done well in school tasks in the past. Many lack the basic skills of education and are severely handicapped in college-level learning. They began flooding into open-admissions community colleges in the 1950's and 1960's, and they now constitute a significant mass of college students. I would credit them with making college faculty members aware that the traditional lecture-discussion approach to college teaching was not working. There is, I think, a noticeable new interest on the part of community college faculties, especially, in experimenting and in learning more about new teaching methods and instructional technologies.

The impact of the second group of new clientele on postsecondary education has not yet been clearly felt, but it soon will be. The second wave of new clientele into colleges and universities have been labeled "non-traditional" learners--adult part-time learners who are combining their college educations with jobs, family, and other adult responsibilities. I say this group will demand good teaching because they represent the vanguard of the consumer movement in higher education. So far these adult learners tend to be highly motivated serious students giving their own valuable time and money for classes that they will insist be worthwhile. While there is no evidence that this group needs as much attention to pedagogy as the New Students that I described earlier, we can expect them to stay away from classes, teachers and instructional materials that are not directly relevant to their needs.

These two groups of new clientele into higher education have already done a great deal to sensitize college professors to the need

for better teaching. I predict that the pressure from students who need good teaching combined with those who demand good teaching will continue, and that this pressure will bring about teaching changes of significant magnitude.

Finally, I think that the recent emphasis on faculty development and teaching improvement is the result of some breakthroughs in knowledge about the teaching-learning process. We do now have some concrete suggestions to make to faculty about improving the effectiveness and efficiency of teaching.

It is to those ideas that I wish to address myself this morning. I cannot possibly talk about all of the teaching innovations that are enriching teaching today, but I would like to discuss in some detail two strains of research that seem especially promising for dealing with the learning problems of low achieving students with basic skills deficiencies.

Let us talk first about the fairly simple task of creating some educational approaches that recognize individual differences in the rate at which students learn. A great deal of progress has been made in the last few years in breaking the lockstep of higher education. The new surge of interest in a variety of techniques and methods, known collectively as the individualization of instruction, is a movement of sufficient magnitude that it is not inappropriate to call it the Instructional Revolution (Cross, 1976). The movement is broad in its influence, deep in its demands for change, and relatively sudden in

its acceptance by educators. And breadth, depth, and speed of change are characteristics of educational as well as political revolutions.

Self-paced learning, and its conceptual companion, mastery learning, lie at the heart of the Instructional Revolution. The speed with which these teaching strategies have been introduced into a variety of educational institutions is almost beyond belief. I discovered in my survey of two-year colleges, where egalitarian education has had the most direct impact, that in the short span of three years the use of self-paced learning methods had spread from 31 percent of the colleges in 1971 to 68 percent by 1974 (Cross, 1976). Today it is the unusual college that does not have one or more good examples of self-paced instruction--whether in learning laboratories, off-campus programs, or standard classrooms.

More interesting than speed and breadth of adoption of self-pacing, however, is its revolutionary potential for upsetting conventional ways of thinking about education. The concept behind mastery learning is that the student must learn a unit to a high level of achievement regardless of how long it takes. This is quite the reverse of the traditional concept which insists that all students spend equal amounts of time in the classroom but permits them to learn to varying levels of achievement--A through D, for example. In traditional education we turn out students who are well educated and those who are not, but we certify that all have spent the same amount of time at the task--surely a meaningless measure of learning. The conventional grading system does not solve

the problem; it just acknowledges that some students learned a lot in the time specified and received A's and B's, while others learned little and received D's and F's. If Benjamin Bloom and other scholars are correct in their assertion that 95 percent of the population can learn the standard school curriculum to mastery if given adequate time and appropriate help, then we have a breakthrough that permits us to provide for individual differences through holding achievement constant (mastery for everyone) and letting time and method vary.

Mastery learning has special significance for the education of students with poor records of past academic performance (Cross, 1971). Its advantages to these students are both cognitive and affective. It lays the cognitive foundation for future learning by insisting that one unit must be mastered before the student may proceed to subsequent learning. And it carries an affective message through demonstration to low-achieving students that they too are capable of doing good work. To most New Students, those two critically important experiences are missing from most of traditional education. New Students are perpetually at a cognitive disadvantage in school because they are rushed along to advanced learning without laying the foundation of the more elementary concepts. To the extent that knowledge is cumulative and sequential, efficiency in learning depends upon mastering each step in turn. Research demonstrates that as children proceed through school, the bright get brighter and the dull get duller as the gap between achievers and non-achievers increases (Coleman, et. al., 1966). The

widening gap is probably due to the efficiency factor in learning. Whereas achievers have the tools and the background to make good use of further education, the future learning of non-achievers is perpetually thwarted by their failure to master fundamentals.

Even worse than the cognitive handicaps wrought by traditional education's notion that everyone should move along with the group, 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 equal-time group methods geared to the average rate of learning, 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.

Ironically, we are discovering that mass education is not the inevitable route to the education of the masses. The very diversity of the masses calls for the abandonment of the mass education that seemed to work fairly well in the days of more homogeneous student bodies.

While mastery learning has undeniable merit for individual learners, it also has some unsung advantages for the educational system. Mastery learning is one of the few educational concepts that I know of right now that offers a solution to the concern about the erosion of academic standards. If all students master the subject matter, then the charge of lower academic standards for New Students cannot be leveled at mass higher education.

In the strange logic of higher education, however, the very idea that every student in the class can learn a subject to the same high level of achievement is unacceptable to some standards buffs. If every student studies the learning unit until he masters it, then every student deserves an A--if by an A grade we mean to certify that the student has mastered the learning task and not simply that he is one of the best in a particular class. A grading curve with mostly A's is completely sound educationally, but it is anathema to those accustomed to thinking of educational results measured by the bell-shaped normal curve. The normal curve, after all, is a statistical tool designed to reflect the result of random processes. If there are no factors operating except chance, then the normal curve is the result. To the extent that purposeful, directed influences are operating, the curve should depart from a chance distribution. Education is not a random process; the outcomes of successful education should push the grading curve away from anything resembling a chance distribution. Indeed, one of the impressive findings of the research on mastery

learning is the evidence that instruction presented under mastery learning conditions enables about four-fifths of the students to reach a level of achievement attained by less than one-fifth under non-mastery conditions (Bloom, 1976). Research and logic, however, must do battle against custom which has made us so accepting of the normal grading curve that teachers who give more A's and B's than D's and F's are looked upon as "soft graders" rather than as effective teachers. Many people equate the preservation of the normal grading curve with the preservation of academic standards. Actually, standards are served only when students learn the material. And there is ample research evidence that students do learn the material better under conditions of mastery learning (Cross, 1976).

The phenomenon of grade inflation is something quite different from grading based on mastery. Inflationary grading gives acceptable grades for unacceptable work; mastery grading gives no grade, no credit, no recognition for unacceptable work.

Benjamin Bloom, after some years of study and research on the concept of mastery learning, has just written a new and much discussed book in which he maintains that if the quality of the instruction is really good, individual differences in the time needed for mastery are not as great as has been assumed. He writes, "Where conditions for learning in the home and school approach some ideal, we believe that individual differences in learning should approach a vanishing point (Bloom, 1976, p. 16)."

Well, that's pretty strong stuff for a generation of social scientists brought up on the notion of the unchanging lifetime IQ and only recently moved to debating the proportionate roles of genes vs. environment in the determination of learning capacities. If Bloom is right in his assertion that quality education should result not only in equal opportunity but in equal outcomes, then we as educators are in for more trouble over accountability than we thought.

Whether Bloom is ultimately shown right or wrong--and his scholarship is certainly strong enough to command a lot of respect--the point is well taken that the time required to learn any task is in part dependent on the quality and methods of instruction. And a great deal of research and development is now going into the improvement of instruction. One of the most promising avenues of research is based upon the common sense observation that people have different styles of learning. Some people learn best by being shown; some by reading; some through discussion with other people. The things people choose to notice and remember and the way they process information are of increasing interest to psychologists studying cognitive styles.

Research on cognitive style has been going on for some 25 years in psychology laboratories but it has rarely been applied in educational settings. That is too bad because Herman Witkin, a pioneer in cognitive style research, asserts that there is now clear research evidence that "... cognitive style is a potent variable in students' academic choices and vocational preferences, in students' academic development

through their school careers, in how students learn and how teachers teach, and in how students and teachers interact in the classroom (Witkin, 1973, p. 1)."

There are at least a dozen separate cognitive style dimensions that have been the subject of systematic research, and perhaps half a dozen more that have been identified but not extensively studied. I shall limit my discussion, however, to the dimension studied by Herman Witkin and his colleagues at Educational Testing Service. Witkin's dimension of field-dependence vs. Field-independence is far and away the most extensively studied cognitive style, with more than 2000 studies reported in the literature. Field-dependence-independence was introduced in 1954 as a research measure useful in the psychology of perception. Witkin found in laboratory experiments that some people see things and situations intuitively or in toto without distinguishing the elements that make up the whole, whereas others tend to see discrete elements which are then put together to give the total picture. The reason for the name field-dependence-independence is dramatically illustrated by a laboratory experiment in which the subject is seated in a darkened room with a luminous rod in a luminous picture frame which has been set aslant. The task is to set the rod to the true vertical position. With remarkable consistency, some people align the rod to the slant of the frame--swearing that it is vertical when it may slant as much as 30 degrees. Others ignore the frame, apparently using internal cues to set the rod upright. Those who ignore the surrounding field formed by the luminous frame are called field-independent, whereas

those who depend on the slant of the frame to give them their orientation for positioning the rod are termed field-dependent.

According to the research, people who are dependent on the surrounding field to define physical situations are also field-dependent with respect to social situations. Field-dependents tend to be interested and sensitive to what other people are thinking and doing; they tend to be conforming and they like to have people around them. Field-independents, on the other hand, are more internally directed; they are not as sensitive to their surrounding social field, nor are they as concerned about what others may think. Predictably, the research shows that field-dependents are drawn to fields of study that involve people and human relations--social services, counseling, and teaching; whereas field-independents favor the sciences--mathematics, biology, and engineering. Witkin and his colleagues found that freshmen who entered a field of study not compatible with their cognitive style were significantly more likely than other students to switch majors during their college careers.

Although cognitive style seems not to be related in significant ways to IQ, field-dependents are likely to have trouble with the analytical tasks demanded by school subjects such as mathematics and science. I am beginning to suspect that the school system favors the field-independent learner to the detriment of field-dependent students. Let me give some examples.

Although we know that social situations often present highly effective learning experiences, the traditional classroom is not

a very social place. Beginning with their earliest experiences, children are cautioned not to talk to their neighbors, to keep their eyes on their own papers, and to do their own work. Rarely do we permit, let alone encourage, social problem-solving. This throw-back to the years when independence had survival value for pioneers on the rugged frontier is especially self-defeating in today's world where survival may be related more to one's ability to cooperate with others than to go it alone. More people lose their jobs because of failure in interpersonal relations than because of lack of job skills. Divorce, alienation, and people-related problems are major maladies of our times. Yet the educational system is still geared to the reward of independence, not often balanced by equal rewards for interpersonal cooperation. The independent learner, I suggest, has an advantage over the field-dependent learner in the methods and the attitudes of traditional school systems.

There are other differences between field-dependents and field-independents that have educational significance. Research indicates that the more analytical field-independents seem to structure their own learning material, whereas the more intuitive field-dependents benefit from greater external structure. We need more applied research on the implications of cognitive style for teaching methodologies. But one issue that is beginning to intrigue me, especially as it relates to individualized education, is the hypothesis that some of our teaching techniques are put together wrong. They have some ele-

ments in them that are good for field-dependents and some that are good for field-independents. When group instruction is used, that may be desirable since it means that there are both advantages and handicaps for all kinds of learners. But when we begin to think of the power of individualized instruction, it means that it is possible to put together some teaching methods that maximize learning for both field-dependents and field-independents.

Let me illustrate by taking the two ends of the individualized education continuum. At one extreme, we have programmed instruction, mastery learning, and all of their cousins, which are highly structured, generally impersonal, approaches to education. At the other extreme are learning contracts. A learning contract, in the sense in which I am using it here, is a program of education jointly worked out between student and teacher or mentor. This form of learning is essentially unstructured for the student, but it is highly personalized.

The research on cognitive styles, however, would indicate that field-independents would respond well to the unstructured aspect of the learning contract, but they do not really need or want the personal interaction with a caring mentor. Field-dependents, on the other hand, need the warm personal attention of a mentor, but they also need the more structured, more disciplined approach of behavioral objectives or programmed instruction or some other learning program that spells out quite clearly what is to be learned.

This analysis suggests that we should take today's models of instruction apart and put them together differently. For field-dependents,

we should offer the high structure associated with mastery learning plus the high interpersonal interaction associated with learning contracts. For field-independents, on the other hand, we should offer the low structure associated with learning contracts coupled with the independence associated with programmed instruction.

There is much that remains to be done in exploring the full range of instructional approaches. But there are many promising avenues now, and I believe that the 1980's will be a decade of progress in our understanding of the teaching/learning process. We will make progress because we must. Group education that aims for the center but misses most of the target cannot stand up to the diversity of today's student bodies. Postsecondary education will be charged for the foreseeable future with the education of the masses, and we would do well to learn how to provide for the individual differences of the masses.

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