

Speeches.
Aug 18, 1964

EDUCATION AND ITS MEASUREMENT FROM 1940 TO 2000

Throughout the meetings which I attended yesterday, there were many exciting ideas presented concerning plans for the future. For about one-half hour this morning, I'd like to project us into the far distant future -- to the year 2000 and from that vantage point look back at the history of education as it developed from 1940 through the 1990's.

After World War II as educational systems from grade schools to grad schools began to dig their way out of the all-absorbing task of expanding physical facilities, the quality of education became a national focus. It was glaringly apparent that steps considerably more drastic than expanding the traditional educational program had to be undertaken. A leading educator of the 1960's pointed out that ...if they had continued to operate colleges along conventional lines, more college facilities would have had to be constructed in the 15 years from 1963 to 1978 than had been built in all our history. Educators of the 1950's and 60's also realized that faculty expansion could not hope to keep pace with student expansion and that other ways would have to be found to teach and to learn. City, state, and national governments faced mounting problems in the rise of unemployment and the societal problems of the school dropout who could find no place for his muscle and had not educated his brain for the new kind of work to be done in a society which had replaced physical concerns with human, societal, and technological problems. The needs of education in the 1960's were apparent in every level of society, and thus it was not difficult to interest people from a vast array of specialties in the problem.

College Presidents, who had spent the 1950's raising money and building classrooms and dormitories, began to call upon their faculties and research experts

for major attention to the quality of their educational offerings. Foundations and government agencies made available vast amounts of money for educational research and experimental programs which would lead to more significant learning experiences for the highly diverse student bodies of the 1960's and which would result in the more effective utilization of teaching faculties. National and State Bureaus of Education began to plan for total programs of education -- from nursery school thru adult education programs. The community colleges, the four year state colleges and the universities became a coordinated system of higher education. As early as the 1960's the Universities had started the movement away from offering instruction in the first two years. Rather, they concentrated on upper-division work, graduate programs, and post-doctoral studies. Gradually the Universities ceased to offer any introductory courses as the Junior Colleges provided the work of the freshmen and sophomore years. Student Governments began to move away from their traditional concerns with social regulations, women's hours, and an annual review of the Student Government constitution to a vital concern with the academic programs offered at their college. National testing and educational research agencies worked at peak capacity to improve measurement of the educational process. They not only made great technological and scientific advances in test construction and in procedures for handling millions of students at every educational level, but through research, they sought new criteria for the measurement of the educated man. Incredible as it now seems, many people saw the major role of testing in the early 1960's as the increasingly precise prediction of college grades -- at best an imprecise measure of education.

At that time, education was measured in units known as credit-hours. A student earned a credit hour's worth of education by attending a class for a certain number of hours a week for a given number of weeks. When he had accumulated 120 or 128 of these hours he received a bachelor's degree and was

Albert Einstein once said, "It is rather short of a miracle that modern methods of instruction have not yet entirely strangled the holy curiosity of inquiry"

generally received into society as an educated man. In searching the records of this civilization, we find that even then, they knew that the credit-hour was a medium of exchange and an administrative convenience and not a true measure of education! They had adequate evidence that 120 course hours of college was not comparable across people or across colleges. It was a common occurrence to find a student with 120 hours of college education who knew less than a student with zero hours of education. College instructors of that period faced the rather difficult task of equating their courses to this standard credit-hour system. Sometimes they had to trim the course and cut out things they considered important so that it would fit into 3 hours a week for 15 weeks. Other times, of course, they had to do quite a bit of padding and stretching to make it fit. But it was quite universally accepted that 45 hours of classroom instruction led to 3 credit hours on the educational scale regardless of kind of instruction, outside reading, or level of difficulty of the course.

Another great problem of the credit-hour system was that because of this universally accepted measure of the educated man, students went to college not with the purpose of being exposed to new ideas or broadening their appreciation and understanding of the works of man and nature, not to get an education -- but to get enough grades and hours to add up to a degree. They became thoroughly trapped in the fiction that education and learning were synonymous with grades and credit. As a matter of fact, grades were so important in the 1960's that a number of practices grew up which were antithetical to good education. For example, there was a student custom known as cheating. This was an arrangement whereby the cheater got credit for something that someone else learned -- all of which goes to show how little the traditional measures of education really measured education, for in this instance a student who avoided learning received education credit. Another common practice was to take "gut" courses. This was a course in which

you were already proficient, but you took it to get a good grade which upped your educational credit while leaving unaffected your education.

In fact by the mid 1960's the credentials of education had almost replaced education. Many students in high school and college felt that they could take only courses that they were good in. Only in this way could they assure themselves the necessary grade point average to get to the next level of education. For instance, an engineer dared not experiment by trying a course in poetry because if he made a poor grade due to his lack of background in it, he might not be accepted into the graduate school of his choice. Likewise some very able students steered away from honors courses because they would be graded more severely, and thus their chances for the next level of education might be hurt. In other words, in education it was safer to stick to what you already knew and not fool around with trying to fill gaps in your knowledge.

*Cite Princeton idea
of no grade for one
course per semester.*

It is bewildering to us now to try to figure out just why this system persisted in this age of mathematical precision and interest in accurate measurement. I suppose that the best answer was given in the report of the Harvard Committee of 1945 which described the credit hour as the "mechanism whereby courses of every kind are legitimized, put on an equal footing, and made available for tabulation." But on the other hand, they noted that this standardization was the only alternative to complete chaos. Then as now, it was easier to specify the pathways to education than it was to define the goals of education. And remember too that the educational systems were coping with tremendous problems in the 60's and 70's. I have already referred to the almost overwhelming problems of numbers of students but there were also ideological problems. There was the conflict between the democratic ideal and of education for all/the reality that colleges were becoming highly selective. There was the unresolved battle between vocational education for a highly specialized society dependent upon engineers and scientists, and liberal education which

adherents saw as the way to provide leadership for vital human decisions regarding world peace, equality of opportunity for all peoples of the world, and the problems of the cities -- slum clearance, crime, narcotics, and a host of evils which beset a rapidly changing society. Better education for more of the people was seen as the most effective way to solve some of these problems, and educators worked tirelessly to expand and improve their offerings.

To a very large extent, however, knowledge about education was far ahead of practices. It was reminiscent of the busy farmer who was visited by the enthusiastic young representative of the Agriculture Extension Service. He was carrying the latest word to the farmers of the state when he was interrupted by the impatient farmer who said, "Sonny, I don't farm half as good as I know how now." Likewise, in the 1960's they didn't educate half as well as they knew how.

I have very briefly described education in the 1960's only as it appeared on the surface. There was, of course, a great deal of ferment and change brewing on every campus and on the national scene as well. Let me turn now to a closer

look at some of the experiments in educational measurement of those days.

The stage was set after World War II for consideration of more effective utilization of our known resources, with special attention to the academically talented. Many of the returning servicemen had received part of their military training on college campuses, they had traveled and lived in foreign lands; the launching of the Russian Sputnik in the late 1950's challenged the educational facilities of this country in the development of highly skilled scientists; many young men had left high school without graduating in order to enter military service and in terms of motivation and experience they now seemed ready for college; the GI bill made college education possible for segments of society who had never considered it before.

Programs to meet these challenges developed very rapidly. The tests of General Educational Development were adopted quite universally as measures of secondary education in lieu of a high school diploma, thus making it possible for servicemen who had not completed high school to go directly into college. Many colleges granted college credit to any veteran on the grounds that his military experiences had placed him ahead of the typical 17 year old freshman.

A great deal of attention was given to programs which would encourage the superior student to move at a more rapid pace. Some of the boldest and most successful educational innovations of the early 1950's were the programs of advanced placement and its predecessors all of which emphasized individual differences in learning and made special provisions for the able ambitious student. Much earlier in both European and American educational systems, the individual moved at his own pace, but after 1900 when the ideal of mass education began to take hold in the United States individual placement was sacrificed to standardization for larger numbers. The Fund for the Advancement of Education of the Ford Foundation took the leadership in providing support for educational

experiments which would emphasize a return to consideration of individual differences with special attention to the programs for the gifted.

The program for early admission to college ran as an experiment in schools and colleges for 5 years. It permitted gifted students to enter college directly from the 11th or even 10th grade. Research data showed that early admissions scholars did well in college, and all conclusions pointed up the value of permitting superior students to move ahead more rapidly, but there were disadvantages too-- adjustment problems among early admission scholars were somewhat more frequent than the comparison students and there was criticism from the secondary schools because it deprived them of some of the finest leadership in the 12th grade and also the presence of these superior students was a stimulus to better teaching in the high schools. The Advanced Placement Program offered the answer to these criticisms by proposing enriched secondary education for able students coupled with advanced placement in college. The program gained rapid acceptance and had a dramatic impact upon the educational system. In addition to providing a stimulus to the able student, it did a great deal to strengthen the coordination between secondary schools and higher education. For students from superior high schools, much of the 1st year of college had been a repetition of high school work and on the other hand colleges had quite typically offered non-credit courses in English and other basic subjects so that students with inadequate preparation could bring themselves to college level. Articulation Conferences between secondary and college faculties helped to eliminate this duplication in education. One wit of those days had claimed that the overlap present throughout education was stifling to individual learning and the discovery of new ideas and had pointed out that the only new discovery present in education was done not by the students but by Columbus who made his discovery in the 3rd, 5th and 7th grades. The Advanced Placement Program had other advantages. It made use of some of the best teaching

available. The superior secondary teacher was stimulated and challenged through his teaching of college-level courses and frequently the quality of instruction in these courses was far superior to the freshman offerings by graduate assistants in the colleges.

From 1955 to 1964 the program grew from 130 participating colleges to 888 (better than a 600% increase in 9 years) and by 1970 virtually every college in the country granted advanced placement credit—either on the basis of their own local college examinations or on the basis of the College Board series of examinations in specified subjects.

Looking back, it is hard to see why the program didn't catch on even more rapidly than it did. But educational change is slow. Colleges are conservative and many colleges saw less "risk" in a borderline student repeating what he already knew than in challenging him to stretch a bit. Actually, boredom and lack of challenge is probably a more serious threat to education than the "risk" of possible failure.

A leading college of those days—Harvard University—encouraged advanced placement whenever possible, taking the position that if it permitted a student to reject advanced placement they were placing an over-emphasis on grades, i.e. permitting a student to make a superior grade while adding little that was new to his education. It is interesting to note that the more experience an institution had with the Advanced Placement Program, the more lenient they were in granting credit. In the mid 1960's there were identifiable leaders in the Advanced Placement Program. A 1963 study of 700 colleges receiving advanced placement scores showed that 73% of the advanced placement candidates applied to only 13% of the colleges.

Despite the tremendous impact of this program, there were still problems to be solved. In the first place only 2-3% of the college-going population of the mid 1960's were candidates for advanced placement and these were a highly superior

scoring in the 600-700 range of the SAT, and averages of 700 were not uncommon on the CEEB achievement tests. Although many felt that a much higher percentage of students could profit from advanced placement, there was a limit to what the pressured high schools could offer and it should be remembered that many high schools were unable to offer any advanced courses at all.

The very success of the Advanced Placement Program contributed to its demise in 1965. As early as 1964, certain highly selective colleges began requiring advanced placement credit as a prerequisite to their courses. The program had in fact raised the level of secondary education so that colleges no longer offered the courses for which advanced placement was formerly granted. The other problem faced by the Advanced Placement Program was that since the examinations were oriented to specific courses it was in most places tied to the credit hour system. Harvard and some other institutions had gotten around this temporarily when they granted an entire year of credit to any student passing three advanced placement examinations.

One of the first dramatic departures from granting credit on the basis of examinations tied to courses was made by American University in 1964. They offered up to 39 hours of college credit to any student who could demonstrate adequate educational background in the English, Humanities, Social Sciences, Natural Sciences and Mathematics--ordinarily the distribution requirements of the first two years. They offered up to 9 hours of Humanities or Social Sciences credit, 6 hours in Physical Sciences, English and History, and 3 hours in Mathematics. The instruments used to evaluate this general liberal arts background were the Comprehensive College Tests developed by Educational Testing Service in 1961-64.

Other colleges saw this kind of testing program as a way to offer greater flexibility and student choice in meeting ^{distribution} requirements. They abolished

distribution requirements in the first two years with the stipulation that at the end of the sophomore year, the student must pass comprehensive examinations. This gave the students greater responsibility with direction of their own academic program and had the educationally desirable effect of encouraging students to take their requirements in subject in which they were weak rather than courses in which they were assured of a good grade.

The introduction of new instruments of measurement and the desire of colleges to introduce greater flexibility into their programs led to an increased emphasis on independent study programs. Careful studies at Antioch and Oberlin in the late 1950's had shown no difference in the learning of experimental and control groups when the experimental groups received considerably less formal classroom instruction than the controls who took the same courses in the traditional manner. A great variety of independent study programs had existed in colleges for some years, but the technological age had literally made education available to all who had the desire to study. By 1970, 50% of all college degree programs were available via education TV, which was just what the Stanford University Institute of Communication had predicted in the 1960's. Language labs and programmed learning became available in almost all high schools and public libraries, and book publishers had made fascinating courses available on records—on which one could hear poets reading their poetry, composers discussing their music, etc. At any rate, by 1980 it became apparent that many people outside the universities knew as much as the students inside but since the yardstick of education was still the credit-hour people were applying to the universities to credit their knowledge. Ultimately, this force on the colleges to serve as certifying agents was the straw that broke the camel's back and they returned the universities to their rightful role as educators.

Now in the year 2000, students do a great deal of their study independently making wide use of the programmed learning and language labs. A student now proceeds

at his own pace and the instructors in our colleges are freed from the mass lectures of the past for work in small seminars and tutorial study. There is a new spirit of cooperative learning between student and instructor without the tension of grades. Educational progress is now measured not by grades and credit hours but by advancement to the next level of education on the basis of comprehensive examinations. Transcripts no longer show ability by the grades received at each level, but rather only the educational level reached. The concept of education as something one gets and then has, has completely disappeared being replaced by the concept of a lifelong process of learning aided by the shorter work week and the easy availability of educational resources.

The key to this educational utopia, of course, lies in a more appropriate evaluation of learning than the number of hours of exposure, for the relationship between exposure and learning is discouragingly low. At each step of the educational change that I described, the existence improved evaluative instruments made possible the next improvement. Beginning with the Advanced Placement Program in the 1950's we see the use of tests by which the able and ambitious student can show that he will profit from placement at more advanced levels of learning. In the late 1960's and 70's further improvement of testing procedures and the greater experience with the validity of their measurement permitted departure from the necessity for equating tests to specific courses. By the 1970's we had the instruments to evaluate both breadth and depth of education and eventually, of course, a way of predicting just when the student can profit from the next level of learning. Notice that the emphasis of testing has changed at this point. It is no longer an instrument used largely by others to make decisions regarding the student's educational future, but it has become a way in which the student can evaluate when he has sufficient background to be able to proceed to more difficult concepts.

The tests themselves are different too. The computers changed that. Much could be done and was done by the testing experts in 1960 to make the nationally standardized achievement tests oriented toward the understanding and interpretation of the basic facts of the subject field rather than simple recall of the facts themselves. In this way, tests could be devised which were not specifically curriculum oriented but good tests of this type were difficult and expensive to construct and the only way of comparing the academic achievement of students across the very diverse student backgrounds was to have everyone take the same test or parallel forms of the same test. Long before the year 2000, individual students could sit at computer stations and take flexible tests designed for individual differences in learning background -- each new item determined by the answer to the preceding item. Since the statistical properties of the items in the huge computer pool were known, comparisons could be made between students, but more important, the student received an immediate evaluation of his performance and he could determine for himself his weaknesses and strengths. Thus, tests became truly an integral part of the learning process. Colleges, departments, and faculty members were able to evaluate their instruction in much the same manner. Their faculties could put together a well-designed test on the spot by selecting those items most appropriate to the measurement of their goals.

This progress of the testing agencies and the colleges was certainly interdependent throughout the last half of the 20th century. The test experts continually checked and improved their instruments by comparison with the educational systems, and the progress of education depended in part at least upon the existence of better evaluative instruments. I have not meant to imply that all academic reform is dependent upon the use of tests -- only that the continued improvement of valid instruments of measurement will open up vast new opportunities for educational advances.

Speech delivered to the National Students' Association at the Minneapolis Convention on August 18, 1964, by K. Patricia Cross.

REFERENCES

- Abrams, Irwin, Study Abroad. Washington, D. C.: New Dimensions in Higher Education No. 6, 1960.
- ✓ Baskin, Samuel, Quest for Quality. Washington, D. C.: New Dimensions in Higher Education No. 7, 1960.
- Better Utilization of College Teaching Resources. New York: The Fund for the Advancement of Education, 1959.
- ✓ Cole, Charles C., Jr., & Lewis, Lanora G., Flexibility in the Undergraduate Curriculum. Washington, D. C.: New Dimensions in Higher Education No. 10, 1962.
- Darley, John G., Promise and Performance: A Study of Ability and Achievement in Higher Education. Center for the Study of Higher Education, Berkeley, California: University of California, 1962.
- Decade of Experiment. New York: The Fund for the Advancement of Education, 1961.
- Duryea, E. D., Management of Learning. Washington, D. C.: New Dimensions in Higher Education No. 5, 1960.
- ✓ Freedman, Mervin B., Impact of College. New Dimensions in Higher Education No. 4, Washington, D. C.: U. S. Government Printing Office, 1960.
- ✓ Hatch, Winslow R., The Experimental College. New Dimensions in Higher Education No. 3, Washington, D. C.: U. S. Government Printing Office, 1960.
- ✓ Hatch, Winslow R., What Standards Do We Raise? New Dimensions in Higher Education No. 12, Washington, D. C.: U. S. Government Printing Office, 1963.
- ✓ Lewis, Lanora G., The Credit System in Colleges and Universities. New Dimensions in Higher Education No. 9, Washington, D. C.: U. S. Government Printing Office, 1961.
- Liberal Education. Association of American Colleges, May, 1964, Vol. L, No. 2.
- ✓ Radcliffe, Shirley A., Advanced Standing. New Dimensions in Higher Education No. 8, Washington, D. C.: U. S. Government Printing Office, 1961.

*Wilson, Edward T. AP at Harvard, College Board Review,
No. 41 Spring 1960*

*Not in bibliography, Edward T. A Report to the faculty on the program
of Advanced Standing, 1959.*

*Palfrey, John. "Is Accreditation a threat to the liberal arts
college? The Newsletter of the Inter-University
Committee on the Superior Student, Vol 3, Oct 1960
p 19-16*