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ABSTRACT

Jobs in the future are likely to be far different than those in the past, as our society moves into the information age. To prepare for the changes that are coming, the New York State education department developed a new program of career and vocational education to meet the educational needs of today's students as they prepare for the future. To get ready for the program, the state invited noted futurologists such as Alvin Toffler to speak at seminars for the state's teachers. Then committees of teachers from various disciplines developed the curriculum. The main thrust of the new curriculum is its emphasis on the development of transferable skills, rather than on the narrow specialization that often characterized vocational education in the past. The program has components for grades 7-12, although the program developers are now looking at the whole K-12 structure to see what vocational skills can be integrated into the regular curriculum. The program also has provisions for adult education and mainstreaming of special students. (This report provides specific details of the program for each of the grade levels, as well as statistics on program development and costs, and expected implementation issues.) (KC)

Strategic Vision and Planning: Keys to Educational Improvement

Willard R. Daggett

Occasional Paper No. 100

THE NATIONAL CENTER
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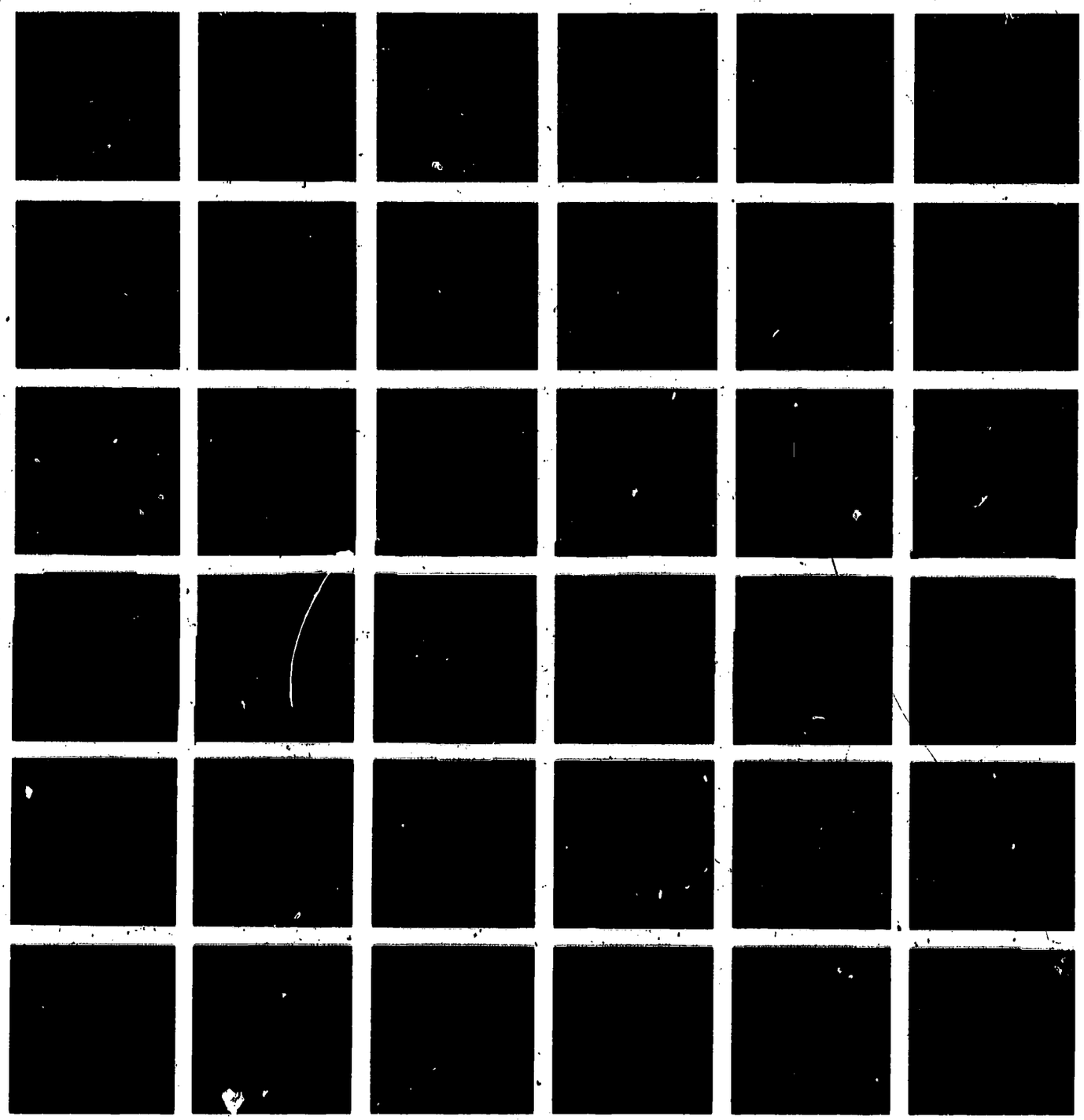

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STRATEGIC VISION AND PLANNING: KEYS TO EDUCATIONAL IMPROVEMENT

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1984

FOREWORD

No discussion of future educational models would be complete without examining the implications of the Occupational and Practical Arts Futuring Project in the New York State Education Department. To some, it is revolutionary; to others, it represents a threat to traditional vocational education programming. Still others recognize the futuring process as an exemplary model that represents what vocational education improvement programming ought to achieve.

This project is not simply a major update of the curriculum, nor is it a rehashing of America's social, demographic, and economic trends; instead, it is an effort to integrate the skill requirements of emerging labor markets with current vocational programs. This process represents a new system that has the capability of continually updating vocational education programs in response to the rapid rate of change that is occurring in our society.

This program emphasizes the development of *transferable skills*—skills generic to large sectors of our labor market and delivered through a core set of courses required of all students. Occupational-specific programs for most would be delayed until the late secondary grades or during postsecondary education or training.

The purpose of this effort has been to provide New York with a program that addresses all ages and levels and supports continuous lifelong development. Overseeing this dramatic restructuring is Dr. Willard R. Daggett, Director of the Division of Occupational Education Programs, New York State Education Department. In this capacity he is responsible for coordination of the State's instructional programs in agriculture, business, health occupations, home economics, industrial arts, marketing, technical, and trade and industrial education. Under his leadership, these instructional programs are undergoing a major restructuring, intended to make them responsive to the societal and industrial changes engendered by the rapidly increasing influx of technology to the workplace and the home, and to the existing and imminent economic and demographic changes.

The National Center and The Ohio State University are pleased to present Dr. Daggett's expert insights on the Futuring of Occupational and Practical Arts Education process in New York in "Strategic Vision and Planning: Keys to Educational Improvement." A videocassette of this seminar presentation is also available from the National Center.

Robert E. Taylor
Executive Director
The National Center for Research
in Vocational Education

STRATEGIC VISION AND PLANNING: KEYS TO EDUCATIONAL IMPROVEMENT

Introduction

New York State's occupational and practical arts programs will go through a major change in the immediate future. Why will the new program directions require all students to take instruction in Introduction to Technology and Careers? Why has the Introduction to Occupations program been created for grades 9 and 10, for all occupational education students? Why will there be new applied math and science requirements? What are the reasons for modifying the specialized occupational education programs? Why will home economics and industrial arts programs be transformed into new curriculum areas? In what way will the traditional disciplines of business, agriculture, trade and industry, technical, marketing, health occupations, industrial arts, and home economics now be part of a single, ccordinated curriculum in New York State?

In the context of the rapid technological, demographic, economic, and social changes taking place in the world, and specifically in New York State, education must also change if it is to remain viable. From this perspective, it is clear to see why the New York State Education Department has taken the lead in preparing education for the future.

Historical Perspective

A transformation or restructuring of all industrial societies is taking place today that is as significant as both the agricultural and industrial revolutions were in the past. Approximately 10,000 years ago, humans learned that they could, to a certain degree, make nature do what they wanted it to do. That was the beginni g of the agricultural revolution. The strategic resource of the agricultural age was the land. If a person had land, he or she could be successful. Decisions were based on past experience. Where did I plant? What did I grow? Children were an economic asset to the family because they worked the land with their parents. Economies were isolated in small, local regions.

Approximately 200 years ago, a second transformation of civilization began that would eventually change every single institution and every set of expectations to build the new society for the industrial age. In the industrial age, the strategic resource changed to capital. The time frame best suited to that age moved to the present. Everything had to happen immediately—today, this week, this month. The large, multigenerational family of the agrarian society was no longer appropriate to the ne system of economic production. Due to the need for a mobile labor force, the family adapted and became a nuclear family consisting of husband and wife and a couple of children. The husband went to work leaving the wife at home to assume the responsibilities of the home and children. The children of this economic age could be considered more of a liability than an asset, as they no longer worked or contributed to the economic well-being of the family. The economy generally expanded to become one that was regional and State based.

We are now witnessing the emergence of yet another transformation. We are shifting to an information and service economy (see figure 1).

1955	11-12%	In Service Occupations
1982	12-13%	In Service Occupations
1955	17%	In Information Occupations
1982	60%	In Information Occupations

Figure 1. Occupational shifts

How has this shift affected society? Human intelligence has now become the strategic resource needed in this new economy based on information. The time frame has switched to the future. It is now necessary to learn from the future instead of from the past or from the present. No longer is it necessary for workers to go to work. Through the development of the information technologies, work can now go to the worker. It may be that children, who are generally more computer literate than their parents, may once again become economic assets by assisting their parents in their work. Senior citizens may also be able to contribute more under these new circumstances. This information/service economy has grown to become one with a global base.

The present education system developed as this Nation emerged from an agricultural society, where the preponderance of education was on-the-job training, to become an industrial power where children in school learned the skills needed by an industrial society. Our society is changing into one that is as radically different from the one we have known as industrial civilization was from the agrarian world that preceded it. A new civilization is being formed that has its own systems and subsystems. These are not extensions or straight-line projections of industrialism, but are based on new principles—and even on principles that contradict those on which industrial societies were based. We are simultaneously developing a revolutionary new system, new levels of technology, new industries, new information and communication systems, new family structures, new corporate forms, new values and attitudes toward time and space, new life-styles, and new work habits. All of these add up to a new way of life, based on new principles.

Education exists within this larger context of society as a whole. As society changes, so must education—if it is to fulfill its mission of preparing people to thrive.

Demographic and Social Changes

America is undergoing a demographic revolution that is affecting the way people act and think. The 80 million members of the baby-boom generation, like a pig swallowed by a python, have created a demographic bulge that influences everything from the housing market to Social Security payments. This segment of the population does not conform to the traditional patterns of American life. They are marrying later (and divorcing more frequently), postponing children, and establishing smaller households, thus setting off a myriad of repercussions.

The job market and makeup of the work force are changing dramatically. The participation of adult males is dropping, due, in part, to an obsolescence of their job skills. In 1960, trade and manufacturing accounted for 73 percent of jobs in the United States. In 1983, only 23 percent

remained in trade and manufacturing, while 73 percent existed in information and service occupations. Advances in technology will continue to cause this obsolescence of jobs. Not only does a large number of the current adult population need to be retrained for new employment now, but many people will need to be retrained several times during their working years.

Life expectancy has reached its highest peak ever—73.8 years. The American population is growing steadily older and will continue to do so at an accelerated rate. Combining this with later marriages and lower birthrates, the number of households with children will continue to fall from the present low of 25 percent.

The number of immigrants entering the United States each year between 1977-73 surpassed the number that had been admitted in any similar time period since 1924. The huge increase in the number of Vietnamese and Mexicans who immigrated to the United States between 1977-78 accounted for 95 percent of the total increase of immigration in America during those years. The immigrants from Asia and the Pacific Islands settled mostly in the western States. Those from Mexico and other Latin American countries immigrated to the South and East. The tremendous impact on our education system of these limited-English-proficient immigrants, including the need to teach English as a second language, cannot be overlooked. The need for both integrating these citizens into our culture and at the same time preserving their ethnic heritage will be a challenge to the educational system in coming years.

At the same time, millions of residents of our northern regions moved west and south to the Sunbelt in search of sun, jobs, and lower heating bills. In some regions of the country, this migration has had the effect of increasing the enrollment in public schools, but in some areas of New York State it has added to the decline in enrollment, which was already affected by the drop in birthrate following the baby boom. Table 1 illustrates the shift in four States.

TABLE 1
POPULATION FORECAST

State	1983	2000
California	23.7 Million	30.7 Million
Texas	14.2 Million	20.8 Million
Florida	9.8 Million	17.5 Million
New York	17.6 Million	15 Million

The role of women is another area of dramatic change in America. In 1960, only 33.3 percent of all women worked outside the home. By 1980, the total had climbed to 51 percent. It is projected that 73 percent of the adult female population will be employed by 1990. The fact that their wages reflect only 59 percent of what men earn for the same job points out an equity issue that needs to be addressed by business as well as education.

Of equal importance is the issue of equity between races. National statistics indicate a great inequality of income amongst races. In 1982, the median family income for whites was $16,750; for Hispanics, $11,421; and for blacks, $9,653. The percentages in table 2, representing people 45 to 54 years of age whose incomes fall below the poverty level, further highlight the racial inequity in this country.

TABLE 2
INCOMES BELOW THE POVERY LEVEL (ages 45-54)

Race	Males	Females
White	5.4 percent	6.7 percent
Black	15.2 percent	26.3 percent
Hispanics	15.2 percent	22.4 percent

Education must recognize its responsibility of providing all citizens with the skills and competencies that will enable them to select careers based upon their abilities and interests, rather than having society determine their future based upon their heritage.

The need to provide educational and work opportunities to the handicapped is yet another social issue that has come to the forefront. Although great strides have been made in the last decade in providing educational opportunities to handicapped students under the age of 21, the need to form a linkage to the world of work for these students as they "age out" of the education system is becoming a larger issue. This is due mainly to greater expectations of the handicapped students by their families and society.

In general, all citizens have grown to have greater and greater expectations. Today, our citizens ask government, business and industry, and education to provide more and more services. This can only be accomplished, however, by developing a competitive edge over other states and nations. Human resources, not natural resources alone, will determine that competitive advantage. Education naturally is being asked to respond by providing students with all the skills and knowledge needed to live and work in a rapidly changing high-technology world. In vocational education, this means producing graduates who can obtain and retain employment in this changing world.

Jobs themselves are different from those that existed in the industrial society. Like other States in the Nation, New York has many emerging high-tech industries, from energy technologies to electromechanical and biomedical engineering. There also are a steadily increasing number of information and service occupations that contain such job titles as data processors, machine mechanics, computer operators, agribusiness specialists, computer systems analysts, emergency health technicians, and geriatric aides.

These are but a few of the demographic and social changes taking place in America that must be reflected in the education system.

Process for Addressing Change

Five years ago, recognizing that basic changes were occurring and that creation of a strategic vision was needed before strategic planning could take place, the New York State Education Department reviewed its system of vocational and practical arts education. This review process projected changes necessary to ensure, through the remainder of this century, that we would be preparing our students for the society that would be, not for the society that was. This review process, or strategic planning process, is called "futuring."

A new bureau, the Bureau of Occupational Education Program Development, was formed to provide efficient planning and implementation of the process. Initial activity consisted of invitational meetings in each of the State's 13 planning regions to determine the issues that educators in the field considered to be vital to the future of occupational and practical arts education and to their graduates. Teachers' unions and professional organizations scheduled similar meetings. The input from approximately 1,200 participants in these meetings was reviewed by State Education Department personnel and selected representatives—all recognized leaders in their field—reviewed and revised successive drafts of "The Plan for Futuring of Occupational and Practical Arts Education." Businesses and industries were relied upon to project what skills and knowledge would be needed in the next 15 years; educators in the field and social scientists recommended how these skills and this knowledge should be taught.

At the heart of the futuring process were eight Instructional Futuring Committees—one for each area of occupational or practical arts education: agriculture, business, industrial arts, home economics, health occupations, marketing, trade and industrial, and technical education. The Administrative Committee was established to make recommendations on all broad issues that concerned more than one instructional area.

Each 20-member Instructional Futuring Committee, and the 22-member Administrative Committee as well, consisted of 5 to 7 representatives of business and industry of various sizes, a social scientist, a teacher educator, a student, and secondary and postsecondary teachers. Others affected by occupational and practical arts education such as the New York State Departments of Labor and Commerce, the New York State School Boards Association, advisory councils, and unions also participated in the decision making through the committee structure.

In order to create a climate for change among the 22,000 occupational educators and several thousand school administrators and school board members across the State, each Instructional Futuring Committee included a group of regional facilitators composed of a teacher from each of the State's 13 planning regions. Their tasks were of a communications and advisory nature. By mail, telephone, and meetings, they kept educators in their region aware of the committee's deliberations and recommendations and informed them of the agenda for the next meeting. They collected the reactions and suggestions from the field and reported these to their committees as the first item of business at meetings. They advised the committees and served on subcommittees as requested. The chairperson (a representative of business and industry) and vice-chairperson (an educator) of each Instructional Futuring Committee served as a liaison and advisory auxiliary to the Administrative Committee. A member of the staff of the pertinent subject bureau of the State Education Department served each committee as liaison with that bureau and as a resource person. In addition, a member of the staff of the Bureau of Occupational Education Program Development served as the committee administrator handling administrative functions. These people did not join in debate (except when asked for advice), vote on any issue, or otherwise influence the committee decisions.

"The Plan for Futuring of Occupational and Practical Arts Education" provided a time line for accomplishing the futuring project's objectives. Committees met for 2 days bimonthly during the school year to deliberate and reach conclusions on the scheduled issues. Subcommittees and task forces met as necessary to provide the committees with needed information.

An organizational meeting was held in May 1981, at which time committee members, regional facilitators, State Education Department personnel, and invited observers were addressed by prominent futurists, including author Alvin Toffler. Toffler described what the world would probably be like in 10 years, while emphasizing that consideration at this time would allow the lead time necessary to implement changes.

Also, the plan addressed a broad range of issues, including the purposes and objectives of occupational and practical arts education in each of the instructional areas, student populations to be served, skills and knowledge areas in which graduates must be competent, and education governance and finance.

The Instructional Futuring Committees' Recommendations

Of primary concern to the Instructional Futuring Committees was the development of a system that would meet the needs of students, not just young students, but also the increasing number of adults who have never been trained for emerging high-technology occupations, and who would require retraining in order to maintain or regain employment. Handicapped students were also recognized as an important population to be served by occupational education. The committees noted that recent attempts to "fix" the system, and to make it more responsive to the needs of handicapped and adult students, were ineffective. Therefore, the ability to serve all citizens was recognized as a necessary factor in restructuring the occupational education systems.

In addition, the committees wanted a system that would meet the needs of business and industry. In order to meet those criteria, the committees agreed that any system must be flexible, allowing students to enter programs when they are ready, change career directions with a minimum of disruption, and advance to higher skill levels without duplicating previous material or leaving gaps. They also agreed that the system must be capable of adapting to the changing demands of industry.

The committees and experts in the field identified a group or core of competencies that graduates of every instructional program should possess. These core skills and knowledges were classified into five groups.

1. Personal development
   - —personal skills
   - —self-concept
   - —personal appearance
   - —health
   - —use of leisure time
   - —adaptability
   - —decision making
   - —problem solving
   - —interpersonal relations
   - —social skills
   - —participation and interaction with groups and organizations

—leadership
—career awareness/exploration/information
—goal setting/career and education planning
—job application
—job retention, including work habits
—job progression and change
—employer and employee relations

2. Social systems
—economic concepts
—political literacy
—legal literacy

3. Information skills
—verbal communication
—nonverbal communication
—listening
—written communication
—reading comprehension
—computation
—information retrieval
—dictating communication skills
—keyboarding skills
—use of information systems

4. Resource management
—money
—time
—natural resources
—human resources
—consumer skills

5. Technology
—concepts of technology
—applications of current and emerging technologies
—use of basic tools and equipment
—work-related health and safety
—personal safety

The committees also made the following recommendations:

- **Integration of the eight separate occupational and practical arts programs currently outlined in State curriculum (agriculture, business, health occupations, home economics, industrial arts, marketing, technical occupations, and trade and industrial occupations) into a coordinated curriculum.** This integration would connect repetitive elements now being offered in discrete units, yet maintain the unique elements of all eight programs. Such a revision would allow students to acquire broad, transferable skills, and make decisions about specialized occupations at an appropriate time.

- **A three-phase coordinated curriculum for all occupational and practical arts programs.** The three phases were outlined as follows (see figure 2):

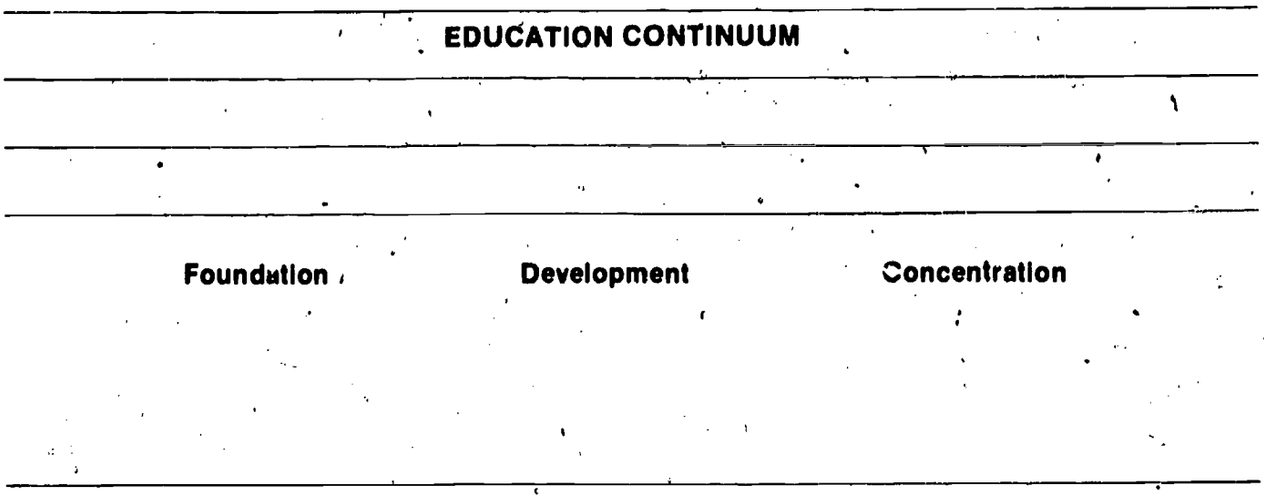

Figure 2. A three-phase, coordinated education continuum

1. **Foundation.** In this phase, teachers would develop basic concepts, knowledge, and attitudes and lay the groundwork for the next two phases. The first phase generally would be part of the elementary school curriculum.

2. **Development.** This phase would serve as the transition from basic learnings common to all students to more specialized concepts and skills. This phase should emphasize exploration and interests through hands-on experiences and provide more opportunities to develop more advanced personal, social, informational, resource management, and technology-related competencies.

3. **Concentration.** In this phase, teachers would prepare students for employment or for postsecondary instruction.

Throughout all three phases, teachers would emphasize core skills, concepts, and attitudes for all students. The core skills would include basic communication and computation skills, as well as those general skills required by advancing technology, such as computer literacy.

- **Adoption of a curriculum in which modules could be used and updated or replaced easily to meet the changing needs of the business community.** Such an approach should give local school districts considerable flexibility in providing instruction. By using sample configurations and other assistance from the State Education Department, each local agency should be able to organize modules into patterns that meet local needs.

- **Identification, on a continuing basis, of skills and knowledge to be included in programs and ways of measuring student achievement.** The State Education Department should assume leadership in this effort. Development of local evaluation activities should ensure accountability. Checkpoints should be established to assess where a student is in his or her educational development and how to proceed from there.

- **Development of a mechanism to ensure that the instructional system will respond to the long-term and short-term needs of business and industry.**

- **Adoption of a single certification area for all teachers in the development phase of occupational and practical arts education.**

- **Provision of increased inservice training to education professionals, to enable them to carry out their roles in implementing the revised occupational education programs.**

- **Modification of the Education Law and Commissioner's Regulations to enable the education system to meet the needs of adults more effectively. Provision of mechanisms for the more efficient use of business and industry advice in planning and implementing occupational education programs.**

- **Clarification and, where appropriate, modification of the role of educational institutions (i.e., local districts, BOCES, and postsecondary institutions) to improve the articulation of occupational programs.**

The Action Plan

As the Instructional Futuring Committees' deliberations proceeded, the State Education Department became aware that the challenges identified in this process were not unique to occupational education, but related to the entire education system. Therefore, the Commissioner of Education and the Board of Regents initiated a review of elementary and secondary education goals. Input was received from some 3,700 participants in the 1982 Regents/Commissioner's regional conferences. An action plan was developed in the summer of 1983, at the request of the Board of Regents. Because occupational education exists in that larger context of the total education system, the recommendations that came from the committees and related to elementary and secondary schools had to be integrated within the "Regents' Proposed Action Plan for Improving Elementary and Secondary Education Results in New York State." In effect, occupational education had to move from its philosophical plan to a very practical plan of implementation.

Within the action plan, new directions were identified for several aspects of elementary and secondary education, including occupational education. These new directions are based on the series of basic premises developed, in part, by the consultants and committees that participated in the process known as Futuring of Occupational and Practical Arts Education.

Major Program Directions for Occupational Education

The new occupational education program is designed primarily for grades 7 through 12. It assumes, however, that a major assessment of the elementary school curriculum during the 1983-84 school year will provide insights for determining which foundation skills should be incorporated into the new state-mandated elementary curriculum, as proposed by the action plan.

A summary of the major program directions for occupational education, as identified in the action plan, follows.

The Program for Grades Seven and Eight

Once students have acquired the foundation skills as part of their elementary school program, they will be provided opportunities for developing basic life skills, occupational and career awareness, and job readiness through half-year courses in Introduction to Careers and Technologies. This program is required of all students in the seventh and eighth grades.

K-6	Integrate	Core
7-8	1/2 Unit Introduction to Careers	
	115 Minutes a day in Math/Science/Technology	

Figure 3. The program for grades seven and eight

The two half-year courses in Introduction to Careers seek to develop an awareness of life-style options; of relationships between education, work, and one's chosen life-style; and of the skills needed to meet home/family and employment responsibilities. Decision-making, problem-solving, consumer awareness, personal management skills, and parenting skills are part of this program. Hands-on and applied teaching and learning techniques are emphasized.

The two half-year courses in Technology involve the study of technical systems, tools, and machines, and their relationship to the National and international economy, government, and society. These courses emphasize the application of technology in the home as well as in the workplace, the impact of technology on individuals and society, the development and application of systems and subsystems, resources essential to technological development, the scope and diversity of technology development, and the many career opportunities available in technology.

In addition, a significant portion of the Technology courses provide experience in designing and constructing elementary technological devices and include participating in projects and experiments as a response to specified problem situations. Through experimental construction and problem-solving activities, students become aware, thus, of the basic elements common to all technological systems—input, comparison, adjustment, process, control, feedback, and ways technological systems interact.

Consideration of the economics of technology (intended and unintended impacts) and of the impact of technology will help students understand how technology affects people and their environment, and also the role that government and society should assume in maintaining control.

The Program for Grades Nine and Ten

The proposed grades 9 and 10 program, Introduction to Occupations, will include two 1-unit courses. Typically, 1 unit will be offered in grade 9 and 1 unit in grade 10. However, in some cases, the courses may be offered at different grade levels or the competencies integrated into specific occupational programs.

- Technology at Work
- Work-Related Communication Skills
- Use of Resources
- Problem Solving/Decision Making
- Productivity/Profit
- Keyboarding
- Drafting
- Electronics

Figure 4. Introduction to occupations, grades 9 and 10

Instruction in the 2 units includes 3 required 10-week modules and a series of optional 10-week modules for the schools to select from to complete the 80 weeks of instruction. The proposed required modules are—

- *My Career and Role as a Working Citizen,*
- *Personal Resource Management I,*
- *Personal Resource Management II.*

These modules emphasize the exploration of career opportunities and responsibilities a cluster of occupations, and the efficient and effective management of resources, including materials, time, and money.

Optional modules have been developed around, and relate to, the business, health, service, trade, technical, technology, and agriculture programs.

Skills integrated within every module in the Introduction to Occupations curriculum, through performance objectives and instructional strategies, are human relations/leadership, safety/work habits, math/science, career options, use of technology, decision making, problem solving, and communication.

Applied Math and Science Requirements

Occupational students in grades 9 through 12 may elect an applied math and/or an applied science course.

10 Introduction to Occupations

- Advanced Keyboarding/ Communication

Applied Math

- Business Math

Figure 5. Applied math requirements

- Electronics
- Small Engine

Applied Science

- Physical Technology
  or
- Animal/Plant Biology

Figure 6. Applied science requirements

In some cases, students may take an occupational program module that develops generic math or science concepts and includes occupationally oriented activities that apply these concepts. For example, projects might provide experiences using robot-type machines, computers, and numerically controlled machines with fiber optic devices for carrying light, voice, or data from one point to another, as used in production manufacturing; or projects might provide experiences with electronic instrumentation as used in medicine to monitor body functions in the care of hospitalized patients. Still other projects might involve applications of technology in modern housing, in transportation, in pollution control, or in the development of new energy sources. Curriculum to be provided by the State Education Department for this type of course will afford maximum flexibility. Modules may be selected and sequenced to satisfy the interests of individual students or classes, as well as the career opportunities unique to an employment area.

The Program for Grades Eleven and Twelve

In grades 11 and 12, occupational education will permit students to concentrate on one or more selected occupational clusters, and to develop entry-level job skills. The number of courses (units) required in a particular specialization will usually vary from three to six. No student will be able to complete an occupational sequence without an appropriate completion of concentration phase curriculum.

Considerable latitude will be permitted in organizing and scheduling modules to be covered over a 2-year period. Some schools may organize modules to permit postponement of specific similar trades) in the second year of this concentration phase. A key factor in the delivery of the new program is more emphasis on interdisciplinary programming than on traditional occupational programs.

For another example, business education majors might be scheduled during the 11th year for modules of instruction involving business organization and management, business communication, keyboarding, and similar types of generally applicable job skills, postponing the specialization skills essential to general office, bookkeeping, or marketing positions until the 12th year.

In each of the examples cited, schools may prefer to combine the general and specialized job skills over the 2-year period devoted to occupational concentration, and further, may provide opportunities for students to change areas of specialization as the result of tryout experiences.

Youth leadership and work experience, each considered an essential part of a sound occupational education program, are incorporated in the program directions. Also addressed in the action plan are accountability and teacher certification, including teacher education and retraining through inservice programs.

Occupational Education Programs

In summary, the new program plans to achieve better student outcomes in several ways through occupational as well as general education.

7	Technology Introduction to Careers
8	Technology Introduction to Careers
9	Introduction to Occupations - Technology at Work - Use of Resources - Problem Solving/ Decision Making - Productivity/Profit
11-12	Specialization

Figure 7. Overview of occupational education program

- A common set (core) of conceptual skills and knowledge has been identified that is believed to be essential to all individuals in their personal, family, home, community, and work responsibilities. Most of these core skills will be obtainable in elementary general education or in a new junior high school program. All students will take one-half unit in Introduction to Careers and in Technology in grade 7 and in grade 8. Introduction to Careers courses will emphasize personal, consumer, and relationship skills needed to enhance the students' abilities to meet their present and future responsibilities in the home and in the workplace. The Technology courses will introduce students to modern technology, to the resources needed for technological development, to ways in which technology helps to solve problems and enhance our living standards, to a variety of technological systems and their operation, and to the impact of technology on individuals and society. A broad spectrum of knowledge and skills generic to all areas of home/family and employment will be provided to occupational students at the 9th and 10th grade levels through instruction in Introduction to Occupations. Specialized occupational education will usually be deferred until the 11th and 12th grades, thereby keeping career options open until students have thoroughly explored the full implications. Specialized programs will be coordinated with earlier programs, and required for completing an occupational sequence.

- All areas of occupational education will be updated and redesigned to afford maximum preparation to meet anticipated job demands, as well as to permit broad career alternatives. Achievement standards and accountability will be strengthened through new curriculum materials and a statewide testing program.

QUESTIONS AND ANSWERS

Willard Daggett

Question: Is this program only for vocational education students, or is it for all students in New York State?

The seventh and eighth grade mandates in technology and in home economics and career skills are for all students. The 9th and 10th grade program, Introduction to Occupations—one unit per year—is for occupational education students, but it will also be an elective course for academic students. Our best guess, based upon present trends, is that about one-third of the academic students will take one unit of Introduction to Occupations on an elective basis.

The programs in grades 11 and 12, which have traditionally been designed to develop specialized, job-specific skills, will continue for occupational education students. However, we think more and more academic students will begin to take portions of these programs on an elective basis. The 11th and 12th grade programs will now be in module format instead of in 2-year, elongated programs where, for example, electricity was integrated into auto mechanics, into the trade occupations, and into a variety of other occupations. Now we will have separate modules available for electricity. We believe academic students will elect the data processing modules, which are part of the office occupations track. It is a requirement for vocational education students in high school and an elective for the general education student.

Question: You've given us a sense of some of the skills that all students would be bringing to the occupationally specific programs in the 11th and 12th grades—careers, understanding of technology, keyboarding, computer literacy, etc. What assumptions are you making about basic skills such as reading and computation, and so on? Is it your sense that vocational education will continue to have to fulfill a role by devoting time and resources to those skills as well?

Our response is that they absolutely will have to. Looking at employment in the future, we believe that students are going to have to be more literate rather than less literate. They are going to have to be proficient in reading, writing, and mathematics and the occupational education teacher is going to have to continue teaching the applications of those concepts and providing remediation. We also believe that there is a series of new basic skills to be mastered, including computer literacy, technologies, and keyboarding.

Question: Can you give us some examples of occupational areas, or nontraditional curriculum modules that you have developed, or are planning to develop, that do not fall within the range of examples you have given us? For example, academic students may take modules in business law as they prepare for entry into a college curriculum in pre-law, business administration, or engineering. Do you have the capacity to expand beyond the typical content areas?

Yes we do, and I will give you a few examples. But before I do, let me tell you why we have not given a great deal of thought to it yet. It is a matter of time. We had to go to the largest group of students—vocational education students—and determine what they needed first.

An example of a module that might interest a college-bound student is information systems. A solid understanding of information systems will be very valuable to a student who is going into business administration or into engineering, and also very good for the business education student.

We will be giving priority to developing modules that are needed both for entry-level employment and for management-level ability. Why we use an example like information systems is that for a long time, vocational education students have believed, and I think we have believed as well, that they were entering deadend occupations. They were not management material. The fact is that that is not true. And so, we are trying to give the vocational student some of those advanced skills, while also giving them to the academic students.

Biochemistry is another area where we are beginning to develop some modules for both students in the laboratory-based occupations and certain agricultural occupations students. Mechanical electronics is another area that is appropriate for the student who may be interested in going into engineering programs and also for some of the trade students.

Question: Most of the changes you are talking about seem to be institutional, that is, based within the school. One of the trends that many people foresee in education is far more cooperation with the community, far more involvement of employers in providing occupational training. How are you designing your programs to arrange for more employer input and for instructors to work more with the employer in designing training?

We've discussed that issue a great deal and our response has not been very good. We have run into three different obstacles. Business and industry are very willing to give us advice, but their reservoirs of resources are depleted because of economic conditions; therefore, they cannot provide us the staff to work with teachers or the time to bring our people in for training as much as we would like and they would like.

A second problem has emerged when we have tried, especially for some of our more advanced programs, to look at options for sending our students into business and industry to learn on-site with a trainer. We have run into resistance from our teacher unions on that issue—and understandably so. We have also run into some legal issues in terms of insurance and workman's compensation.

The other area we have looked at is a mechanism whereby we can have a continuing dialogue with business and industry to find out what is needed. This is an area we have had a fair amount of success. We all have advisory councils. We are convinced that some of these advisory councils are very effective, but that most of them have the wrong people talking to us. We need to talk to the people in the R&D (research and development) centers; they are the ones concerned with future program direction. A personnel person talks about what he or she will need 6 months from now or next year, but schools can not change programming in less than 5 to 8 years. That is the time it takes to identify needs, change curriculum, provide inservice for teachers, and put students through the program. So we are finding we need to go to R&D people. In January we established a statewide steering committee in vocational education, comprised primarily of people from R&D, to address such areas as major changes in organizational structure, product lines, and types of facilities and equipment that the firms will have.

Question: I have two related questions. When you began the discussion, you pointed out that high on the priority list was serving handicapped students and adults. Do you feel that you really did that in the final plan or did turfdom force you to concentrate on the second area? Second, what was the involvement in your planning process of postsecondary leaders or institutions who train a lot of those adults and are concerned about the articulation between secondary and postsecondary education.

Let us take that as three different questions: special education, adult, postsecondary. First of all, we believe we did address the issue of special education. Right now we have 43 curriculum teams writing the new curriculum; we will have 55 additional teams appointed this summer. A year from now we will have all 98 curricula completed and always up for revision. Every curriculum team consists of five to seven people: typically, two from business and industry, two from vocational education, and one special educator.

What we found after much discussion is that we should not design special programs for students with handicapping conditions, that the skills and competencies those students needed were the same. The difference is in methodology.

The greatest contribution special educators have made to our curriculum efforts goes way beyond special education. They found as they listened to our curriculum people and our business and industrial people that we were designing vocational education curriculum based upon how people do work. What tasks do they do first? What tasks do they do second? The special educators pointed out that our instructional programs were not moving from the simplest concept to the most complex.

In our newly designed curriculum materials, we do go from the simplest concepts to the most complex. We think this curriculum will enable special education students to develop some of these skills, even though they may not get through the whole laundry list of skills. In addition, the curriculum includes instructional strategies for students with various types of handicapping conditions.

In the area of adult education, we have not done enough. We have, however, developed a State proposal that was in the Governor's budget, which calls for special aid for adults in the form of an entitlement bill. The bill would enable adults to come back into secondary or postsecondary institutions and take vocational education, with some type of tuition assistance provided. We have also worked with some modules where, with declining secondary school enrollments, we can bring adults into the day school program. In the past state-aid ratios previewed this. We have eliminated this barrier. We have not done enough, but we are moving in that direction.

In the postsecondary area, we have not done very much. However, of the 100 educators who served on the Instructional Futuring Committees, 22 were in postsecondary institutions. So there was input. The problem we have with postsecondary is we do not have the tight State controls that we have in secondary. We do not have required State curriculum or required State testing. There is a local college autonomy that is even further complicated by the tug of war between the college faculty senate and the administration as to what will be taught. In our State, the proprietary schools are moving the fastest to respond to changes in our high school curriculum. I believe the proprietary schools, which are quick to change for financial reasons, are going to drive our postsecondary institutions to change more than any other influence we can bring to bear.

Question: Would you care to talk some more about the staffing implications of the program that you have described—in terms of professional updating of teachers and administrators, acceptance, costs, and long-term implications?

The first thing that must be done is to create the climate for change. We have been doing that through the futuring process since 1981. During a 2-year period, we have spent approximately $500,000 a year in creating a climate for change by running regional meetings on a monthly basis throughout New York State. People on the Futuring Committees ran regional meetings for people in the field about what the future holds; what the Alvin Tofflers and the John Naisbitts of the world are telling us. They asked: "What does it mean for vocational education? How are the committees responding? What is your response? Tell us and we will bring that back to the committees." During those 2 years we averaged 10,000 teachers each year attending the regional meetings, which is slightly less that 50 percent of the total teachers in the State.

Moving now into really implementing the program, there are certain teachers who need much more inservice education and updating than do others. Number one on the list, in my opinion, are the industrial arts teachers who have to begin to teach systems and the whole concept of technology. Teachers are going to learn how to teach the new curriculum areas by experiencing it themselves and sharing what they know with each other. So as part of their inservice program we hope to have them spend 3 hours biweekly during the school year sharing experiences: what methodologies are working, what is not working, what are the problems. We will have State Education Department staff involved to help translate those findings into new inservice programs and into modification of the curriculum.

In this specialized area, we have an even more severe problem. Where do you go to get someone to train or specialize vocational education teachers? We believe we have to go to business and industry. We have asked the State Business Council, which is our State Chamber of Commerce, to assist us in that. We have not yet put a plan in place, but we have a proposal into the State legislature for funding. We hope that flies, and if it does, we will then be able to develop some type of specialized training using business and industry.

Question: As a follow-up to the last question, what are some of the implications for the teacher training institutions in your State?

You have asked the toughest question anybody could ask me. We have had difficulties in teacher education. As we have looked at the readiness and willingness to change, we have found teacher education to be most entrenched. Not all institutions; some of them are excellent. But it is a situation very much like the community college problem, where you have faculty senates. You have the same configuration in teacher-education institutions.

In our State, teacher education over the last several years, in all instructional areas—general education and occupational education—has seen a dwindling of support from college administration. This means that it is the very, very senior people who are left on faculty. We are finding that they are able to place their graduates. Why? Simply supply and demand. But, they may not have the skills that we need. To help break that wedge, what we decided to do in our inservice program is not to go just to teacher-education institutions. We believe the biggest area in our State in teacher education in the future is teacher inservice education rather than just preservice preparation. So we have gone to a series of groups and said, any of you are eligible to offer inservice programs as long as you meet our specifications. We have found teacher education institutions to be the group least eager to offer them initially. We are finding that they are beginning to become a little nervous, however, because we are permitting other groups to offer inservice programs and they are setting up teacher inservice education centers around the State.

Question: You talked about business and office occupations. What are your plans to work with marketing and distributive education and will the cooperative program exist as it is now?

Before I answer that question, let me tell you that I am a former distributive education teacher and was in teacher-education for distributive education. My opinion is that distributive education at the 11th and 12th grades has a very shaky future. The reason is that when you look at the skills and competencies that I described for the 7th through 10th grade program, most of the skills are in distributive education. The skills they now teach are down in the 7th through 10th grade program.

The distributive education teachers will be eligible to teach the Introduction to Occupations program in the 9th and 10th grades as well as their distributive education courses. Candidly, I do not see a lot of specialized skills in 11th and 12th grades beyond that. In terms of cooperative work, experience continues to be very important in all program areas. We are frustrated that we cannot get more students into cooperative programs because of the lack of work stations.

Question: Traditionally and historically, the vocational student organization has played a rather significant role in providing students with opportunities to develop the social and managerial skills needed for successful participation in the world of work. What changes do you foresee taking place in its role?

I am going to begin my answer like I did the last one, by telling you that I am a product of the youth organizations, but they have to go through dramatic changes if they are going to remain viable. I am convinced there is no better instructional technique in education than youth organizations, but I am also convinced, when you look at our 7th through 10th grade program where we are trying to develop those affective domain skills and relationship skills that youth organizations are so good at, that schools in our State are not going to offer seven different youth organizations within a school when they have a single program for all those students. Remember, we do not have home economics or industrial arts or business or distributive education in grades 7 through 10 now. We have broad vocational education.

For that reason, we have called together the boards of directors of the seven youth organizations in our State. A State advisor has been assigned to each of those 7 organizations, as well as support staff to help run the organizations for the next year and a half so they can come up with a proposal statewide on what to do with youth organizations in grades 7 through 10. Our intent is to expand the number of students involved, but within a mechanism that makes sense across the board instead of with seven separate youth organizations. This is a very emotional issue.

Question: You have spoken to us about a program developed during a period of surplus labor. Did your committees—especially your business and industry leaders—discuss the viability of the program during periods of severe shortages of labor that are likely to take place as our demographic patterns change?

You are talking about the general labor force, not the teaching force, correct? Yes, they did talk about it and they came to the conclusion that during a shortage in the labor market in terms of employment opportunities, if a person has only specialized skills and loses his or her job, the public sector is not going to be able to provide enough funds for retraining. Therefore, it is critical for graduates of the future to have broad, transferable skills to be able to fit into several occupations. This flexibility is one of the reasons why the committees pushed us into later specialization in vocational education—to still develop specialized skills before the student left the program.

Question: I was pleased to hear you mention that vocational education must operate within the context of the broader educational community. I was further pleased that you included principals and other significant factors and key policymakers in the decisions that you were making about the changes in the vocational program. As you

implement the changes in the vocational education program, what impact will that have upon the rest of the education offered within the school and what changes do you envision for the portion of the program that is nonvocational?

The Board of Regents has put forth an "Action Plan," which is a total review of K-12 requirements. The proposal is for a whole series of changes, including additional requirements in art and music, and additional requirements in Technology and Home and Career Skills programs.

Beginning last July, our proposals went on the table of the Board of Regents together with everyone else's proposals on what the new school mandates should be, as part of the action plan. What has happened over the last 9 months is that our proposals have received approval of the Regents, whereas many of the proposals in general education have not. We plainly lucked out, because we didn't know that was going to happen when we started this process in 1981. We got to 1983 with all of our proposals. We have had to debate them publicly in 10 regional meetings. We have had to debate month by month with the Regents in their individual meetings. We had all kinds of support behind us; we had the State Business Council, for example, because it had been involved in the process.

In terms of total mandates, there was a proposal to increase the school year by 20 days. The Regents' vote on that in March rejected the 10-day increase for students because of the cost implications. However, the other 10 days, for inservice education, were adopted. The increase in math and science is an additional unit in each, for all students. One additional unit in social studies is required. We had required three units in high school; four units are now required. We've added a year of Technology, and three-quarters of a year of Home and Career Skills for all students.

In effect, the Regents have said there will be no more study halls in junior high school. Students are to be in class 5 1/2 hours a day. Local districts can choose to have study halls, but only after 5 1/2 hours of instruction. That's true all the way—grades 7 through 12. So what has happened is those free periods during the school day are being filled up. We have increased the number of graduation requirements by four units for all students. But the other side is we will have fewer electives. What we are hoping is that many of the academic students are going to elect our area. The fact is that vocational educatior students, when you add all the present requirements and all the vocational education requirements, will have little time for electives in their schedules.

Question: My question deals with how you see the academic courses being offered in the school. If we have restructured the vocational courses and have a new pattern for their delivery, does it not also follow that there might be a new pattern for the delivery of academic instruction? How might that proceed?

What will happen in our State is some movement in that area but not across the board. We anticipate that the State Legislature will appropriate $600,000 in this year's budget to revamp the science and math curricula. What they are doing in math education is moving away from 9th grade algebra, 10th grade geometry, 11th grade trigonometry into something called Math I, II, and III, where all math areas are being integrated on a continuum. The science curriculum is being unified in grades 7 through 9 where they are taking physical science, earth science, and life sciences and integrating them as well. So the s some movement in that area. We do not have that movement in English or social studies or th arts because they do not have the resources at this time to do it.

Question: I have been impressed with your program development, that it is comprehensive and coherent, that you have had administrative and policy support, and that you have the clout of the Regents' examinations to see that the system does transform and move in some of these directions. Could you tell us what the development costs have been to

get to the implementation point in September 1985, and also what the implementation costs will be?

For development to date, between the Futuring Committees and the recommendations, we have spent $4,800,000. For inservice education over the next 3 years, we anticipate we will need between $9,000,000 and $15,000,000. For curriculum development we will need a minimum of $500,000 a year for each of the next 5 years. It is a big price tag, and that is not counting staff time. We have had 40 full-time staff members working on the project now for 3 years. The total cost would probably double, if you took into account the total staff costs.

Question: Looking into the future, how soon do you think you are going to need to go through this process again?

We probably should have begun about 6 months ago. That sounds like I am joking, but I am really not. When do you begin to look toward the future? Some of your staff and I were discussing that this morning. Some say if you go beyond 5 years, no one can predict what is going to happen—and they are right. However, if you go less than 8 years, you cannot design an educational program that students are going to graduate from by the time you do the analysis, you write the curriculum, you do the inservice education, and you put the student through the program. Therefore, we attempted to "crystal ball" 10 years out.

What we will do in the future, however, is not go through this mammoth review to rebuild the system. Instead, we are establishing a steering committee comprised of leaders from education and business that will meet with us on a quarterly basis to advise us on changes as we go along. It is hoped we will not have to go through a major restructuring within the next several years.

Question: You have described to us a mammoth change process that involved numerous groups of people. You have indicated that at times you received on the order of 500 letters a week. My question is, do you have a historian or someone who's doing a chronology on this process so that it might be replicated in other States, and so that the wisdom that has been acquired can be applied when you go through a similar process again?

Yes we do. We have a whole series of reports. We have a report of about 150 pages that really goes into some of the techniques and materials. We have an in-depth report on the workshop that we ran in California for the National Center. We have materials on almost any level. I have one full-time staff person to handle requests, responses, and questions and to continue to develop materials for the people who ask for them.

Let me close, if I may, with a story. I know some of you are frustrated, and I know some of you do not like what I said. I do not like some of the things I have said. My 12-year-old son has a favorite story from Indian Guides that I think helps keep in focus that the key in education is children. There were two very wise Indian braves in the tribe. These two braves decided they wanted to show the chief that they indeed knew more than he, and to show the tribe that they should be the leaders rather than the chief. So they devised a scheme to catch a bird, take the bird in front of the tribe that evening, and ask the chief to tell them whether the bird was dead or alive. The scheme was that if the chief said the bird was dead, they would open up their hands and let the bird fly away. If he said the bird was alive, they would crush it in their hands and hold up the dead bird. They went in front of the tribe and said to the wise chief, "If you indeed are so wise, tell us whether this bird is dead or alive." The chief thought long and hard and then responded saying, "Young braves, you hold both the answer to your future and that question in your own hands."

I am convinced that vocational education leaders across the country hold the answer to their own future, and much, much more important, the future of literally millions of youth, in their own hands.

Thank you very much.

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