

Innovative Approaches to College Teaching

K. Patricia Cross

Visiting Professor
Harvard Graduate School of Education
United States

An understanding of innovative teaching in the United States today requires some historical perspective because innovation is usually a response to changing conditions, and the role of higher education in the United States has undergone some especially rapid changes over the past three decades.

Emerging in the latter half of the 1950s, but making itself felt in the 1960s, was a dramatic shift in social priorities that affected higher education profoundly. Equal educational opportunity became a national priority. Although many colleges remained selective, the task for the nation was no longer to select only the brightest young people in the nation and to educate those elite few for positions of leadership, but rather to educate the masses. New colleges were opened at the rate of more than one each week throughout the period of rapid expansion between 19⁵0 and 1970. Two-thirds of the new colleges were two-year public open-admissions colleges. These colleges were established largely by local governments for the purposes of admitting anyone who wanted to

Prepared for presentation at The Institute of Higher Education, Tokyo, Japan, January 24, 1981.

go to college and preparing them for work or for further education. The opening of so many colleges that were low in cost, conveniently located, and open to anyone who wished to attend college resulted in high levels of college entrance. By 1975, approximately 60 percent of all high school graduates were entering college, and in regions with high concentrations of community colleges, 70 to 80 percent of the high school graduates were entering postsecondary education of some sort.

The growth of the 1960s, however, meant not merely more students, but different kinds of students. Prior to World War II, young people attending college came largely from the upper half of the high school graduates in both academic rank and socioeconomic status. The expansion of higher education opened the possibility of college education to children of the lower classes, but it also brought students into the colleges who lacked the basic skills to do college-level work. In 1966, 28 percent of the college-bound young people scored below 400 on the national Scholastic Aptitude Test; by 1980, 42 percent were scoring below 400.

Thus there is a new seriousness in colleges these days about the mission of teaching students. At latest count there were more than one thousand 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, however, is a rather recent phenomenon at the college level; most faculty development programs or offices of instructional improvement were started after 1970.

Open-admissions is only one reason for concern about the quality of college teaching. A second reason springs from the new competition among colleges for students. There are now more than 3,200 colleges in the United States; almost one-third of them were established since 1950 to meet the combined pressures for increased access to college plus the large number of eighteen-year-olds in the population. In the 1970s, there were adequate spaces in college for almost anyone who wished to attend, and in the 1980s, most colleges are expected to have difficulty attracting enough students to keep their faculties employed. In this climate of competition, colleges are interested in good teachers, and teachers need to improve their skills if they are to be competitive in a very slow employment market.

Since it is not possible to talk about the full range of experimentation with teaching methods in American higher education, let me address myself today to innovations that seem especially promising for higher education's new task of teaching the masses.

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. There is considerable interest in a variety of techniques and methods, known collectively as the individualization of instruction, which permit students to learn at their own pace. Growth of self-paced learning methods was especially rapid in the early 1970s and in open-admissions colleges where the wide range

The most common form of self-paced learning exists in learning laboratories. A well-designed learning laboratory provides a wide variety of academic services. They arrange for the diagnosis of learning deficiencies, offer an array of slides, tapes, and programmed print materials for individual students to use; they provide counselors, tutors, and sometimes peer support groups. They are usually perceived as supplementary to regular classroom study, but some learning laboratories offer academic credit for the work accomplished. The prevalence of the learning laboratory is growing, on selective as well as on open-admissions campuses, and it is now the most common way to deal with the growing diversity in academic ability that is characteristic of an open system of postsecondary education.

A second form of self-paced learning that is common in psychology, engineering, physics, and other fields where subject matter mastery is critical, is known as the Personalized System of Instruction (PSI). It is handled in regular classes and is used more frequently in selective than in open-admissions colleges. PSI consists of a set of learning units, each with its own mastery test. Teaching assistants administer the mastery test whenever the learner feels he or she is ready. It is possible, of course, for a student to complete the work of a semester before the end of the term. If that happens, the student simply has more time to spend on other courses, which is another form of self-pacing.

At latest count, there were more than a thousand classes in colleges and universities throughout the United States taught by the PSI method. Its major problem is that some students, especially open-admissions

students, lack the self discipline to pace themselves throughout the semester, and completion rates are frequently lower than those in conventional classes. But "completion" is defined differently in PSI than in the traditional classroom. To complete the PSI course is to demonstrate mastery on all the unit tests. That means that all PSI students completing the course receive high grades because they have mastered the material. In contrast, students complete traditional courses when the semester ends. Some students have learned a lot when that time comes, and others have learned very little, but by definition all who remain until the end of the term "complete" the course.

The universally high grades given in PSI courses create another problem for traditional structures. Traditionalists find it difficult to accept the notion that every student in the class can learn a subject to a high level of achievement; they insist that grades must be distributed normally according to the bell-shaped curve. However, one of the impressive findings of the research is 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 nonmastery conditions (Bloom, 1976).

Another promising avenue of research with implications for teaching innovation is being pursued by psychologists interested in cognitive styles. Since cognitive style is concerned with things people choose to notice and remember and the way they process information, its application in education is especially appropriate. 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 (1975) 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 two thousand studies reported in the literature. Witkin found in laboratory experiments that some people see things and situations intuitively or in toto without distinguishing elements that make up the whole, whereas others 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 slanted 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 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 college freshmen who entered a field of study not compatible with their cognitive style were significantly more likely than other students to change majors during their college careers.

Although cognitive style seems not to be related in significant ways to intelligence, field-dependents are likely to have trouble with the analytical tasks demanded by school subjects such as mathematics and science. I 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. Yet research suggests that field-dependents might learn better under more socially interactive conditions. There is also some evidence that field-dependents learn best when the subject matter is clearly structured, but that they are at a disadvantage in ambiguous and unstructured situations. These

findings suggest that while the structure of programmed instruction, for example, should be beneficial to field-dependents, such a cold, impersonal approach to learning would not be attractive to them. The implication is that some way should be found to combine high structure with high interpersonal interaction for field-dependent learners.

Most of the application of cognitive styles in colleges takes the form of expanding the number of options available and in making both teachers and students aware that people have different ways of learning and teaching. One community college makes a point of helping teachers develop a style of teaching that is most comfortable for them. Through this process, they gain more diversity of teaching styles for students, but they also encourage better teaching through helping teachers do those things that they do exceptionally well.

Finally, I would like to give brief attention to the uses of technology in innovative teaching. The use of television for instructional purposes seems at long-last to be making progress in higher education. A recent survey showed that a majority of colleges are now using television, on campus and off, for instructional purposes. The variety in course offerings is considerable, ranging from a simple video tape of a traditional college lecture course to expensively produced documentaries with "wraparound" study materials prepared by college faculty members. It is estimated that approximately 500 colleges have granted credit to some 600,000 students for five of the best known national telecourses. Telecourses, of course, change the

role of college teachers whether they are on the producing or receiving end. The University of Mid-America, which is a consortium of public universities engaged in the production of telecourses, uses teams consisting of four specialists: one for academic content, one for instructional design, one for the appropriate uses of the technology, and one for evaluation. Thus, one of the implications is that those few faculty members who are involved in production are becoming very specialized in the presentation of knowledge. At the same time, regular classroom teachers using telecourses are emphasizing presentation less and are thus free to devote more attention to student learning. Whether, in fact, teachers relieved of the responsibility for presentation do give more attention to pedagogy and student learning has not been studied to my knowledge.

One technology that is primarily concerned about learning (as opposed to teaching) is the computer-managed system devised by Miami-Dade, which is a community college in Florida enrolling some 50,000 students. They call their system RSVP which stands for Response System with Variable Prescriptions. It was originally designed to provide individualized evaluation, diagnosis, and prescription for students studying independently off-campus. It operates in this way: The student uses a combination of course materials -- television, tapes, textbooks, and study guides -- to learn the material. When he completes a study unit he takes a test and returns a machine-scorable answer sheet to the computer which not only scores the test, but analyzes the pattern of errors to show which concepts are not adequately understood. The computer then generates an individualized letter to

the student, analyzing weaknesses and suggesting prescriptive assignments. In the case of basic skills deficiencies, the computer can select from 3,000 possible assignments, the one best suited to a particular student. Miami-Dade College is now using RSVP to individualize attention to its large student body, with widespread acceptance by both faculty and students. Last fall, for example, a computerized letter was sent at the midterm to each of Miami-Dade's 10,000 entering students. The letter informed each student how well he or she was doing in each course and made suggestions to those not doing well about where they could obtain additional help. Miami-Dade expects such analysis to reduce their attrition rate, and they also expect the system to be used with considerable effectiveness in the distance-learning situations created by the potential of telecourses.

Time does not permit even a cursory review of all the teaching innovations that prevail in the United States right now. I have concentrated largely on those teaching innovations that seem to offer promise for dealing with diversity in open-admissions colleges. I opened these remarks with the observation that most teaching innovation is launched in response to perceived problems and there is not much doubt in my mind that the greatest challenge to teaching and learning exists in the open-admissions practices of America's community colleges. As long as equal opportunity for disadvantaged groups remains a high national priority, there will be support for those methods which have some hope of bridging the gap between the well educated and the poorly educated.

References

- Bloom, B.S. Human Characteristics and School Learning. New York: McGraw-Hill, 1976.
- Centra, J.A. Faculty Development Practices in U.S. Colleges and Universities. Princeton, N.J.: Educational Testing Service, 1976.
- Coleman, J.S. and others. Equality of Educational Opportunity. Washington, D.C.: U.S. Government Printing Office, 1966.
- Cross, K. Patricia. Accent on Learning: Improving Instruction and Reshaping the Curriculum. San Francisco: Jossey-Bass, 1976.
- Witkin, H.A., Moore, C.A. and others. Field-Dependent and Field-Independent Cognitive Styles and Their Educational Implications. Princeton, N.J.: Educational Testing Service, 1975.