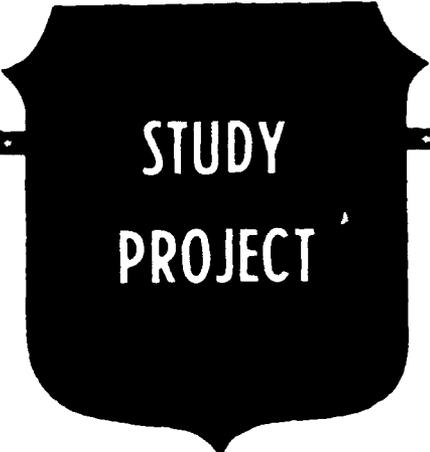


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**EDUCATING THE ARMY OF 2010:
A STRATEGIC PLAN**

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BY

LIEUTENANT COLONEL HOWARD A. DILLON, JR.
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Educating the Army of 2010: A Strategic Plan

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LTC Howard A. (Art) Dillon, Jr.

20 February 1992

Project Advisor: Dr. Herb Barber

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ABSTRACT

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My purpose in this project is to show the current status of public education in America, and how the quality of that education will determine the quality of our recruits in the 21st century. I have focused on the year 2010 in order to provide a target date for the future by which the goals of the education strategy could be obtained. In order to project a probable scenario for 2010, I have used emerging trends at both the national and international levels. My list of the competencies and personal skills needed to cope with the projected future is based on an analysis of that scenario, on the reports cited, and on my own observations after fifteen years of teaching in the public school classrooms. In the strategy explanation, I have used the research on teaching and learning to identify specific actions available to each of us in America as we choose to get involved. I've included several implications for the U.S. Army in the conclusions, with recommendations for how the U.S. Army can become more directly involved in public education as a way of improving the training of its future recruits.

INTRODUCTION:

In 2010, many of the recruits for the United States Army will be those young men and women who are born this year, in 1992. If the quality of these recruits is to be that required to maintain the edge of a trained and ready Army, their education from birth to high school graduation is critically important.

In speaking to the members of the Fortune education Summit on October 30, 1990, then Army Chief of Staff General Carl Vuono stated that "...the Army shares your concern about the quality of education in this great nation of ours. A quality education system is essential to providing the kind of soldiers that our Army and our nation need as we move into a new decade; and to get that education, our young people must stay in school." (1)

If the United States Army is to build on the foundation laid by the public education institutions to produce soldiers of quality, that educational foundation must be sound. Quality supplies are essential for producing quality products. For the Army of the future, the most important imperative is the task of maintaining a quality force. Education is the key to achieving this task.

At present, the United States Army does not accept a soldier who does not have a high school diploma. The Army's recruiters are cooperating with educators in reinforcing the Stay in School Program, instead of offering an alternative to students who choose to drop out. If these recruits are to become effective soldiers capable of handling the complex technology of the sophisticated weapons systems in place by 2010, then the education they receive between 1992 and 2010 must be the best possible. An inadequate education from Kindergarten through Grade 12 will result in the recruits being unprepared for the requirements of military training. This will put more pressure on the TRADOC training base to

improve the soldiers' basic skills before introducing the training associated with complicated weapons systems and warfighting doctrine.

Training and education are basic to the United States Army. They enable the Army trainers to build the technical skills the new recruits need to operate and maintain the world's most sophisticated high-technology weapons systems. The Army does not stop with technical skills, however. Leadership, decision making, personal motivation, self-discipline, teamwork, self-confidence, and loyalty to America are among the character qualities and personal skills which are taught directly to new recruits. Current Army practice demonstrates the need for soldiers to be "lifelong learners" whose education continues throughout their careers. The Army provides them the opportunity for this learning through its professional education programs.

A short personal example from my experience as a student of the U.S. Army War College provides insight into the concern of senior Army leaders for the status of public education in the United States. Before our class field trip to New York City last October, the members of my seminar listed those issues which we felt were critical to America's national interests. We named the obvious issues of drug abuse, the economy, the need for improved medical care, and the pattern of family breakdown. The issue our seminar voted as most critical to our national interests, however, was the current status of public education, and the need to dramatically improve it. The justification which emerged during our discussions was that since education provides such an important foundation for our society, making improvements in the quality of our public education will produce gains in each of the other areas as a natural consequence.

In considering our future as a nation, we must include public education as a strategic resource, and recognize how important it is for all of us to become

involved in improving it. The decisions that today's Army leaders make to become a partner in public education create investments which will pay excellent returns in the quality of the Army of the future. America depends on its soldiers to protect the human freedoms that are basic to American citizenship, and that is a responsibility the Army must meet. In a time of shrinking budgets, paying for educational partnerships will hurt, and may detract from some deserving military programs. It is, however, a necessary investment if the Army is to be assured of an adequate supply of well trained recruits who are ready to handle the challenges of the Army's advanced military training. The Army must be an active partner with educators, business organizations, community leaders, and parents in a joint operation to help America's students in school. It must become involved in using its resources to help American education fit the Army slogan of "Be all you can be."

In 1983, the National Commission on Excellence in Education published the findings of its eighteen months of investigation into the U.S. education system. Its report, A Nation at Risk, issued this warning: "If an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we might well have viewed it as an act of war. As it stands, we have allowed this to happen to ourselves. We have even squandered the gains in student achievement made in the wake of the Sputnik challenge. Moreover, we have dismantled essential support systems which helped make those gains possible. We have, in effect, been committing an act of unthinking, unilateral educational disarmament." (2) That warning alerted Americans to the seriousness of the conditions in our schools, and initiated a series of educational reform programs across the nation. Now, nine years later, we can evaluate the progress which has been made as a result of those reforms.

My purpose in this project is to show the current status of public education in America, and how the quality of that education will determine the quality of our recruits in the 21st century. I have focused on the year 2010 in order to provide a target date in the future by which the goals of the education strategy could be obtained. In order to project a probable scenario for 2010, I have used emerging trends at both the national and international levels. My list of the competencies and personal skills needed to cope with the projected future is based on an analysis of that scenario, on the reports cited, and on my own observations after fifteen years of teaching in the public school classrooms. In the strategy explanation, I have used the research on teaching and learning to identify specific actions available to each of us in America as we choose to get involved. I've included several implications for the U.S. Army in the conclusions, with recommendations for how the U.S. Army can become more directly involved in public education as a way of improving the training of its future recruits.

It is true, as former Education Secretary William Bennett observed, that "Excellence costs. But in the long run, mediocrity costs far more." (3) We have seen the effects of mediocrity in the lows of the Army's history, and we know the human costs which have resulted. We have worked hard to achieve the excellence the Army now enjoys, and must not relinquish that edge.

ENDNOTES:

1. General Carl Vuono, Address to Fortune Education Summit, October 30, 1990.
2. The National Commission on Excellence in Education, A Nation at Risk, U.S. Department of Education, Washington, D.C., 1983.
3. William J. Bennett, American Education: Making it Work, A Report to the President and the American People, U.S. Government Printing Office, Washington, D.C., 1988.

THE CURRENT STATUS OF PUBLIC EDUCATION:

Each year, as the nation's students return to school, the newspaper headlines report on how educational reform is doing. The news is seldom positive. This past fall, the editorial of The Washington Post on August 28, 1991 reported no gains in academic achievement, and stressed that American students get little out of school because they don't put much work into it. The Wall Street Journal of September 4, 1991 reported President Bush's criticism of the U.S. schools and his concern about the negative impact of television watching on student achievement. The Harris Poll released on September 29, 1991 reported that employer groups and educators gave low marks to the preparation of U.S. high school students for either the job market or for college course work. These are examples of what has become commonplace each fall, bringing news that is discouraging to the teachers, and disheartening to the American public.

Unfortunately, the official report cards are not much better. In September, 1989, President Bush and the nation's governors met in Charlottesville, Virginia for the historic Education summit. During that meeting, the President and the Governors agreed to establish national education goals in order to focus the resolve of the American people on the task of radically improving student performance. They recognized that adopting these national goals would only be meaningful if there was a shared commitment to achieving them and a system for measuring progress toward those goals. So, in July, 1990, the National Education Goals Panel was created to report on each state's success in achieving the goals

which were established during the Education Summit. Since the intent of the President and the Governors is to achieve these National Goals by the year 2000, the Panel has the mission of issuing an annual report card for each of the next ten years. The first report for 1991 has been released, and shows that while our nation's schools are making progress in some areas, there is much work that needs to be done.

The goals proposed at the Education summit were formally released as National Education Goals in February, 1990. Here is a listing of those six goals, and a measurement of where our nation stands in relationship to each goal, according to private research findings, official government publications, and the 1991 report of the National Education Goals Panel:

Goal 1: All children in America will start school ready to learn.

The report from the National Education Goals Panel acknowledges that there are presently no direct ways to measure the overall national progress toward achieving this goal. However, the Committee for Economic Development has established that quality preschool programs provide one of the most cost-effective ways of lowering the dropout rate and helping at-risk children become more effective learners. It maintains that investing one dollar on a comprehensive preschool program for a disadvantaged child can save up to six dollars in future costs of welfare, remedial education, teen pregnancy, and crime. Thirty five states currently fund preschool programs, placing a high priority on early childhood education for at-risk children. In spite of this recognition of the benefits of early intervention, however, only about one-third of all poverty-level three and four year old children attend some form of preschool. (1)

Goal 2: By the year 2000, the high school graduation rate will increase to at least 90 percent.

In 1990, 83% of 19 and 20 year old young adults in the United States reported completing high school, and the majority of these earned their diplomas by completing the traditional high school course of studies. For 23 and 24 year old young adults, the high school completion rate was 86%. High school completion rates for White and Black students were substantially higher than the rate for Hispanic students, with 90% of White students and 85% of Black students earning their diplomas by age 24, compared to 56% of Hispanic students. (2)

Goal 3: By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography, and every school in America will ensure that all students learn to use their minds well, so they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy.

In 1990, only one out of every five students in Grades 4, 8, and 12 had reached the National Education Goal of demonstrating competency in mathematics. The standard of competency is derived from the achievement levels established through consensus by the National Assessment Governing board (NAGB). Students scoring at the achievement levels of "Proficient" (representing the Goal 3 standard of capability on challenging subject matter) and "Advanced" (denoting superior academic performance) were judged as competent in mathematics. The test results showed a considerable variation by racial/ethnic groups in each of the three grades tested, with Asian/Pacific Islander 12th grade students scoring highest (39% competent), followed by White students (22% competent), Hispanic students (6% competent), American Indian/Alaskan Native students (5% competent), and Black students (4% competent). (3)

The Advanced Placement program, sponsored by the College Board, provides a

way for high schools to offer college-level coursework to their students. The Advanced Placement examinations taken by 11th and 12th grade students are given in May of each year, and measure their skills in the core subjects of English, Mathematics, Science, and History. The exams are graded on a five-point scale: 5 - extremely well qualified; 4 - well qualified; 3 - qualified; 2 - possibly qualified; and 1 - no recommendation. Since 1980, the number of these examinations taken has increased sharply, with the greatest rates of increase among minority students (e.g. Hispanic increase of 148%; American Indian/Alaskan Native increase of 134%; Asian/Pacific Islander increase of 131%; Black increase of 118%; and White increase of 51%). For every 1,000 11th and 12th grade students enrolled in 1991, 70 Advanced Placement examinations were taken, and of these, over 60% were graded at 3 or above. As noted, the grade of 3 or higher is generally high enough to make students eligible for college credit. (4)

In the area of citizenship readiness, nearly all 12th graders tested in 1988 had a basic knowledge of civics, such as elections, laws, and constitutional rights. However, only about half understood specific government structures and functions, such as the separation of powers, and only 6% had a detailed knowledge of such institutions of government as the President's Cabinet and the Judiciary. According to the 1989 Bureau of the Census, only 48% of the nation's 18 to 20 year olds were registered to vote, compared to 70% overall of American citizens who are eligible to vote. (5)

Goal 4: By the year 2000, U.S. students will be first in the world in science and mathematics achievement.

In 1988, the United States, Ireland, Korea, Spain, and the United Kingdom participated in the International Assessment of Educational Progress (IAEP), which measured the achievement of 13 year old students in both science and

mathematics concepts. American students scored substantially lower than students from Korea, Spain, and the United Kingdom, and scored slightly higher than students from Ireland. Most American students (78%) demonstrated a basic knowledge of life sciences and physical sciences; less than half (42%) could design experiments and use scientific equipment; and only a few (12%) could draw conclusions by applying scientific facts and principles. Korean students scored the highest, with scores of 93%, 73%, and 33% in each of the categories listed; and the United Kingdom students were second with scores of 89%, 59%, and 21%, respectively.

On the same test, American students scored lowest of the five nations on the mathematics skills section. American students were able to add and subtract two-digit numbers and solve simple number sentences (97%), and most could solve one-step problems and demonstrate their understanding of the basic concepts of logic, percent, and geometry (78%). However, less than half (40%) could solve problems which required more than one operational step; use information from charts and graphs; convert fractions, decimals and percents; or compute averages. Fewer than one in ten American students (9%) could multiply fractions and decimals, or demonstrate their understanding of measurement and geometry. This compared to 40% of Korean students and 18% of United Kingdom students who could complete those problems successfully. (6)

Goal 5: By the year 2000, every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship.

In 1985, the National Assessment of Educational Progress (NAEP) tested the literacy skills of America's young adults in the 21 to 25 year old age group. The NAEP used a wide variety of tasks that simulate the diversity of literacy

activities that people encounter at work, at home, at school, and in their communities. The results showed that while most (97%) were able to write a simple description of the type of job they would like to have, slightly less than half (49%) could locate information in an almanac or newspaper, and very few (13%) could interpret the main argument in a lengthy newspaper or magazine article. The document literacy portion of the test showed that most (97%) could match money-saving coupons to a shopping list of several items, but less than half (49%) could use a map to travel from one location to another. Even fewer (14%) could use a bus schedule to select the appropriate bus for given departures and arrivals. The third portion of the test, the quantitative literacy tasks, confirmed that the majority (97%) of those tested could correctly total two entries on a bank deposit slip. Just over half (51%) were able to enter deposits and checks and balance a checkbook, but less than one in five (19%) could use a given percentage to determine how much to tip in a restaurant. (7)

Goal 6: By the year 2000, every school in America will be free of drugs and violence, and will offer a disciplined environment conducive to learning.

In 1989, about three out of ten high school seniors reported that alcohol and marijuana were easy to obtain in their schools. According to their survey results, however, drug use at school was not widespread. In 1990, only 7% of 12th graders reported using alcohol at school, while 6% reported using marijuana, and 1% reported using cocaine. These figures reflect a sharp drop since 1980 in the use of alcohol (21%), marijuana (14%), and cocaine (3%) while at school. (8)

Victimization and vandalism continue to be problems in America's schools. In 1990, 25% of twelfth grade students who were surveyed reported they had been threatened in situations where a weapon was not being used. Of those, 14% were then injured. Of the 13% who reported being threatened with a weapon, 6% were

actually injured. In addition, 42% reported their property stolen, and 29% reported their property had been vandalized. The survey showed that Black students were much more likely than White or Hispanic students to be victims of violent acts at school involving weapons. (9)

During the past ten years, the number of threats and injuries to students and the incidents of theft or vandalism of student property has been increasing. This violence and crime has not been limited to the students. While most public school teachers reported they felt their schools were safe during the day, the teachers in the city schools were more likely than teachers in other areas to feel unsafe in their buildings after school hours. Nearly one in five (19%) of public school teachers overall reported being verbally abused by students during the month previous to the survey. Eight percent reported being physically attacked during the previous year. Teachers in the city schools were more likely than teachers in other areas to be victims of verbal abuse and threats. (10)

ENDNOTES:

1. The Unfinished Agenda: A New Vision for Child Development and Education, (A Statement by the Research and Policy Committee of the Committee for Economic Development, New York, N.Y., and Washington, D.C., 1991), 28.

2. The National Education Goals Report: Building a nation of Learners, (U.S. Government Printing Office, Washington, D.C., 1991), 7-8.

3. Ibid., 11-12.

4. Ibid., 11, 14.

5. Ibid., 15.

6. Ibid., 17-18.

7. Ibid., 21-11, 227.

8. Ibid., 25-27.

9. Ibid., 28.

10. Ibid., 29.

CURRENT TRENDS SHAPING THE 21ST CENTURY:

Current national trends in the United States are significant, because they will affect the education our recruits for 2010 receive during their kindergarten through high school years. International trends are important to examine because they will help us anticipate the world environment in which our military forces will be operating in 2010, and the threats they are likely to face. In this section, we will consider trends at both levels.

National Trends:

Nationally, one trend which is having a major impact on public school systems is the increasing diversity of students. There are wide differences in racial and cultural heritage, language, health, family structure, and school preparation among the members of the student body. For schools which were designed to educate students who are relatively stable, this diversity creates a significant strain.

One serious social trend in the last twenty years has been the rise in poverty among young families with a head of household under thirty years old. The number of these families living below the poverty level has increased from 12% in 1967 to 21% in 1986, and the number of families living below the poverty level has increased from 15.3% to 32.6% for families with a head of household under twenty five years old. One of the major causes of this change is the increase in the number of families headed by single women. In 1950, the rate of births to unmarried women in the United States was 4%, but in 1988, that rate had grown to over 25%. (1) The poverty that results creates the conditions which produce

disadvantaged children who do not get the strong positive start in kindergarten that they need.

Other national trends in the United States have been identified by futurist John Naisbitt, in his books Megatrends: Ten New Directions Transforming Our Lives, and Megatrends 2000. Several trends Naisbitt observes which affect education and the military include the following:

- America is moving from an Industrial Society to an Information Society. In the Information Society, the new resource is knowledge, and the key to success is to learn how to convert massive amounts of information and data into useable knowledge.

- The United States no longer dominates the world's economy, and we are moving toward global economic interdependence. As we develop greater trade relationships with Latin America, it is apparent that this is the time to learn another language. To be really successful in our hemisphere, we will need to be trilingual, meaning fluency in English as our own native tongue and the language of international business, in computer communications through networking and modem hookups, and in Spanish as we focus more on improving our relationships with our trading partners in Central and South America.

- There is a shift from short-term to long-term planning. Japan has built its economy successfully through focusing on long range planning, while American businesses have shown greater concern for short-term profits.

- Real political power is shifting from the centralized Federal government to the decentralized State and Local Governments. This means that the ability to get things done is shifting away from Congress and the President to the states, cities, towns, and neighborhoods. The individual American is willing to get involved in political action to the degree that he believes his input can make a

difference.

- Americans are turning away from institutions to solve their problems, and are learning again to rely on helping themselves. For example, in the area of health care, more Americans are learning that a basic wellness program is simple and uncontroversial, consisting of regular exercise, no smoking, a healthy diet, adequate rest, and stress control. Since personal habits are the key element in this kind of health care, individual self discipline and responsibility are critical. This trend includes self-help in education, where parents who choose private schools or home schooling are becoming more common as parents opt out of the public school systems.

- The move from representative democracy to participatory democracy is changing the way we think people should be governed. The key concept behind this trend is that people whose lives are affected by a decision must be part of the process of arriving at that decision. The amount of information available to each of us through satellite technology allows us to become informed citizens who have much to share in the decision making process. This principle is being applied to corporations through the formation of quality circles, and in management teams or partnership teams composed of employees, managers, and shareholders. In the military, it is being implemented through the concepts of total quality management. The lesson for leaders is that they can be more effective as decision making facilitators, rather than as order-givers.

- The hierarchy of authoritarian structures with top-down, elitist pyramids is being replaced by decentralized, smaller units linked together through informal networks. Networks are people talking to each other, sharing ideas, information, and resources. This linkage is accomplished through conferences, phone calls, air travel, workshops, social get-togethers, "Friday afternoon clubs," mutual friends,

newsletters, church groups, service organizations, etc. This networking process provides a fast acting, energy-efficient, and high-touch way to exchange information, improve personal productivity, share resources, and bring necessary changes to an organization or community. While hierarchies promote moving up and getting ahead, networking provides nurturing for individual members, rewarding those who empower others instead of climbing over them. The application of this trend calls for a new style of leadership, where consensus building and leadership at the lowest levels are common practices.

International Trends:

Charles W. Taylor, in his newly published book A World 2010: A New Order of Nations, provides several international trends which will provide a framework for anticipating the kind of world the U.S. Army will be facing by 2010. These trends include the following:

- Nations of the world are progressing toward a new international order and a rearrangement of shared power. More nations are turning toward representative government and democracy, and an increasing number are adopting free market economies. The spread of free enterprise worldwide will promote a rise in capitalism along with an increase in privately owned industries. This influence of a free market system will likely encourage a preference for representative government and the recognition of human rights among more nations of the world.

- Global population continues to increase. Estimates are that the world population will have increased 30% over 1991 census figures by 2010.

- The reserves of petroleum and natural gas will continue to decrease as energy sources, while the use of alternative sources of energy will rise. By 2010, nations of the world will have become increasingly aware that fossil fuels could be depleted by the end of the 21st century. Chances are good that about 40 nations

will have nuclear power plants by 2010.

- Science, technology, and space exploration will continue to advance rapidly. Most nations will benefit from these advancements, as they share technical information and equipment.

- The proliferation of weapons will continue, including chemical, biological, and nuclear weapons. Despite the reduction of world tensions, most industrial nations will be armed with a range of lethal conventional weapons. Many nations will continue to purchase or barter for the latest high-tech conventional weapons, which will be available in 2010 from new arms suppliers. Nuclear proliferation will likely lead to 24 or more nations who will have nuclear weapons in their arsenals by 2010. (2)

- In this Information Age, satellite technology is making it possible to receive instantaneous news reports of worldwide events as they occur. More nations are giving media reporters freedom to report on events within their national borders. There is also an increasing willingness of nations and people worldwide to exchange information internationally. (3)

ENDNOTES:

1. The Unfinished Agenda: A New Vision for Child Development and Education, A Statement by the Research and Policy Committee of the Committee for Economic Development, New York, N.Y., and Washington, D.C., 1991, 9.

2. Charles W. Taylor, A World 2010: A New Order of Nations, Strategic Studies Institute, U.S. Army War College, Carlisle Barracks, Pa., 1992, 5-6.

3. Ibid., 7.

THE ENVIRONMENT OF 2010:

If we use the trends described in the previous section, we can project their logical outcomes to derive a baseline scenario that will fit within a range of possible futures. This baseline scenario is not a prediction, but it is useful as a planning guide for determining what our recruits will need to know and be able to do.

Since there are a number of events which could significantly alter this scenario, we will make these assumptions for the years between 1992-2010:

1) there will not be a general war between the United States and any of the major world powers;

2) even though the United States and other nations may experience economic struggles and recessions, there will not be a worldwide economic collapse or depression;

3) no major scientific or technological breakthroughs will occur which would give one nation the ultimate power of intimidation over all other nations.

(1)

Using these assumptions and projecting current trends, we can derive a planning scenario for 2010 in which the United States is still the most influential economic and political nation in the world. It will maintain a small active duty military force, with a large general purpose reserve force. Its military members will be thoroughly trained in high-tech warfare, and will be equipped with the most advanced weapon systems in the world. As a post-industrial nation, the

United States will focus on ultramodern, science-based/high-tech information services and knowledge industries, making maximum use of satellite communications capabilities. Nearly two-thirds (65%) of the American work force will be employed in information and knowledge occupations, with 15% involved in providing services, 18% in light manufacturing, and only 2% producing food through highly efficient methods of technoagriculture. (2)

The information industry will dominate the nation and the world. Information management and accessing will drive the search for technological solutions. While the United States will be a leader in designing these solutions, it will be dependent on other nations for manufacturing. Computers will be common throughout the world, and computer literacy will be as essential as reading, writing, or arithmetic. The United States will be economically interdependent with other nations in the world economy, due to increased economic competition, new trade agreements, and the growth of its multinational corporations. Improvements in quality management and production innovation will enable the United States to better meet the competition from other postindustrial or advanced industrial nations, particularly those of the Pacific Rim. (3)

Politically, the national and regional social upheavals caused by democratization will have increased world instability. To cope with this instability, the U.S. and other nations will have developed new international treaties, alliances, and organizations. The United States will share the political spotlight with such nations as the People's Republic of China, Brazil, Europe, Japan, a quasi-united Korea, and India. Americans' confidence in their own political leaders will decline even further. Media influence on politics will be dominant in defining national priorities, as new communication technology increases the ability to target individuals on special issues. (4)

The world military environment will be characterized by a proliferation of highly lethal weapons among the nations comprising the multipolar world. These weapons will include sophisticated conventional systems as well as biological and chemical weapons of mass destruction. Nuclear technology will be more common, both as a source of energy and in weapon systems.

The United States military will face a diversity of threats generated by an unstable and multipolar world. It will need to be prepared to respond to missions ranging from low intensity operations to high intensity conflict. The military forces will be smaller, lighter, more lethal, more dependent on technology, and rapidly deployable. U.S. forces will be versatile to facilitate the requirement to tailor specific force packages for a range of missions, and will be trained to fight as parts of joint or combined forces. Military doctrine, training, leadership, and morale will be as important as modernization in enabling the military to maintain its edge. Budget constraints will push for further consolidation of the separate services, and will require more dependence on simulation systems as substitutes for field exercises. (5)

ENDNOTES:

1. Charles W. Taylor, Alternative World Scenarios for Strategic Planning, Strategic Studies Institute, U.S. Army War College, Carlisle Barracks, PA, 1990, 15-16.
2. Charles W. Taylor, A World 2010: A New Order of Nations, Strategic Studies Institute, U.S. Army War College, Carlisle Barracks, PA, 1992, 20.
3. Army Directorate, National Guard Bureau Long Range Plan 1991-2010, Our Future is Here, Office of Plans, Program Analysis and Evaluation, National Guard Bureau, Washington, D.C., 1991, 24.
4. Ibid., 25.
5. Ibid., 4-5.

WHAT STUDENTS NEED TO LEARN IN SCHOOL:

As the national and international trends continue to change our society and our world, Americans are looking to our schools to complete more of the preparation our children need. As John Sculley, CEO of Apple Computer, Inc. put it: "We expect our teachers to handle teenage pregnancy, substance abuse, and the failings of the family. Then we expect them to educate our children." (1)

The school cannot take over the full task of preparing children for the 21st century. This responsibility must be shared with the parents as the child's first and most important teachers, with the family unit and churches who teach the child moral values and purpose for living, and with the community which affirms the child's worth and provides opportunities to interact and contribute in positive ways. There is, however, much that the school can do to reinforce and build on the family foundation.

Our nation's schools do more than just prepare students for making a living in the work world. Schools help prepare students to live full lives by providing the knowledge which gives students an understanding of their present society, an appreciation for their heritage, and the encouragement and uplifting that music, art, and literature can bring. Our schools also provide the information and time management skills which enable the students to balance their lives.

The U.S. Department of Labor recently released a report titled What Work Requires of Schools. The members of the Commission which prepared the report based their findings on the data gathered after twelve months of talking with

business owners, public employers, employer managers, union officials, and the workers themselves. The message the Commission members heard from the stores, shops, government offices, and manufacturing facilities was clear: good jobs depend on people who can put knowledge to work. New workers must be creative and responsible problem solvers who have the foundational skills and attitudes on which the employers can build. Employers and employees share the belief that all of us must work smarter in order to meet the challenges of the 21st century. (2)

The Harris Poll released in September, 1991 provided a comprehensive measure of how employers and higher educators assessed the preparation of recent high school graduates for either the work world or post-high school education. The results show a uniformly low regard for what American high schools are turning out. Yet, by contrast, the graduates and their parents feel they have been well educated. The shortcomings noted among the graduates include the inability to read and understand written instructions, poor writing skills, and the lack of proficiency in basic arithmetic functions. The most serious flaw, however, was the lack of those key characteristics essential for success throughout life. These character traits include disciplined work habits, a sense of dedication to the task at hand, motivation to put full effort into doing a job well, and the capacity to concentrate on the work being done over an extended period of time. Further, only 10% of employers and 15% of higher educators felt recent high school graduates had the thinking skills necessary to solve complex problems. (3)

In order to cope with the major changes coming with the 21st century, all American students must develop a new set of competencies and foundational skills. Whether they move next into the work world, apprenticeships, the armed services, or into college, all American students should leave high school with the

"know-how" they need to make their way in the world. According to the U.S. Department of Labor's report, this know-how has two parts: competence and a foundation of skills and personal qualities. (4) These are the competencies and skills or character qualities which The Harris Poll revealed were so lacking.

The qualities of high performance that currently characterize America's most competitive companies must become the standard for the rest of America's corporations. These qualities include a relentless commitment to excellence, product quality, and customer satisfaction. Our nation's schools must be transformed into high-performance organizations which promote the development of these same qualities within the students, teachers, and all members of the school community.

The five competencies and the three-part foundation of skills and personal qualities identified by the Secretary's Commission on Achieving Necessary Skills (SCANS) enable effective workers to be fully productive in their work. The Commission's descriptions are included as Figure 1 and Figure 2.

Several areas of the SCANS listings merit additional emphasis. The competency of information processing is particularly critical as we continue to develop the capabilities of satellite image gathering and message transmitting. When this satellite technology is combined with fiber optics, video imaging, and the computer's ability to connect them all, the information overload potential is staggering. The result is what Michael McCarthy calls "information anxiety." This is the gap between what we understand and what we think we should understand. The symptoms of this anxiety include the frustration caused by overstuffed in-baskets and feelings of being behind when confronted with hundreds of unread magazines, newspapers, or periodicals. Other signs are our feelings of ignorance when we go to a library and see dozens of recently published books we haven't

read; or feelings that we can't keep up, can't read fast enough, don't know how to locate the information we need, and don't have time to sort through or think about all the data surrounding us. (5) Since the Information Age has just begun, this condition of information anxiety will get worse. The challenge for us is to create knowledge out of information, by learning how to make sense of it and find a use for it.

I believe that several character qualities need to be added to the "personal qualities" portion of the foundation, based on my own observations of American students over the past fifteen years. The first is a desire for excellence, and the discipline to achieve that excellence through the habit of thoroughness. The second is the willingness to work, to make the short-term sacrifices required to get beyond the current entertainment mentality and gain the long-term benefits. The third is the quality of perseverance, so that students learn to stay with a difficult task until it is completed.

When we select the curriculum content to use for teaching the competencies and foundational skills, the work done by former Secretary of Education William J. Bennett is very helpful. Secretary Bennett wrote James Madison Elementary School to describe the curriculum for elementary students, and James Madison High School to list curriculum specifics for secondary students. These are not actual schools, but the names used by Secretary Bennett to describe his concepts of the ideal curriculum to teach at the elementary and secondary levels.

As Secretary Bennett emphasizes, while American students are in elementary and middle school (grades K-8), they must all learn to read, write, and speak clear, grammatically correct English. They need to learn the varieties and qualities of the best fiction and nonfiction literature available. It is important for them to learn the essential features of American and world history, of U.S. and world

geography, and the rights and responsibilities that belong to them as American citizens. They must gain proficiency in arithmetic, geometry, and the basic principles of algebra. They must develop good problem-solving strategies, and learn to use their minds well through critical thinking and higher-order reasoning skills. Integrated throughout their studies should be the "implicit curriculum" of character education through calm and candid teaching of moral principles, insistence on order and firm discipline, and steady encouragement of solid work habits. They should explore the world of science through courses in biology, chemistry, physics, and earth science. They should learn at least one foreign language, and become familiar with the cultures of the major regions of the world. Artistic expression and appreciation need to be cultivated through classes in music, art, and drama. Healthy lifestyle habits of sound nutrition, exercise, stress management, good sportsmanship, and avoidance of substance abuse should develop through classes in health, physical education, and positive personal interactions. When they complete the 8th grade, our students should be fully prepared for serious and challenging study in high school.

Secretary Bennett's curriculum recommendations for the kindergarten through 8th grade years are included as Figure 3. (6) One change I would urge is to take full advantage of the students' propensity for learning language during the K-3 years to energetically teach the foundations for foreign language studies which follow in grades 4-8.

During their high school years, I believe it is essential for American students to gain or strengthen those competencies, basic skills, thinking skills, and personal character qualities identified by the SCANS report as essential for post-high school success. They need to know the principles of math and science, and how to use the scientific method for reaching a conclusion about a problem.

They need to know and feel the roots of their rich cultural heritage, and be able to trace those beginnings in their history and literature. They must learn how to think for themselves, how to respond to important questions, and solve problems. They should learn to pursue an argument, defend a point of view, understand another's opposing arguments, and be able to weigh alternatives and identify consequences. When they have completed their high school years, they should have developed those habits of mind and character traits identified in the SCANS report, and demonstrate their readiness for entry into the community of adults.

Secretary Bennett's suggestions for a high school course of studies can provide the content for teaching these competencies, skills, and personal character qualities. A listing of his ideal high school curriculum from James Madison High School is included in Figure 4. (7)

The events of this past year emphasize how rapidly our world is changing. While a strong back, the willingness to work, and a high school diploma were once sufficient for starting out in America, they are no longer. The keys to the future of America's youth now include a well-trained mind, carefully disciplined character, a desire to keep learning throughout life, the skills to sort through information data to derive knowledge, and the ability to apply that knowledge to achieve worth-while goals. It is the task of all of us within the community of adults to insure that our students gain these keys. For their future, and America's future, we must work together to create an entire generation of students who are trained to think, and who are equipped with the competencies and skills we have identified which will make their knowledge productive.

ENDNOTES:

1. John Sculley, Chairman, President, and CEO, Apple Computer, Inc., Fortune, Spring, 1990.
2. What Work Requires of Schools, A SCANS (Secretary's Commission on Achieving Necessary Skills) Report for America 2000, U.S. Department of Labor, June 1991, v.
3. Louis Harris, The Harris Poll, Creators Syndicate, Inc., New York, N.Y., September 29, 1991.
4. What Work Requires of Schools, A SCANS Report for America 2000, vi.
5. Michael J. McCarthy, Mastering the Information Age, Jeremy P. Tarcher, Inc., Los Angeles, 1991, 12.
6. William J. Bennett, James Madison Elementary School, United States Department of Education, August 1988, 11.
7. William J. Bennett, James Madison High School, United States Department of Education, December 1987, 9.

RESEARCH ABOUT LEARNING AND TEACHING:

In 1986, the U.S. Department of Education published the results of its study of the research on how children learn. Its publication, What Works, contained 41 findings about what works in the education of children. One year later, the Department released an updated and expanded version of What Works which included the revised 41 findings, and 18 new ones gathered during the year. The report focuses on what works for the individual child. Its findings are aimed mainly at parents and teachers, since these are the individuals who have the most impact on what children learn.

What Works is divided into the categories of home, classroom, and school learning environments. According to the research findings, there are certain actions or practices which maximize the learning of the children in each of the three environments. As the adult teachers in each setting act in ways congruent with the findings, the children under their care learn more.

The following paragraphs summarize the major points made in the findings for each of the three categories.

Learning in the Home:

Parents are their children's first and most influential teachers. What parents do to help their children learn is more important to academic success than how well-off the family is. Conversation is important. Children learn to read, reason, and understand things better when their parents read, talk and listen to them; or tell them stories, play games, share hobbies, and discuss news, TV programs, and special events.

The best way for parents to help their children become better readers is to read to them, even when they are very young. Children benefit most from this

reading aloud when they discuss the stories, learn to identify letters and words, and talk about the meaning of words. Children improve their reading ability by reading a lot. Reading achievement is directly related to the amount of reading children do in school and outside.

Children who are encouraged to draw and scribble "stories" at an early age will later learn to compose more easily, more effectively, and with greater confidence than children who do not have this encouragement. Studies of very young children show that their scrawls have meaning to them, and that this "writing" helps them develop their language skills.

Excessive television viewing is associated with low academic achievement. When a child's homework and leisure reading are disrupted by TV watching, the "excessive" point has been reached. American children do not spend much time reading independently in school or at home. For example, half of American fifth-graders who may spend an average of 130 minutes per day watching TV spend only 4 minutes per day reading at home, and 7-8 minutes reading silently in school.

Learning in the Classroom:

Children get a better start in reading if they are taught phonics. Learning phonics helps them understand the relationship between letters and sounds and to "break the code" that links the words they hear with the words they see in print. Using storytelling with young children can awaken in them a desire to read by showing them how exciting books can be. After students have learned to read, they will get more out of a reading assignment when the teacher precedes the lesson with background information and follows it with discussion.

Students who work in cooperative learning teams learn to work toward a common goal, help one another learn, gain self-esteem, take more responsibility

for their own learning, and gain respect for their classmates. Teachers can use two cooperative learning methods which will especially increase student achievement. These are the practices of assigning a group goal so students must work together in order to succeed, and of measuring success according to the work of each individual student within the group instead of a single group project grade.

Children learn science best when they are able to do "hands-on" experiments. Reading about scientific principles or having the teacher explain them is frequently not enough. Doing the experiments helps the students learn to use the scientific method to distinguish facts from opinions and misconceptions.

Children in early grades learn mathematics more effectively when they use physical objects in their lessons. Teachers call these objects "manipulatives." When young children are still in the concrete stage of cognitive development, learning from real objects provides a firm foundation for the later development of skills and concepts. Although students need to learn how to find exact answers to arithmetic problems, good math students also learn the helpful skill of estimating answers. When students can make good estimates of the answer to an arithmetic problem, they show their understanding of the problem. When solving math problems, students will improve if their teachers encourage them to think through a problem before they begin working on it. Too often, school instruction rewards speed in problem solving and fails to emphasize the need for thinking about how to solve the problem. Students learn the thinking process when their teachers guide them through it, and when they have regular, frequent practice in problem solving.

The most effective way to teach writing is to teach it as a process of brainstorming, composing, revising, and editing. In brainstorming, students think and talk about their topics, often collecting more information than they will use for their first draft. They then sort through their ideas to organize what they

want to say and compose the first draft. Students need to be aware that composing is typically time-consuming and difficult even for experienced writers. The most useful adult response to the first draft focuses on what the student is trying to say, rather than the mechanics of writing. The principles of good writing practice and editing for spelling, grammar, punctuation, and legibility can be attended to during the revision stage. Students learn to write well through frequent practice, and become more interested in writing when there are significant learning goals for writing assignments which provide a clear sense of purpose for writing.

Teachers who set and communicate high expectations to all their students obtain greater academic performance from those students than teachers who set low expectations. When teachers ask questions that require students to apply, analyze, synthesize, and evaluate information instead of simply recalling facts, students achieve more.

The amount of time students are actively engaged in learning contributes strongly to their achievement. This "time on task" is determined by the instruction management skills of the teacher, and the priorities set by the school administration. When teachers effectively plan class work, explain exactly what students are expected to learn, demonstrate the steps needed to accomplish the instructional objectives, and regulate the learning activities according to the students' learning development, their students learn more. These instructional practices enable the teachers to capture the students' attention, make the best use of available learning time, and encourage academic achievement.

Good classroom management is essential for teachers to deal with students who chronically misbehave, but such students also benefit from specific suggestions from their teachers on how to cope with their conflicts and

frustrations. This helps the students gain insights about their behavior.

Memorizing can help students absorb and retain the factual information on which understanding and critical thought are based. Memorizing multiplication tables, the spelling of words, historical dates, poetry, or science facts simplifies the process of recalling information. The more sophisticated mental operations of analysis, synthesis, and evaluation are impossible without rapid and accurate recall of specific information. Teachers can use "mnemonics" to improve memory, and help students connect the new information being memorized to knowledge they already have.

Student achievement rises significantly when teachers regularly assign homework and students conscientiously do it. Homework boosts achievement because the total time spent studying influences how much is learned. When teachers prepare written instructions and discuss the assignments with their students, the homework is taken more seriously than when it is simply announced. Students are more willing to do homework when they believe it is useful, and when teachers treat the assignments as important parts of the instruction which are evaluated and counted as part of the students' grades. Effective homework teaches students to be independent learners by giving them experience in following directions, making judgments or comparisons, raising questions to ask in class, and by developing responsibility and self-discipline. Assignments that require students to think are more interesting and increase student desire to learn both in and out of school.

Effective Schools for Learning:

The most important characteristics of effective schools are strong instructional leadership, a safe and orderly climate, school-wide emphasis on basic skills, high teacher expectations for student achievement, and continuous

assessment of pupil progress. Effective schools are places where principals, teachers, students, and parents agree on the goals, methods, and content of schooling. The school climate or learning environment puts academics first. Principals and teachers believe they can make a difference in what students learn. Teachers and students believe each student is capable of making significant academic progress. Students understand that their first priority is to learn, and agree to work toward that priority. School routines discourage disorder and disruptions. Teachers and principals protect the classroom from interruptions. Academic success is expected and rewarded. Public ceremonies honor student achievement. New students soon learn the school's reputation as experienced students affirm the value placed on learning. Teacher morale is high, and staff turnover is low. Principals work with teachers, students, parents, and community members to develop and maintain the school's learning environment.

In effective schools, the development of good character qualities is encouraged. The home, school, and community all contribute to a child's development of such character traits as honesty, courtesy, diligence, perseverance, and respect for others. Effective schools reinforce good character by setting and enforcing standards for behavior and integrity. The teachers provide positive role models through their professionalism, courtesy, and cooperation. Teachers use fair and consistent discipline, and are firm in demanding top performance from their students. Teachers use examples from life and the literature used in class to illustrate and nurture good character qualities.

(1)

ENDNOTE:

1. U.S. Department of Education, What Works: Research About Teaching and Learning, Second Edition, U.S. Government Printing Office, Washington, D.C., 1987.

A STRATEGY FOR SUCCESS IN PUBLIC EDUCATION:

If we accept the premise that education is central to our quality of life, and that a solid education system is the key to America's future, then major change in our current system of public education is vital to our national interests. Our country requires a new standard for educating our citizens for the 21st century. All of our citizens must be able to adapt to change, be proficient in thinking and solving problems as a means of making a living, and be thoroughly grounded in the competencies, skills, and personal character qualities identified in the section on "what to teach." We must, whether currently in school or in the workforce, accept the need to become learners who continue to develop new skills throughout our lives in order to cope with the reality of rapid changes.

As Americans, we can meet the challenge of designing a public education system which will create the educated population necessary for the United States to continue to provide strong leadership in the 21st century world. To meet the challenge, however, we will have to make some lifestyle changes to get each sector of our population personally involved in the process of public education. We must become a nation of concerned citizens who show that we value education and learning by our actions. We must believe that every child can learn, regardless of his background or personal handicaps. We will accept the fact that education must become a lifetime effort to be desired by all of us, and not just a task for our children to accomplish.

The six National Education Goals adopted by the state Governors and President Bush provide measurable objectives, or desired ends, for our educational system. A sound educational strategy must identify the resources needed to achieve these National Education Goals, and outline a course of action which employs these

resources effectively. It will present a vision of what the schools for the 21st century should look like, based on the national/international trends, projections for the world of 2010, and current research on how students learn. The strategy will identify the obstacles between America and a world-class educational system, determine their center of gravity, and present a plan to overcome those obstacles.

Necessary Conditions for Successful Change in Public Education:

The success of this strategy will depend on at least four conditions occurring within America.

The first condition is a nation-wide dissatisfaction with the current status of American schools. The Harris Poll results showed that while business owners and college educators were very dissatisfied with the skill levels of recent high school graduates, the students and their parents were quite happy with the quality of education they had received. The common response within American communities has been general acknowledgment that education is below standard in other parts of the country, but that in their own communities, things are fine with their school districts. Before there can be meaningful change, we must move beyond that denial of the problem, realize that our schools look too much like the ones we attended years ago, and still teach in much the same way. Our world has changed much faster than our educational system, and our schools must change dramatically to meet the requirements of this changed world.

The second condition is a new vision of the kind of schools that are necessary for the 21st century. This vision must describe what is desirable and possible in a way that motivates Americans to work together to bring the visualized schools into existence.

The third condition is the willingness of the American people to make the

necessary changes in educational practices and lifestyle habits. The changes required extend throughout the current school systems, communities, churches, and homes. All of us must make changes in the ways we have approached education, and in our levels of involvement if we are to succeed in getting where we need to go with education in America.

The fourth condition is a clear communication to the American people of what they can do to get started. Americans at all levels need to know how they can help build the education system that will meet our needs for the future. The strategy we propose to America must define a recognizable starting point, outline what to expect next, and provide a means of measuring progress. If our strategy does these things effectively, all Americans will be able to share in the hope of the vision, and in the satisfaction of working together to make it a reality.

America 2000: A National Education Strategy:

In April, 1991, President Bush announced his own education strategy, "America 2000." As the title suggests, this is his administration's plan to accomplish the National Education Goals by the year 2000. That makes it an ambitious plan, since there are over 110,000 public and private schools in America which will require energetic action in every community of America in order to make the major changes required before the goals can be achieved.

Concepts for Implementation:

The America 2000 strategy consists of four courses of action that will be pursued simultaneously. These courses of action include achieving better and more accountable schools; creating a New Generation of American Schools; encouraging a Nation of Students who continue to learn throughout their lives; and developing communities where genuine learning can happen. The Department of Education has compared these courses of action to four big trains, which are

moving down four parallel tracks toward the destination. Since each "train" represents all of the effort and resources required to get each course of action moving toward the finish line of the year 2000, it is essential for all trains to reach their destination if the National Education Goals are to be achieved. We will consider each of these courses of action or "tracks" in greater detail to determine whether the "America 2000" initiative satisfies the requirements of a sound strategy.

1) Track I: "For today's students, we must radically improve today's schools by making all 110,000 of them better and more accountable for results." (1) This part of the strategy includes a 15-point accountability package which parents, teachers, schools, and communities will be able to use to measure results and determine what changes will need to be made next. One key measurement includes the definition of "world class standards" which will be developed through cooperation with the National Education Goals Panel. These world class standards will specify what young Americans need to know in each of the five core subject areas of English, Mathematics, Science, History, and Geography. A second measurement instrument, the American Achievement Tests, will provide a means for measuring student progress in each of the five core subjects, according to the world class standards set. These tests will be voluntary, and will be designed by the National Council on Education Standards and Testing in order to foster good teaching practices and to monitor student learning progress. Another organization, The National Assessment of Educational Progress (NAEP), will plan to collect state-level data in grades 4, 8, and 12, beginning in 1994. This part of the strategy focuses on the individual school as the site of reform, and gives the teachers, principals, and parents associated with the school the authority to make decisions about how the school will operate. It also holds the school accountable

for its use of the resources available, and for its actions as part of the strategy to achieve the National Educational Goals. (2)

2) Track II: "For tomorrow's students, we must invent new schools to meet the demands of a new century with a New Generation of American Schools, bringing at least 535 of them into existence by 1996 and thousands by decade's end." (3) This track is a bold challenge to Americans nation-wide to put their ideas and inventive genius to work to design new schools for America which may be very different from the ones we now know. The New American Schools Development Corporation has already been established with funding from private business sources, and has advertised throughout the nation for interested individuals or teams to submit proposals describing their visions of what these New American Schools should look like. Up to 30 of these proposals will be funded for design development during 1992-93, and the most promising designs will be awarded a contract for implementation, testing, and refining in 1993-95. The ideas from the schools will be made available to communities across the country to use in their own school districts.

Another major effort within this Track is the invitation to each community to become "America 2000" partners. The requirements for this designation include adoption of the six National Education Goals; development of a community-wide strategy to achieve the goals; design of a report card to measure the results; and a plan for establishing a New American School in the congressional district of the community. Communities which accept this invitation will be designated by the Governors of their states as "America 2000 Communities." The concept includes limited federal support for the initial costs of establishing a New American School in each of the 535 congressional districts by 1996. The basis for planning these schools is each community's answer to the question: "What would it take to

develop the best school in the world in *this* community, a school that serves the needs of our children while meeting the National Education Goals?" (4)

3) Track III: "For those of us already out of school and in the work force, we must keep learning if we are to live and work successfully in today's world. A 'Nation at Risk' must become a 'Nation of Students.'" (5) Since 85% of America's work force for the year 2000 is already out of high school and in the work force now, improving the schools for today's and tomorrow's students is not enough to insure that America will be able to maintain its competitive edge in the world community. America's working adults also will need to keep learning, and return to school as necessary to learn new skills for living in a changing world and workplace. To assist workers in gaining new job-skills, one-stop assessment and referral Skill clinics will be established in large communities across the country. In the Skill Clinics, workers can find out how their present skills compare with those skills they would like to have or that they need for a particular job. The Skill Clinics will then be able to refer workers to the places where they can gain the skills and knowledge they need. Since education is more than just learning how to make a living, these skills include learning how to improve one's personal quality of life. Choosing to learn can result in better parenting techniques, closer interpersonal relationships, improved literacy skills, more successful information or time management practices, and increased self-respect. (6)

4) Track IV: "For schools to succeed, we must look beyond our classrooms to our communities and families. Schools will never be much better than the commitment of their communities. Each of our communities must become a place where learning can happen." (7) This means that America needs a revival of sound values, including strengthening the family foundation of support, acceptance of parental responsibility, commitment to help our neighbors, activating our

religious faith, and practicing integrity in business. It also includes caring enough to get involved through our churches or civic, business, labor, and volunteer organizations to help meet the needs of others in our communities. America's schools reflect American society, and American society shows the softness of national character that has followed our entertainment driven mentality. It is time to rediscover the time proven foundational values of discipline, accepting responsibility, perseverance, and working to produce a quality product that makes us proud to stamp it "Made in America." Those are the values necessary for success as we make major restructuring shifts to improve today's schools, and as we combine our ideas and resources to shape tomorrow's schools.

Human Resources Necessary:

"America 2000" depends for its success on the strong commitment of Americans at each level. The roles of key participants include:

a) The President, the Department of Education, and the administrative branch will keep national attention focused on the "America 2000" strategy. The administration will spotlight areas of trouble which need attention, and will reward progress by recognizing examples of excellence.

b) Congress will need to maintain the intentions of the "America 2000" initiative as they propose legislation to support its strategy. Each member of Congress should encourage the establishment of an "America 2000 Community" in his/her congressional district, and press for the state and local changes necessary to strengthen education quality in each district.

c) The State Governors are key leaders in this strategy. They will designate the "America 2000 Communities," and lead their state legislatures in providing the kind of support the new schools will need. They will create the Governors' Academies for Teachers and the Governors' Academies for School Leaders to

prepare the agents for change at the school level.

d) The Business Community leaders will provide people and resources to help catalyze needed change in local schools, communities, and in state policies. They will have the option of using the results of American Achievement Tests in making hiring decisions, and will develop their own standards to evaluate potential employee strengths. They will be involved in the work of the New American Schools Development Corporation, both in providing funds for the Corporation and in sharing ideas that have been successful in the education of their own personnel.

e) The media members can keep telling the ongoing educational story, at the local and national levels. While the details may seldom be dramatic, this is the story that will determine America's future. By focusing the attention of America on community level efforts and progress, the media can provide a valuable service of spreading ideas and the details of innovative programs that work.

f) America's parents are the most important members of the task force to improve American education. Parents remain their childrens' first and most important teacher. Reading to their young children, taking time to talk to and play with children as they develop from infancy through pre-school age, and insuring that their children are cared for emotionally, physically, mentally, and morally will lay the sound foundation for learning and living their children must have. While their children are in school, parents can check to see that they understand and complete their homework, talk with their childrens' teachers about how things are going in school, and attend the school events in which their children are involved. These actions will communicate a strong message to their children about the value the parents attach to education.

g) Community members include all of us in America, as we look at what we

have to offer, and volunteer to provide the help we can give where it is needed. Within the school setting, principals must catch the vision of what is possible, and bring all of the school community members together to join forces to make that vision a reality. Teachers must be willing to learn new ways of working with students to help them learn more effectively, recognizing that the real changes to improve education must begin within the classroom. Students must be willing to work instead of demanding entertainment, and must accept more of the responsibility for their learning. School boards and district administrators must work together to develop a clear sense of purpose for their schools, and must share their vision for how to achieve that purpose. All of us must set higher standards for ourselves and for our schools, and combine our ideas and energies to make sure those standards are met.

A Vision for What is Possible in America's Public Schools:

We can build a vision for what the New American Schools should include, based on the trends outlined earlier, the projection for 2010, the research on learning, and the objectives established by the "America 2000" strategy. These schools will be organized around the principles of helping students learn how to improve the working of their minds. Every course will be taught with the question in mind of "How will the content and structure of this course help to improve the mind?" The measurement of an effective school will be how well it prepares its students to be critical thinkers, not how well its students score on a set of tests which focus on short-term factual recall. The goal of the teachers and administrators will be to instill in their students a mental set that enables them to use relevant knowledge and skills in a rigorous and systematic way to think through problems encountered in living. The teachers and students will seek ways of asking the kind of probing questions that require both of them to use their minds in higher

cognitive processes. Teachers will develop application questions which require analysis and synthesis; questions which ask for evaluation instead of factual recall. Students will have frequent opportunities to demonstrate that they can apply a principle, concept, or generalization correctly. They will be encouraged to become responsible learners who are skilled at learning, and who know how to use problem-solving techniques which allow them to solve unusual or unfamiliar problems. The result of this approach will be much more active learning effort on the part of the students, and a teaching situation which will be far more rewarding for the teacher.

In this kind of learning environment, the role of the teachers will change, as they move away from being information sources and providers of correct answers, and begin to function more as coaches and guides for student learning plans. Teachers will be researchers who design curriculum and evaluation instruments, and who function primarily as tutors and evaluators. Student progress will be evaluated through observation of how well students handle the tasks associated with their individual learning programs, through portfolio collections of student learning products, through demonstrated proficiency on skills-measuring tests, and through student assessments of their own learning. Teachers will be able to make effective use of computer-assisted learning programs to move away from the drudgery of endless paper grading, and to allow students to assume a more active role in evaluating and correcting their own work. Teachers will use subject material used in class which has direct relevance to "real-world" conditions, and place more responsibility on students to work independently and in cooperation with other students. Time and other resources will be used differently, with a greater flexibility in scheduling to permit a variety of learning configurations, from large classes led by a teacher to small, student-led work sessions, computer

laboratories, or interactive video programs accessed through satellite receiver dishes. Students will be provided equal access to the school learning resources, including the computer terminals, media center materials, satellite TV programs, modem connected data-bases of information, and community networks of volunteer subject experts. Teachers will understand the different learning styles of their students, and design their instructional approaches to accommodate these styles and the range of student abilities. The different interests and readiness levels of students will be considered as students make their learning plans, and these interests will be used to integrate the competencies and skills the students will include as part of their learning objectives. Instruction will be planned so students achieve more detailed learning, and the questions they struggle with will require higher-levels of thinking skills.

The core subjects will be approached differently, and in more depth. History classes, for example, will include opportunities to learn the language, the culture, the art, and the music of the areas or countries under study. The humanities will require students to read selected classic works of literature, to think about the human conditions described, and to write analytical comparisons about the messages these works have for us about living a productive and rewarding life during our own lifetimes. Mathematics will involve learning the basic concepts, sharing them in smaller groups, and using the concepts to design and solve problems generated by the teacher or the other students. The emphasis for learning will be to gain the ability to do something well, rather than to learn only what is required for a good grade-point average. Evaluation will be designed to determine the proficiency students have gained in their literacy skills, problem solving abilities, and thinking levels. Part of this evaluation will require students to demonstrate their ability to determine what information is pertinent for the

problems they are to solve, access that information, and use the computer to process the information appropriately. Diplomas will mean more than an accumulation of credits, and will be awarded after students can demonstrate their mastery of the essential competencies, basic skills, thinking skills, and personal management skills.

The role of the students will be very different from what it is in most traditional schools now. Students will become more in charge of their own learning, and will find themselves doing most of the work instead of their teachers. They will work in learning teams, teaching other students what they have learned through their independent research and from teacher-designed, cooperative-based learning activities. Students will learn to accept more responsibility for their own lifestyles, and will begin to choose less destructive lifestyles, especially in their decisions about drugs and sexual practices. As they become more engaged in their own intellectual, emotional, and physical development, students will choose to remain learners for the full range of their lives because they see how the changes in their world require them to keep learning.

The role the central administration fills will also be different in the New American Schools. Since the individual schools within a school district will have more authority and responsibility for site-based-management decisions about how to teach the competencies and skills identified as essential, the central office will become less directive and more service-oriented. The central administration will coordinate the use of common resources and services, to facilitate the implementation of building programs and changes. It will work for greater efficiency within the school district through centralized operation of business services which can be conducted more cost effectively at district level, such as

business services, personnel management, transportation, food services, media services, and maintenance. The central office will assist individual schools in developing instructional approaches using computer-assisted programs, interactive video capabilities, networking, and other developing technology. The central office will form the hub of a district-wide network which will spread the news of success in instructional approaches to other schools in the district. Central office administrators will be actively involved in generating visions for future school improvements, and in the strategic planning necessary to enable the district's schools to bring those visions into reality. Public relations will be a key role for central office administrators, as they continue to communicate their vision of what is needed, describe the successes of current programs, and generate support for moving ahead to prepare for the changes of the future.

ENDNOTES:

1. U.S. Department of Education, America 2000: An Education Strategy, (Washington, D.C.: April 18, 1991), 6.

2. *Ibid.*, 13-17.

3. *Ibid.*, 6.

4. *Ibid.*, 19-22.

5. *Ibid.*, 6.

6. *Ibid.*, 23-24.

7. *Ibid.*, 6.

CONCLUSIONS AND RECOMMENDATIONS:

Obstacles to Overcome in Order to Realize the Vision:

As we consider the vision of what is needed in American schools, and accept that it may be possible, we must identify the obstacles to overcome. "How much will it cost?" is a valid question. Since 1980, total spending for elementary and secondary schools has more than doubled, while the number of students has remained about the same. As a nation, we now invest more in education than in defense. (1) The results within our schools have not improved significantly, however, and we are not coming close to our potential or what is needed. While we are at the top of investment per pupil in the world, our students continually score at or near the bottom on international comparisons. The rest of the world is not sitting idle, waiting for us to catch up. Serious efforts at education improvement are getting close attention within the systems of our international competitors and trading partners. Unless we make radical changes in our education system, we can expect to remain in the bottom part of the international pack.

There have been many suggestions of what is needed to bring America back to the top in quality, ingenuity, and production excellence. There has been a call for "back to the basics" in education. While there is a solid foundation of American values which does need to be rebuilt, there can be no backward moves to the "good old days" of post-World War II America, because today's world is a far different place than it was then. Our focus must be in the future, and as we rediscover the time-proven character qualities which have served us well in the past, we must join forces within our nation in a full combined effort to find new solutions to the problems ahead.

Implications for the U.S. Army:

The U.S. Army can choose to be a major player in this combined effort. For today's children, the U.S. Army can become active in such programs as "Adopt a School" or "Project Business," providing volunteers who present classes about how the Army uses the very skills the students are learning. Individual soldiers can volunteer one hour per week to the school their children attend, acting as tutors for "at-risk" students, and encouraging them to work hard and stay in school. Army leaders can place command emphasis on the importance of education to the members of military families, and make it professionally acceptable as the "norm" for soldiers to become involved in the school activities and learning experiences of their children.

For tomorrow's students, the U.S. Army training installations can share their lessons learned about increasing student learning through "hands-on," performance oriented training. The value of computer-generated simulations and the findings of U.S. Army training centers on their cost-effectiveness can be emphasized. The Army can provide liaison officers to serve on the advisory planning boards and "think tanks" of the New American Schools Development Corporation, Business Roundtable, or other organizations committed to helping achieve the National Education Goals by the year 2000. U.S. Army and DOD leaders can express their interest in helping plan America's schools for the future, and follow up on the openings that result.

These recommended changes to America's education system will help to produce a greater number of qualified recruits who require less training time than recruits with poor learning skills. These recruits will be more disciplined and reliable, with the character qualities and commitment necessary to learn to operate more sophisticated weapons systems. They will also have stronger

leadership potential because of their higher order thinking skills and problem-solving abilities.

For its current soldiers, the U.S. Army must insure that its emphasis continues on professional development and self-improvement. The present system of professional development needs to be examined carefully, to determine whether it is directed toward the competencies, basic skills, thinking skills, and character qualities identified as essential for the world of 2010. The concept that it is the personal responsibility of each individual soldier to remain a life-long learner must continue to be stressed. At the same time, there has to be sufficient command emphasis to insure that the soldiers are able to take advantage of the learning opportunities that are available to them.

American Apathy, the Opposing Center of Gravity:

Reinventing American education is a monumental task. To succeed, we will not need just "a few good men," we need every man, woman, and child in America to reach deep within to find the good that is in each one, and to focus that good on helping achieve the goals we face. The center-of-gravity of the forces opposing this rebirth of America is the denial and apathy within American society itself. This strategy demands full mobilization of our national will, resources, and readiness to get involved to defeat that apathy and reawaken our passion for quality and excellence in all we do as Americans. Our Army, our country, our future, is at stake. We must work together, and succeed.

* *

ENDNOTE:

1. U.S. Department of Education, America 2000: An Education Strategy. (Washington, D.C.: April 18, 1991), 9.

FIGURE 1:

FIVE COMPETENCIES

Resources: Identifies, organizes plans, and allocates resources

- A. *Time* – Selects goal-relevant activities, ranks them, allocates time, and prepares and follows schedules
- B. *Money* – Uses or prepares budgets, makes forecasts, keeps records, and makes adjustments to meet objectives
- C. *Material and Facilities* – Acquires, stores, allocates, and uses materials or space efficiently
- D. *Human Resources* – Assesses skills and distributes work accordingly, evaluates performance and provides feedback

Interpersonal: Works with others

- A. *Participates as Member of a Team* – contributes to group effort
- B. *Teaches Others New Skills*
- C. *Serves Clients/Customers* – works to satisfy customers' expectations
- D. *Exercises Leadership* – communicates ideas to justify position, persuades and convinces others, responsibly challenges existing procedures and policies
- E. *Negotiates* – works toward agreements involving exchange of resources, resolves divergent interests
- F. *Works with Diversity* – works well with men and women from diverse backgrounds

Information: Acquires and uses information

- A. *Acquires and Evaluates Information*
- B. *Organizes and Maintains Information*
- C. *Interprets and Communicates Information*
- D. *Uses Computers to Process Information*

Systems: Understands complex inter-relationships

- A. *Understands Systems* – knows how social, organizational, and technological systems work and operates effectively with them
- B. *Monitors and Corrects Performance* – distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems' performance and corrects malfunctions
- C. *Improves or Designs Systems* – suggests modifications to existing systems and develops new or alternative systems to improve performance

Technology: Works with a variety of technologies

- A. *Selects Technology* – chooses procedures, tools or equipment including computers and related technologies
- B. *Applies Technology to Task* – Understands overall intent and proper procedures for setup and operation of equipment
- C. *Maintains and Troubleshoots Equipment* – Prevents, identifies, or solves problems with equipment, including computers and other technologies

FIGURE 2:

A THREE-PART FOUNDATION

Basic Skills: Reads, writes, performs arithmetic and mathematical operations, listens and speaks

- A. *Reading*—locates, understands, and interprets written information in prose and in documents such as manuals, graphs, and schedules
- B. *Writing*—communicates thoughts, ideas, information, and messages in writing; and creates documents such as letters, directions, manuals, reports, graphs, and flow charts
- C. *Arithmetic/Mathematics*—performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques
- D. *Listening*—receives, attends to, interprets, and responds to verbal messages and other cues
- E. *Speaking*—organizes ideas and communicates orally

Thinking Skills: Thinks creatively, makes decisions, solves problems, visualizes, knows how to learn, and reasons

- A. *Creative Thinking*—generates new ideas
- B. *Decision Making*—specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternative
- C. *Problem Solving*—recognizes problems and devises and implements plan of action
- D. *Seeing Things in the Mind's Eye*—organizes, and processes symbols, pictures, graphs, objects, and other information
- E. *Knowing How to Learn*—uses efficient learning techniques to acquire and apply new knowledge and skills
- F. *Reasoning*—discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem

Personal Qualities: Displays responsibility, self-esteem, sociability, self-management, and integrity and honesty

- A. *Responsibility*—exerts a high level of effort and perseveres towards goal attainment
- B. *Self-Esteem*—believes in own self-worth and maintains a positive view of self
- C. *Sociability*—demonstrates understanding, friendliness, adaptability, empathy, and politeness in group settings
- D. *Self-Management*—assesses self accurately, sets personal goals, monitors progress, and exhibits self-control
- E. *Integrity/Honesty*—chooses ethical courses of action

FIGURE 3:

The Program in Brief: A Plan for Kindergarten through Grade 8

SUBJECT	KINDERGARTEN THROUGH GRADE 3	GRADES 4 THROUGH 6	GRADES 7 AND 8
ENGLISH	INTRODUCTION TO READING AND WRITING (phonics, silent and oral reading, basic rules of grammar and spelling, vocabulary, writing and penmanship, elementary composition, and library skills)	INTRODUCTION TO CRITICAL READING (children's literature, independent reading and book reports, more advanced grammar, spelling and vocabulary and composition skills)	Grade 7 SURVEY OF ELEMENTARY GRAMMAR AND COMPOSITION Grade 8 SURVEY OF ELEMENTARY LITERARY ANALYSIS
SOCIAL STUDIES	INTRODUCTION TO HISTORY, GEOGRAPHY, AND CIVICS (significant Americans, explorers; native Americans, American holidays, customs, and symbols; citizenship, and landscape, climate, and mapwork)	Grade 4 U.S. HISTORY TO CIVIL WAR Grade 5 U.S. HISTORY SINCE 1865 Grade 6 WORLD HISTORY TO THE MIDDLE AGES	Grade 7 WORLD HISTORY FROM THE MIDDLE AGES TO 1900 Grade 8 WORLD GEOGRAPHY and U.S. CONSTITUTIONAL GOVERNMENT
MATHEMATICS	INTRODUCTION TO MATHEMATICS (numbers, basic operations; fractions and decimals, rounding, geometric shapes, measurement of length, area, and volume; bar graphs, and estimation and elementary statistics)	INTERMEDIATE ARITHMETIC AND GEOMETRY (number theory, negative numbers, percentages, and exponents, line graphs, the Pythagorean theorem, and basic probability)	<i>Two from among the following one-year courses</i> GENERAL MATH, PRE-ALGEBRA, and ALGEBRA
SCIENCE	INTRODUCTION TO SCIENCE (plants and animals, the food chain, the solar system, rocks and minerals, weather, magnets, energy and motion, properties of matter, and simple experiments)	Grade 4 EARTH SCIENCE AND OTHER TOPICS Grade 5 LIFE SCIENCE AND OTHER TOPICS Grade 6 PHYSICAL SCIENCE AND OTHER TOPICS	Grade 7 BIOLOGY Grade 8 CHEMISTRY AND PHYSICS
FOREIGN LANGUAGE	[OPTIONAL]	INTRODUCTION TO FOREIGN LANGUAGE (basic vocabulary, grammar, reading, writing, conversation, and cultural material)	FORMAL LANGUAGE STUDY <i>Two years strongly recommended</i>
FINE ARTS	MUSIC AND VISUAL ART (songs, recordings, musical sounds and instruments, painting, craftmaking, and visual effects)	MUSIC AND VISUAL ART (great composers, musical styles and forms, elementary music theory, great painters, interpretation of art, and creative projects)	MUSIC APPRECIATION and ART APPRECIATION <i>One semester of each required</i>
PHYSICAL EDUCATION/HEALTH	PHYSICAL EDUCATION AND HEALTH (body control, fitness, sports, games, and exercises, sportsmanship, safety, hygiene, nutrition, and drug prevention education)	PHYSICAL EDUCATION AND HEALTH (team and individual sports, first aid, drug prevention education, and appropriate sex education)	PHYSICAL EDUCATION AND HEALTH (strategy in team sports, gymnastics, aerobics, self-assessment for health, drug prevention education, and appropriate sex education)

FIGURE 4:

THE PROGRAM IN BRIEF: A Four-Year Plan

SUBJECT	1st YEAR	2nd YEAR	3rd YEAR	4th YEAR
ENGLISH	Introduction to Literature	American Literature	British Literature	Introduction to World Literature
SOCIAL STUDIES	Western Civilization	American History	Principles of American Democracy (1 sem) and American Democracy & the World (1 sem)	ELECTIVES
MATHEMATICS	Three Years Required From Among the Following Courses: Algebra I, Plane & Solid Geometry, Algebra II & Trigonometry, Statistics & Probability (1 sem), Pre-Calculus (1 sem), and Calculus AB or BC			
SCIENCE	Three Years Required From Among the Following Courses: Astronomy/Geology, Biology, Chemistry, and Physics or Principles of Technology			
FOREIGN LANGUAGE	Two Years Required in a Single Language From Among Offerings Determined by Local Jurisdictions			
PHYSICAL EDUCATION/HEALTH	Physical Education/Health 9	Physical Education/Health 10		
FINE ARTS	Art History (1 sem) Music History (1 sem)			

NOTE: This chart describes the *James Madison High School* curriculum. For each core subject it shows the number of years required and the names of courses that fulfill them. Each course is two semesters long, except as indicated.

In certain core subjects (English, social studies, and physical education/health), all students are obliged to take particular courses in a set sequence. In other core subjects (mathematics, science, foreign language, and fine arts), the selection of courses and/or their sequence is more flexible. This flexibility permits adjustments for individual student interests, needs, or abilities, and it provides room throughout the four-year program for elective, supplemental, or locally mandated study within or outside the seven core subjects. The shaded area above represents room for such classes in a four-year schedule of seven-period days.

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