

RESPONDING TO NEW LEARNING NEEDS

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For the past quarter of a century, America has entered each decade with a new theme for higher education. In the 1950s the theme was academic excellence; in the 1960s, it was equal opportunity; and in the 1970s the emphasis has turned to concern about the quality of education. Each theme has been supported by a set of circumstances that gives rise to and sustains the emphasis. I'd like to put the education of freshmen in perspective this morning by taking just a few minutes to look at the social context in which higher education does its work.

In the years immediately following World War II, the number of people wanting to go to college far exceeded the number of places available. Decisions had to be made about which students could go to college, and the nation put the emphasis on selective education. The task for higher education, as society saw it, was to prepare a relatively small number of the most promising young people for positions of future leadership. The assumption, incomplete but not unfounded, was that those who had done well in the past would

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do well in the future. Higher education was really asked to take on the rather delightful assignment of choosing from a great surplus of applicants those who would be easiest to teach and most likely to succeed in the colleges as they existed. College prestige in the 1950s was measured in terms of entering admission 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.

It is no wonder that the Carnegie Commission (1973) refers to the post-World War II years as the Golden Age of higher education. Surely the work of higher education will never be as easy again. In those growth years money was no big problem, job offers for faculty were plentiful, and teaching selected and relatively homogeneous student bodies posed only minor pedagogical problems. The atmosphere of the times was such that problems with student learning were felt to be more the problem of the student than the problem of the institution. It is not surprising that faculty members of my generation long for a return to the good old days when higher education knew what it was supposed to do and, as far as the general public was concerned, was doing it in an atmosphere of respect and admiration.

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. Equal opportunity became the national priority. There was a none-too-subtle shift in the assignment for postsecondary education. The task was no longer to educate an elite few for positions of leadership, but rather to educate the masses to their full humanity. Supply began to catch up with demand as open-door colleges mushroomed throughout the nation; financial aid based on need rather than talent became a federal priority; open admissions challenged selective admissions; and the rate of college-going for high school graduates reached a peak by the end of the decade.

Riding on the wave of confidence and prestige generated in the 1950s, higher education was perceived not only as the route to success for individuals, but also as a reservoir of knowledge that could be called upon to solve the growing social problems of the world. John Kennedy and the "best and brightest" from academe were optimistically at work in Washington, and confidence and exuberant growth characterized the campus scene.

Underlying the euphoria, however, was a crisis in purpose for higher education. For the growth of the 1960s meant not merely more students, but different kinds of students. The purpose of the meritocratic education of the post-war years was to provide

advanced education for a select group of those "meriting" it, but the purpose of egalitarian education was to provide education for everyone--regardless of past merit or future promise. In meritocratic education, colleges are the givens, and students are judged by the criteria of how well they meet the demands of the colleges. In egalitarian education the order is reversed; students are the givens, and the educational system is judged by the criteria of how well colleges meet the needs of students. Education is a creation of society, and the mission assigned to postsecondary education changed profoundly in the short space of a couple of decades.

The 1970s opened with dire warnings that colleges may have overbuilt, that a declining birthrate would induce a steady-state, that SAT scores had declined alarmingly, and that the new generation of college students could neither read nor write as well as their predecessors. Furthermore, the peripatetic academicians off the campus were not living up to the promise of the Kennedy era. Sociologists were not solving the problems of the cities; economists were offering conflicting and confusing advice about what to do about the national economy. Educators seemed unable to deal with the multiple cultural, economic, and educational problems of the new students arriving by the thousands on the doorsteps of colleges and universities. Small wonder that the same Carnegie report (1973) that labeled the 1950s the Golden Age of higher education labels the 1970s "time of troubles."

One solution to the growing disenchantment with education on the part of the general public is to attempt to lower the unrealistic expectations that education can solve the varied social ills of the nation. Christopher Jencks (1972) and others have argued against using the schools to bring about social and economic equality. And, of course, there is plenty of sympathy for that point of view. There is a growing feeling that education at all levels has taken on too much. But one can hardly argue that education is not the business of schools and colleges, and the public is highly critical of academe's failure to deal with the educational issues of the nation's new priorities.

Part of the problem, as I see it, is that in making the shift from meritocratic to egalitarian postsecondary education, educators have been consumed by the work of developing what I call the Access Model to education. We have addressed ourselves primarily to the social issues of providing access for previously unserved segments of the society; we are just now getting around to looking at the educational questions of what we can do for these New Students once they have gained access.

Fundamentally, the Access Model for education has been concerned with administrative and social issues, rather than with educational and pedagogical issues. The primary goal of the Access Model is the correction of social injustice. Its tools are legislation and the equitable distribution of funds. Its actors are

policymakers, federal and state agencies, and administrative officers of colleges. Its descriptors are the now-familiar demographic categories of race, socioeconomic status, sex, and age. The weakness of the Access Model is that it concentrates on attaining minimum rights rather than maximum opportunities. It involves administrative rather than instructional activities; and the demographic variables used to describe the new learners are of dubious value in planning educational programs. If access is to have meaning for the nation and for the thousands of students admitted to college under the egalitarian thrust, equal opportunity efforts must be supported by new and creative approaches to teaching and learning. We need to turn our attention now to the creation of a Learning Model for education that will make the implementation of the Access Model something more than a hollow victory.

The first step in creating an effective Learning Model is to devise some better descriptors for the new learners. The old demographic descriptors have served their purpose. They have made us aware of how we discriminate against individuals by stereotyping them as members of groups designated as Black, female, Spanish-American, senior citizen, part-time student, American Indian, or any of a number of special labels that inevitably represent more diversity of talent and needs within groups than between them. While certain cultural issues can be addressed through ethnic studies or gerontology or women's studies, educators cannot design learning

programs to develop individual potential by knowing the color, age, or sex of students.

In discussing the new clientele in higher education, I am going to abandon the old familiar categories of ethnic minorities, women, and adult part-time learners in favor of descriptors related more directly to learning needs and characteristics.

We know now that there are significant individual differences on three major dimensions of learning. People differ in learning rate, learning style, and in their motivation and talents for various types of learning tasks. This means that if we expect learning to have maximum impact on the development of individuals, we must offer options with respect to pacing, methods of instruction, and curricular content.

Let us talk first about the fairly simple task of creating some educational approaches that recognize individual differences in the rate of learning. A great deal of progress has been made in the last few years in breaking the lock-step 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 great variety of educational institutions is almost beyond belief. I discovered in my recent survey of two-year colleges, where egalitarian education has had the greatest 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). The Personalized System of Instruction (also known as PSI or the Keller Plan) uses the self-paced learning module as its basic component, and PSI has made an astounding sweep through university classes, especially in disciplines such as psychology, engineering, and physics. It is estimated that there are now more than 1000 PSI courses in psychology alone.

More interesting than speed and breadth of adoption of self-pacing is its revolutionary potential for upsetting conventional ways of thinking about education. The formula for 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 traditional education which insists that all students spend equal amounts of time in the classroom but permits them to learn to varying levels of achievement. 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 anyone can learn a subject 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.

While Bloom, Distinguished Professor at the University of Chicago, presents strong research evidence for his assertion that mastery learning will work in classroom situations from grade school through graduate school (1976), I want to take the more conservative approach and argue for the special appropriateness of mastery learning for the development of the basic skills in college freshmen, whether in open-door or selective institutions. This is an area that has most parents and teachers sufficiently upset to entertain any alternative to the present practices.

Mastery learning has special significance for the education of the students that I have called New Students--those of any color, sex, or age with poor records of past academic performance (Cross, 1971). Its advantages to New 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 and others, 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. Mastery learning is individualized--challenging students to pit their efforts against their own potential.

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 egalitarian 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).

What are the conditions of mastery learning? While today there are many variations on the theme, all approaches to the ideal of mastery have certain elements in common:

1. All begin with the conviction that almost all students (95% of the population) can attain high levels of accomplishment if given sufficient time and appropriate help.
2. Mastery learning requires accurate and timely feedback on learning progress. If feedback can reveal the misunderstandings in learning shortly after they occur, then corrections can be made before errors are compounded.
3. All learners must be given sufficient time to achieve mastery.
4. There must be some clear criterion of what constitutes mastery.

While these essential elements of mastery learning can be incorporated into a variety of teaching methods, they can be achieved most ideally through the use of learning laboratories or

through the very carefully planned approach represented in PSI or the Keller Plan. In the typical learning laboratory, a diagnosis of the learner's entry skills is followed by some prescriptions for self-paced study of pre-packaged learning units. The learning units are usually brief modules (requiring 1 to 10 hours of learning) with clearly specified learning tasks and self-administering feedback tests. The learning laboratory approach to mastery learning also assumes adequate physical facilities for independent study carrels, a wide variety of learning materials, and a staff skilled in the diagnosis and correction of learning problems.

I am convinced that the experience and research of learning labs has now reached sufficient sophistication that any institution purporting to further the societal goal of egalitarian education should support a well-equipped and well-staffed learning laboratory. The best college lab that I have seen is now in its sixth or seventh year at Miami-Dade Community College in Miami, Florida. But I suspect that most four-year colleges, without a laboratory of their own, could find a good model in their local community colleges. The lab at Miami-Dade is now in the process of extending the capabilities of their staff through the use of computers to analyze problems and prescribe learning exercises. The student completes a brief test, the computer analyzes the pattern of errors, and makes individualized prescriptions for further learning activities. Ultimately, the computer will be programmed to take account of

learner attributes such as cognitive styles or the limitations caused by work schedules, for example. So far the presumably cold impersonal approach of the computer has not been perceived as such by the majority of students. To the contrary, it has been greeted with enthusiasm in student evaluations.

While the learning laboratory offers maximum individualization, it is not the only route to mastery learning. The increasingly popular Personalized System of Instruction (PSI) approaches mastery learning through use of a group-based model. Typically, a course taught by PSI is broken into 15 to 20 self-paced learning modules with learning objectives clearly spelled out by the instructor in a learning guide. Using the guide and traditional materials of education such as textbooks, articles, and other printed materials, the student masters each learning unit, taking as much or as little time as needed, studying wherever and whenever convenient. When the student feels prepared, he presents himself to a student proctor for testing. The proctor is typically an undergraduate student who has already mastered the material. The test is a 15-20 minute quiz which the student must pass at a high level of competence, indicating mastery of all the objectives of the learning unit. The test is graded immediately in the student's presence, thus providing the immediate feedback that is important to mastery learning. If the student fails to pass, the proctor may quiz him further to determine areas of difficulty, may help him with special problems,

or may refer him for further study. There is no penalty for failure to pass the mastery tests, but the learner may proceed to the next unit only after demonstrating mastery of prior units. The grades from a PSI course are sufficiently skewed in the direction of A's to raise academic eyebrows, but the research on PSI is extensive and impressive.

A recent review of the findings from PSI research concluded that students in PSI courses perform better on final examinations, retain their learning longer, and do better in subsequent courses. Furthermore, an impressive majority of students give their PSI courses higher ratings than lecture courses in the same subjects (Kulik and Kulik, 1975).

The experience with individualized instruction and the research on it are certainly strong enough to indicate that we should be doing more of it, but mastery learning, as presently practiced, is not a panacea. It does not work for all students nor in all subjects. Furthermore, the design of an educational program that will help all students to learn as well as they can learn instead of as well as they can learn under the arbitrary time restrictions of the semester is really a very modest suggestion for reform.

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 difference in the time needed

for mastery are not as great as has been assumed. He writes, "Appropriate modifications related to the history of the learners and the quality of the instruction can sharply reduce the variation of students and greatly increase their level of learning and their effectiveness of learning in terms of time and effort expended. 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 educators are in for more trouble over accountability than we thought. Bloom does leave us the out of attributing much of the individual variation in learning to the "history" of the learner--which is welcome news to those of us in higher education who are working with students with a relatively long "history" before we ever assume any responsibility for their education.

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. Some

people learn quickly by being shown, for example, but slowly if they must read a manual of instructions. It now seems clear that we are not going to improve education for all citizens by finding the method or methods that work in all situations. By and large, the research on teaching effectiveness has been inconclusive and disappointing because, I suspect, we have been asking the wrong questions. When we ask whether discussion is better than lecture, whether TV is as good as a live performance, whether programmed instruction is an improvement over more traditional methods, we find that for that mythical statistical average student, it seems to make little difference how we teach. But when we look at the data student by student, it is clear that some students improve, some remain unaffected, and a few actually regress under various teaching conditions. The very process of averaging the pluses, the minuses, and the non-changers wipes out the message that different methods work for different students. We are now asking the more sophisticated interaction questions about which methods work for which students. One thing is clear, and that is that for the sake of both teachers and students, quality education ought to offer a range of instructional methods that extends far beyond the traditional lecture-discussion methods that so dominate the scene--to the disadvantage of poor lecturers and non-aural students.

One intriguing line of inquiry that should be explored further as we seek to understand the complexities of teaching and

learning is the research on 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 student's academic choices and vocational preferences, in student's 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.

Other laboratory experiments demonstrate that people show consistent individual differences in the extent to which they are influenced by a surrounding field--not only in visual perception, but in auditory, kinetic, and social situations as well. Obviously, one's perception of a problem or learning situation will influence how one goes about solving the problem, and it will also help to determine the nature of the content that is remembered. Problem-solving and memory, of course, are familiar components of the learning process. But cognitive styles are also related to less obvious educational variables. Research has shown that they are associated with interests, abilities, and even with self-concepts. In fact, the way in which people perceive themselves, relative to their surroundings, is one of the most interesting findings from cognitive style research.

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. Indeed, one of the important findings from a ten-year longitudinal study that followed students from freshman year into graduate school was that cognitive style predicted major fields of study at college entry, college graduation, and graduate school entrance. Furthermore, Witkin and his colleagues found that students 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 or to overall grade point averages, field-dependents are likely to have trouble with certain analytical tasks demanded by school subjects such as mathematics and science. I am beginning to suspect that present school practices favor field-independent learners to the detriment of field-dependent students.

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. Indeed, I would observe that even in the most esoteric research work at the graduate level, the need for interpersonal cooperation and communication is increasingly important as independent professorial research gives way to interdisciplinary research in complex research centers.

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 question, but one teaching strategy that seems indicated for low-achieving students is one that provides clear structure--mastery learning, for example--in an atmosphere of warm interpersonal cooperation. Without knowing much about the research on cognitive styles, many community college teachers seem to have reached a similar conclusion through working with New Students in the classroom. The research of Robert Wilson at the University of California indicates that community college teachers emphasize structured assignments and personal attention in contrast to university professors who are more permissive but less inclined to show personal interest in students. I believe that we are on our way, in practice as well as through research, to making some breakthroughs in devising a learning model for the egalitarian age.

In conclusion, let me make some summarizing observations:

1. As glorious as the Golden Age of higher education may have been (and I confess that I did enjoy it), I think that egalitarian postsecondary education is here to stay. Even if the lower schools begin to solve some of the serious learning disabilities closer to their source, we will be dealing with learning problems at the college level for the rest of our professional careers and far into the foreseeable future. And, as I see it, the emphasis of the rest of this decade and into the 1980s should be and will be on the improvement of instruction. This emphasis is, of course, especially important to those interested in working with college freshmen.

I think it is more important than admissions formulas, distribution requirements, counseling, or any of the other admittedly important issues that typically command the attention of faculty committees on the freshman year. Yet specific recommendations for the improvement of instruction rarely emerge from such study committees.

2. I believe that we are making some important breakthroughs in knowledge about teaching and learning and that this knowledge, although not perfect or final, is worth sharing with our colleagues. The well-known and too-frequently accepted hostility of many college professors to learning more about the teaching-learning process (see Cross, 1977) should not be tolerated in a community dedicated to pushing at the frontiers of knowledge. As the New York Times (Maeroff, 1976) observed last week, "accountability" is one of the educational slogans of the last decade that has a strong chance of becoming more than rhetoric. And accountability means a hard look at the processes and outcomes of education, i.e., at teaching and learning.

Finally, I would call for increased experimentation in teaching and learning, even in the absence of the certainty that some of our research- and theory-based suggestions will work in practice. Precious little of what we do now has ever been proved effective through research, and traditional education is not so perfect that departures from it should be viewed with alarm.

Far from being "time of troubles," the remaining years of this century could be stimulating years that call for a re-dedication to the central purpose of education--helping students to learn.

References

- Bloom, B. S. Human characteristics and school learning. New York: McGraw-Hill, 1976.
- Carnegie Commission on Higher Education. Priorities for action: Final report of the Carnegie Commission on Higher Education. New York: McGraw-Hill, 1973.
- Coleman, J. S., Campbell, E. Q., Hobson, C. J., McParland, J., Mood, A. M., Weinfeld, F. D., and York, R. L. Equality of educational opportunity. Washington, D. C.: U. S. Government Printing Office, 1966.
- Cross, K. P. Beyond the open door: New students to higher education. San Francisco: Jossey-Bass, 1971.
- Cross, K. P. Accent on learning: Improving instruction and reshaping the curriculum. San Francisco: Jossey-Bass, 1976.
- Cross, K. P. Not can--but will college teaching be improved? In New Directions in Higher Education (J. Centra, Ed.). San Francisco: Jossey-Bass, in press (1977).
- Jencks, C., Smith, M., Ackland, H., Bane, M.J., Cohen, D., Gintis, H., Heyns, B., and Michelson, S. Inequality: A reassessment of the effect of family and schooling in America. New York: Basic Books, 1972.
- Kulik, J. A., and Kulik, C. L. C. Effectiveness of the personalized system of instruction. Engineering Education, December 1975, pp. 228-231.
- Maeroff, G. I. Schools now are taking account of accountability. New York Times, November 10, 1976.
- Wilson, R. C., Gaff, J. G., Dienst, E. R., Wood, L., and Bavry, J. L. College professors and their impact on students. New York: Wiley, 1975.
- Witkin, H. A. The role of cognitive style in academic performance and in teacher-student relations. Research Bulletin RB-73-11. Princeton, N. J.: Educational Testing Service, February 1973.