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Education for the 21st Century: Some Needed Changes for Quality Achievements

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INTRODUCTION

A growing body of evidence points to a decline in the quality of America's education from grade school to college graduation. For students, this evidence is reflected in factors such as lower standardized test scores, diminished comprehension of basic and higher-order skills, limited awareness of foreign languages and other cultures, and comparatively poor performance in cross-cultural evaluations. For teachers, the evidence is reflected most glaringly in poor performance on minimum competence tests. These factors, have serious implications for the future well-being of our society. If such trends are left unchecked, society will pay the bill in the form of burdensome economic and social costs. And since America's huge budget deficits can ill-afford these costs, changes must be devised to restore quality to our educational system. The purpose of this paper is to address the current state of our educational system and to suggest changes for quality improvement. While the causes of the current decline in students' performance has been attributed both to the educational system and to other social structural factors, this paper centers on the changes which can be implemented within the educational system itself. The focus is on the curriculum development in secondary education, but most of the suggested changes are also applicable to the postsecondary level.

The Quality Crisis in Education

Although American educators have been reluctant to define an "educated person", recent studies suggest that the educational attainment of today's

students is below minimum acceptable standards. Indicators of educational deficiencies are numerous, and a few examples are highlighted here. In January, 1987, a survey of 5,000 high school seniors in eight major cities revealed that: (1) thirty-nine percent of the students in Boston could not name the six New England states; (2) sixty-three percent of the students in Minneapolis-St. Paul could not name all seven continents; (3) forty-eight percent of the students in Hartford could not name three countries in Africa; and (4) twenty-five percent of the students in Dallas did not know that Mexico borders the United States on the south[1]. A similar test of high school seniors' geographical knowledge revealed that over forty percent of them could not locate Egypt on a map, and that twenty percent could not locate China or France[2].

In addition to a limited knowledge of basic geography, students also demonstrate declining performance across a wide array of subjects. Studies show that ten percent of high school students are illiterate readers and 25 percent are illiterate writers[3]. Tests of student's mathematical skills indicate a lack of understanding of decimals, fractions and percents. Even when students have familiarity with mathematical concepts, they are unable to use this knowledge in analyses or inferences. For example, studies show that even when students know that all sides of a square are equal and that its area is equal to length times width, fewer than fifty percent of them can use this knowledge to calculate its area when the length of only one side is given[4]. These deficiencies in high school, of course, have implications for colleges. Studies show that remedial math enrollment at four-year colleges increased seventy-two percent between 1975 and 1980, while total college enrollment increased only seven percent[5].

Postsecondary education, as measured by traditional achievement tests, also shows downward trends in quality. Graduate Record Examination (GRE) scores, just as Scholastic Aptitude Test (SAT) scores, have declined. College students are unfamiliar with geography and international affairs. A recent study reported that only five percent of college students preparing to be teachers took any courses related to international affairs[6]. College students' lack of knowledge of geography is reflected in a recent study in which a UCLA junior placed Toronto (which is in Canada) in Italy. Equally as glaring, many Harvard graduating seniors sat through a commencement address by King Juan Carlos without knowing he was King of Spain. And when we go beyond high schools and colleges to the American public in general, our basic knowledge is equally as appalling. A recent CBS/Washington Post survey reported that sixty-three percent of Americans could not name the two nations involved in the SALT talks.

Cross-cultural comparisons of American students with students from countries with comparable educational systems also show comparatively lower educational performance for Americans. For example, a recent study of 1400 first and fifth graders in Japan, Taiwan and the U.S. reported considerably lower performance in reading and math for American students than for Japanese and Taiwanese students[7].

Nonacademic Indicators of Non-achievement

Educators frequently point to crimes of violence and the rising truancy and dropout rates of high school students as further evidence of declining educational quality. Just as educators were becoming encouraged by the falling dropout rate between 1971 and 1981, the tide turned and the dropout rate increased from 1981 to 1986. Dropout rates for persons 14 to 34 years of age

increased during the 1981-86 period for both blacks and whites -- from 18 to 30 percent for blacks, and from 12-15 percent for whites[8]. For some school systems, the numbers are even more alarming. A recent study revealed that forty-six percent of the students who enter New York City's public high schools do not graduate; and in New York's inner city schools, this number increases to ninety percent[9]. Additionally, a New York Times article (May 6, 1980) indicated that "over 50 percent of the children who enter the Chicago public schools each year leave without graduating." Moreover a CNN news report on November 28, 1987, indicated that the truancy rate in some Wisconsin schools has become so alarming that the state has ordered reductions in the welfare payments of recipients who allow their children to miss two consecutive school days. And reports abound of schools that have had to hire security guards to control violence. Violent crimes lead to an atmosphere that not only is nonconducive to learning but also is threatening to human survival.

Causes of the Problems

Educators agree that the current state of America's education does not reflect some inherent inferiority of current students relative to previous generations. Moreover, there is general consensus that lower academic performance is not due to an expansion of educational opportunities which have incorporated lower achieving students. Educationally-related factors commonly identified as causes of the problems include (1) inadequate standards for performance, (2) unwarranted use of separate tracks, (3) poor teaching methods, (4) insufficient hours on school work, (5) inadequate preparation of teachers, and (6) inappropriate course contents. The remaining of this section provides further elaboration on these factors.

Minimum competency tests initiated at schools across the country are believed to have become an acceptable norm for evaluating performance. That is, students view these minimum standards as the maximum level of desired achievement. Since minimum competency tests were initiated because of an observed downward trend in quality education, these tests could not have induced the trend but may have accelerated the rate of decline in educational attainment.

To accelerate the learning process, many schools have assigned students of supposedly different academic abilities into different academic tracks. Educators who have observed teaching and learning within these tracks argue that academic tracks have a negative impact on learning. Boyer argues that tracking students has a "devastating impact on how teachers think about the students and how students think about themselves."[10] The less effective teachers are assigned to lower tracks when, in fact, the assignment of the most effective teachers to lower tracks could possibly compensate for some of the initial disadvantages in learning.

Teaching methods are often judged inappropriate because basic skills and passive learning are emphasized at the expense of higher-order skills and active learning. Most instructional time at the secondary and postsecondary levels involves the use of lectures. And even when teachers deviate from general lectures to ask questions, these questions are most often phrased to ascertain simple factual information that requires limited or no logical reasoning. Further, students are taught and encouraged to read, but then they are given little opportunity to discuss inferences from their reading. Moreover, overemphasis on multiple-choice tests allows insufficient time for developing writing skills. Indeed a recent study concluded that "tests

requiring only the putting of X's in boxes contributes to juvenile writing delinquency"[11].

Problems with course contents involve the emphasis on basic skills at the expense of higher-order skills. Students are taught facts and then tested on their ability to recall these facts. Educators argue that a mere recall of facts is not only an inadequate measure of learning, but many of the facts taught and subsequently recalled are totally irrelevant for today's advanced society. Educators agree that students must be exposed to courses which can develop their analytical, interpretive and reasoning skills. Developing these skills, of course, requires a complete knowledge and understanding of more basic skills.

Educators argue that more efficient use should be made of existing classroom time and that days allocated to the school year should be expanded. Schools are criticized for allocating too much time to nonacademic activities such as assemblies, announcements and pep rallies. Not only do nonacademic activities utilize valuable learning time, but educators' observations have revealed that there are no increased homework assignments to compensate for students' loss of learning time. When these factors are coupled with an 180 school-day-year versus a 220 school-day-year for many other industrialized countries, it becomes clear that American students are given fewer opportunities for learning than many foreign students with whom they will eventually compete in the international arena.

The high failure rate for teachers on minimum competency exams is interpreted by many as inadequate preparation. Some studies also note that too many teachers are drawn from the bottom quarter of their graduating classes. This factor is believed to be related to disparities in teachers salaries

relative to those of other professionals. Concomitantly, low salaries are not conducive to attracting the most talented teachers. As another problem, Boyer notes that there is very limited updating of teachers' skills, especially in the critical fields of mathematics, science and technology.[12] Inadequate teachers' preparation in these three critical areas is further aggravated by the fact that teacher shortages have forced out-of-field teachers into these areas.

Needed Changes for Quality Achievements

It is important to recognize that test scores, especially standardized tests, are imperfect measures of educational achievement. Test scores can be improved by simply refocusing teaching on test-taking. Higher scores resulting from this teaching method, however, would not represent quality achievement. Quality education, as we view it, represents the achievement of all the skills that are necessary to make a smooth and easy transition from school to the labor force, or to a higher level of education. In an informational and technological society, these skills will consist of such factors as effective communication, critical reasoning, cultural awareness, and analytical thinking. As an effort to provide these skills, it seems reasonable to develop a definition of an "educated person", allowing this to serve as a guiding instrument in the pursuit of quality education. Universities such as Ohio State, for example, have found that specification of criteria defining an "educated person" is a useful procedure in curriculum development. Because such criteria obviously would vary by educational institution and district, we do not attempt to identify the parameters of an "educated person". Rather, the focus here is on quality education within the confines of any specified set of parameters for an "educated person".

To reorient America's focus to quality education, we must first have a firm grasp of the implications of declining quality achievement. Hence, the first part of this discussion focuses on the dimensions of the problem associated with low quality achievement. The second part focuses on the specification and implementation of a core curriculum.

Low Quality Education -- Implications of the Problem

The low productivity, low product quality and slow technological advancement, which currently characterize the U.S. economy, are believed to be linked, in part, to low quality education. Relative comparisons of the Japanese and U.S. economies and educational systems have been used to support this argument. The supposedly superiority of the Japanese educational system is believed to have increased productivity, enhanced product quality and advanced technological innovations. Economists argue that these last two factors are evidenced by the preference of Americans for Japanese automobiles and by the significant U.S. market share the Japanese control in electronic equipment. Increased productivity is considered to be reflected in continued expansion of Japanese products in U.S. markets, despite significant declines of the Japanese currency.

Another problem identified by economists is the strong correlation between low education and welfare dependency.[13] And even when Americans obtain what is supposedly a "good education", employers find the graduates of many of our institutions to be unprepared to function effectively in the work force. Effective communication is often cited as the critical and deficient skill. These educational deficiencies increase the operating costs of businesses and lower the overall productivity of the U.S. economy. Low productivity has a negative impact on wage and tax receipts, thereby diminishing available

resources for achieving higher quality education. Changes for alleviating this vicious circle are identified in the remainder of this paper.

Specification of Core Curriculum

The American system of education is best characterized as one which offers a plethora of alternatives and options. This system has led to an educational process in which students select their programs based on factors such as the (1) degree of anticipated course difficulty (2) time of day for course offering and (3) popularity of instructor. This approach cannot be consistent with a quality education because there are no defined parameters. A quality education consists of a curriculum core which includes courses that are rigorous and focused.

Courses providing quality go beyond mere emphasis on basis skills to encourage development of higher-order skills such as (1) development and testing of hypotheses, (2) analysis and evaluation of data, (3) exploring historical cause and effect, and (4) identifying theses within arguments.[14] Courses to develop these skills must be incorporated within the core curriculum at the secondary and post-secondary levels. Students must be exposed to courses that force them to think logically and that allow them sufficient opportunities for expressing their thoughts orally and in writing. Every course, not just communication courses, should be designed to allow students to express their writing skills and should allow for some oral discussion and/or debate. If these skills are emphasized, then testing must go beyond multiple choice and true/false exams to include, almost exclusively, essay exams. Indeed, essay exams provide a far better assessment of educational achievement because they force students to organize and clarify their thought processes.

In addition to the above skills, a core curriculum should include courses which provide a basic understanding of our government and its underlying economic system. Courses which compare and contrast our government and economic system with those of other nations should be incorporated into a quality education curriculum. Understanding the systems of government and economies of other nations also suggest that we should understand foreign languages. Developing an understanding of foreign languages is not only critical for enhancing communications among nations in an increasingly interdependent world but also critical for diminishing our own ethnocentrism.[15] One nation which appears to have recognized the importance of foreign languages is Japan. Japan has an estimated 10,000 English-speaking business representatives working in the U.S. By contrast, we have fewer than 1,000 business representatives in Japan, and most of those cannot speak Japanese.[16]

A core curriculum providing a quality education must also include courses to develop problem-solving skills. This suggests that mathematics courses must be a strong component of the core curriculum. Indeed the curriculum should encompass, as a minimum, basic math, algebra, geometry, trigonometry and calculus. To the extent possible, mathematical skills should be sharpened through computer applications. Computers, however, should never serve as a substitute for developing students' mental ability for problem-solving.

Implementation of Quality Changes

As the previous discussion suggests, a quality curriculum calls for increased standards. Raising standards, some might argue, is bound to increase measured performance because it forces low achievers from the system. Indeed educators have long argued that, were secondary school expenditures not tied to pupil attendance, schools would have an incentive to force low achievers out to

show improved performance. Such results, in our opinion, would fall far short of quality achievement. The quality curriculum we are suggesting must be implemented to ensure both equality of opportunity and equality of outcome.

Implementation of a high quality curriculum suggests, as a minimum, more demanding courses, more homework, and more study hours. These factors are probably least desirable to low achievers. However, it is our opinion that most observed low achievement is a function of problems that have not been properly diagnosed. That is, low achievers can become high achievers if the constraints on their performance are diagnosed and corrected. A quality curriculum should therefore be implemented without respect to measured performance. The tracking system in secondary schools and the honor system in colleges should be abolished. Uniform levels of performance should be expected from all students, socioeconomic differences notwithstanding.

The key factor in the implementation of a quality curriculum centers around the development of an academic environment that is both challenging and conducive to learning. Students must be challenged to put forward their best effort, not just a passing minimum. Grades should be deemphasized, and increased emphasis should be placed on the relationship between quality educational achievements and eventual socioeconomic achievements. Quality achievements are best accomplished with motivating teaching methods and interesting discussion topics. This suggests that lectures must be supplemented (or replaced) with teacher-student dialogue and textbooks must be supplemented (or replaced) with current information.

In sum, we have focused on one aspect of the educational system, curriculum, where changes are needed. While we recognize that curriculum reform addresses only a part of the educational achievement problem, it offers

a particularly promising solution because it can be accomplished within the context of the current educational system and without the addition of extensive societal resources.

NOTES

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