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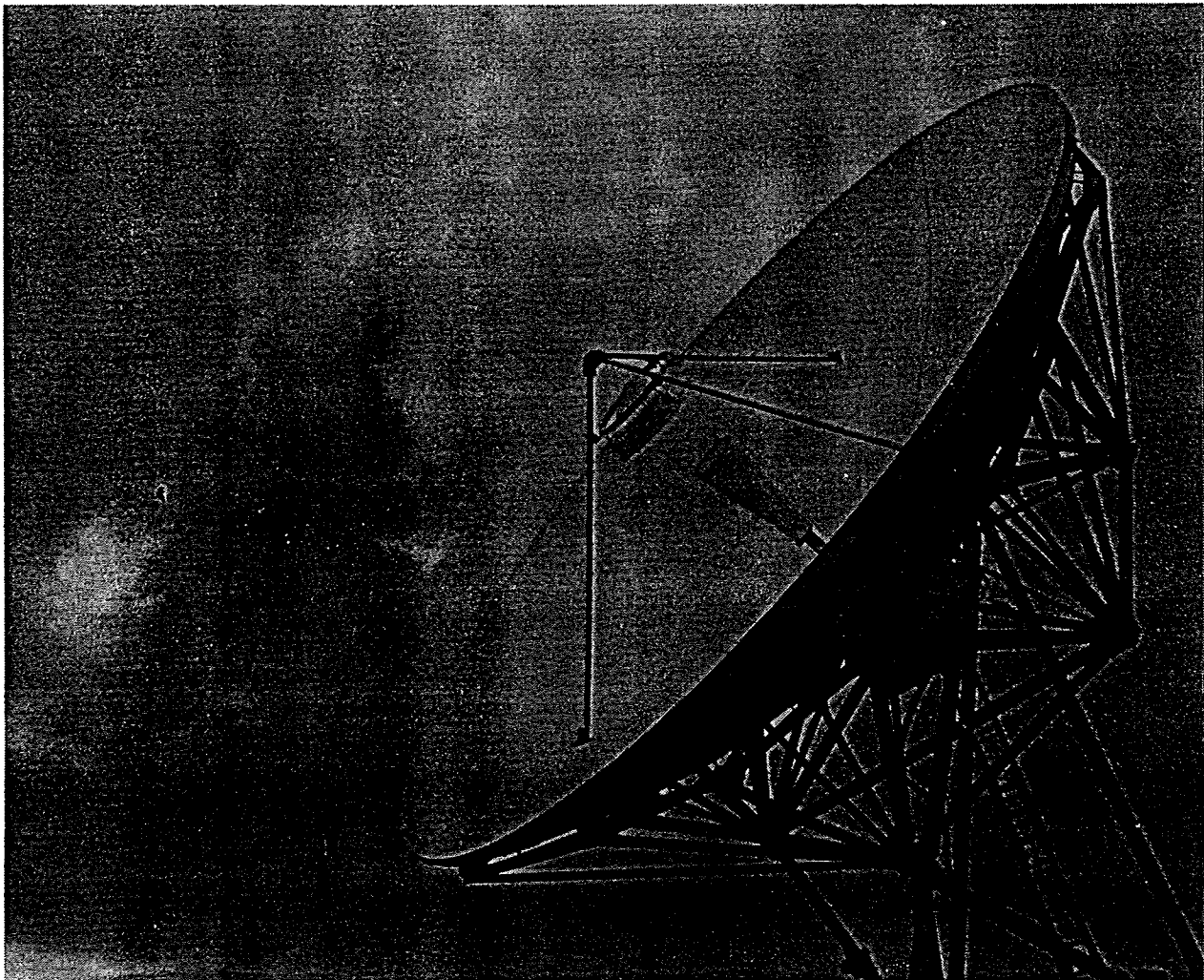


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COMMITTEE ON EDUCATION  
MATERIALS FOR 8/9/91

# BREAKING THE BARRIERS:

Using Information Technology Potentials  
to Benefit the  
People of Maine



The Report of the Commission on Educational  
Uses of Information Technology

AUGUST, 1989



*UNIVERSITY OF MAINE SYSTEM*

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# UNIVERSITY OF MAINE SYSTEM

BOARD OF TRUSTEES

107 Maine Avenue Bangor, Maine 04401-1805 207-947-0336

August 15, 1989

Robert L. Woodbury, Chancellor  
University of Maine System  
107 Maine Avenue  
Bangor, Maine 04401-1805

Dear Bob:

I am pleased to submit to you the final report of the University System's Commission on Educational Uses of Information Technology.

The members of the Commission have appreciated the opportunity to participate in the review of the the interactive telecommunications system and other informational technologies available through the University System and to assess their potential educational and public service value to the broader community.

Members of the Commission commend the University System for its decision to make the interactive telecommunications system available for use outside the conventional pattern of classroom instruction. That system, the University's electronic library catalogue system, and the computer related teaching and learning techniques offer exciting opportunities for statewide advances in education and cooperative ventures on behalf of regions and communities. The technologies are not panaceas. There are costs and obstacles, and there are knotty policy issues related to financial responsibility and equitable access, but the promise is great and argues for further effort by the System and the constituencies represented on the Commission.

The results of the Commission's work and much of the quality of the report are due to the untiring, perceptive and knowledgeable efforts of the staff consultant, Donald E. Nicoll. The members of the Commission and especially myself, as the chair, are grateful for all of his labors.

I want to express my own appreciation for the privilege of chairing the Commission. In my years of serving on committees, task forces, commissions and working groups, I have not found one that matched the hard work, commitment and constructive contributions of my colleagues.

We offer the report and its recommendations for your consideration and decisions. If we can be of further assistance, please feel free to call on us.

Sincerely,

James A. Storer  
Chair

UNIVERSITY OF MAINE

UNIVERSITY OF SOUTHERN MAINE

UNIVERSITY OF MAINE  
AT FARMINGTON

UNIVERSITY OF MAINE  
AT FORT KENT

UNIVERSITY OF MAINE  
AT MACHIAS

UNIVERSITY OF MAINE  
AT PRESQUE ISLE

UNIVERSITY OF MAINE  
AT AUGUSTA

## PREAMBLE

The University of Maine System Commission on Educational Uses of Information Technology was created by Chancellor Robert L. Woodbury and asked to examine a broad range of information technologies that are or may be applied to education and training. Most of its attention was focused on the University System's interactive telecommunications system, which has immediate implications for a wide range of constituencies in every part of the state.

The University of Maine System has shown commendable foresight in developing the interactive telecommunications system to this point. Because of Maine's statewide and local needs, the University System should continue its leadership in uses of telecommunications systems in Maine, the region and the United States. It should also continue to work with public and private groups in expanding and improving the use of other information technologies on behalf of Maine's citizens.

## TABLE OF CONTENTS

	PAGE
<b>INTRODUCTION</b>	1
<b>EXECUTIVE SUMMARY</b>	2-3
<b>DISCUSSION OF FINDINGS</b>	4
A. Expansion of Original Concept of the Community College of Maine	4
B. Application Beyond Traditional Academic Programs	4-5
C. Support in Using of Interactive Telecommunications Technology	5
D. Practical Development of the Interactive Telecommunications System	5-6
E. Equity in Access, Funding, and Policy Decisions	7-8
F. Future Development of the Interactive Telecommunications System	8
<b>DISCUSSION OF RECOMMENDATIONS</b>	9
A. Support of Interactive Telecommunications beyond the Traditional Academic Programs	9
B. Collaborative Possibilities for the Interactive Telecommunications System	9-10
C. Advisory Committee	10
<b>Appendix A --- BACKGROUND INFORMATION</b>	11-20
<b>Appendix B --- COMMUNITY COLLEGE OF MAINE/ TELECOMMUNICATIONS SYSTEM</b>	21-22
<b>Appendix C --- URSUS (UNIVERSITY RESOURCES SERVING USERS STATE-WIDE)</b>	23

## INTRODUCTION

The members of the University of Maine System Commission on Educational Uses of Information Technology have been privileged to participate in an exploration of the burgeoning opportunities for using telecommunications and other electronic techniques for the benefit of the entire State of Maine. Our report is not so much about the technologies, however. They are changing but not new. We are concerned with the promise and the challenges of using the technologies wisely, effectively, efficiently, and equitably.

The University of Maine System's telecommunications venture has opened the way for broader uses of technology, changing classroom instruction and reaching beyond the classroom to other settings for learning and community participation. The interactive telecommunications system will link the University System campuses, expand access to the Community College of Maine, provide new educational opportunities for the Vocational Technical Institutes, the Maine Maritime Academy and our public elementary and secondary schools. Telecommunications can break down geographic, social and economic barriers in the state; involve citizens more directly in public policy development; accelerate our capacity to educate, train and retrain our labor force; raise the aspirations and expand the cultural horizons of our young people; and provide increased access to information needed by public and private sectors. In short, the telecommunications system can be a powerful means of serving the common good.

The challenges are primarily individual and institutional, not technical. Learning to use interactive telecommunications systems, computers, videodiscs, and other electronic means of disseminating and sharing information imposes demands on the deliverers and receivers. Inadequate preparation and unimaginative applications can waste resources and discourage users.

The information technologies will require investments in facilities, equipment, personnel, and institutional support. Those investments must come from the public and private users. The University System bears the immediate brunt of institutional demands because of its pioneering effort. It is in the midst of developing the University program and assisting the Vocational Technical Institutes, Maine Maritime Academy and public schools to use the system, while at the same time responding to the growing interest in additional applications. Capacity and resources will lag behind demand. That lag will place special pressures on the System to support incremental, successful programs in order to win the cooperation and support of initial users. The University System will also need to establish a foundation for a broader telecommunications and information technology system that will depend on cooperative and collaborative efforts by State government, municipal governments, regional organizations, civic groups, public and private educational institutions, health and social service organizations, cultural institutions, business, and labor.

The members of the Commission hope this report will assist in the immediate tasks of developing and broadening participation in the use of the telecommunications system and will contribute to an on-going development of information technology applications in the State of Maine worthy of the vision provided by the University of Maine System.

## EXECUTIVE SUMMARY

The University of Maine Commission on Educational Uses of Information Technology was charged by Chancellor Woodbury to:

- 1) review and identify significant trends in the development of educational uses of information technology.
- 2) review and assess the potential value and uses of facilities, equipment, systems, programs and personnel for planning; encouraging and increasing the understanding, use and sharing of existing and innovative information technology applications in research, education and training; information collection, storage, retrieval and transfer; economic development; and public policy analysis and debate.
- 3) examine the issues related to the University System's information technology resources and public and private sector needs.
- 4) recommend goals and objectives for the University System in contributing to the State's education related needs in information technology applications.
- 5) recommend an ongoing planning process for the System's public and private sector cooperative program for educational uses of information technology.

The Commission was constituted to reflect a broad cross-section of the state's interest in improved and expanded education and training, information applications, research and analysis in the private and public sectors, dissemination of information related to public policy issues, and citizen participation in public policy deliberations. Commission members included representatives from the state's executive and legislative branches, municipal governments, nonprofit public policy organizations, private business, labor, health care institutions, social services, State post-secondary institutions, elementary and secondary education, private colleges and the System campuses. All shared a common interest in using information technology to support improved educational, cultural, social, economic and political conditions in the state. They see such improvements as essential to the achievement of individual aspirations of Maine citizens and the enhancement of Maine as a healthy community, competitive in the world's economy and attractive as a place to live.

The Commission has considered several kinds of information technology in its explorations and deliberations: interactive telecommunications, computer assisted instruction (CAI), and information storage, retrieval and transfer. In the course of its work it has learned about some of the specific technologies that have potential for broad educational applications, including video disks and compact disks/read only memory (CD ROM). Most of the Commission's attention has been directed at the System Interactive Telecommunications (IT) network, which is being developed along with the Community College of Maine. Commission members have also had an opportunity to examine the University's computerized library system.

A description of the Commission's meetings, supplemental materials related to its work, and detailed comments from members of the Commission will be found in Appendix A, Background.

The members of the Commission tried to be visionary in exploring the possibilities of the new technologies. The potential of improved communication and information handling technology to

overcome many of Maine's problems related to low population densities and distances between communities holds promise for all. At the same time, members have realistically assessed the possibilities for technology applications, recognizing the social and political obstacles, the limitations of technology (especially in areas that require or benefit from personal interchanges) and the costs associated with introducing the new technologies. Members of the Commission hope their recommendations offer practical ways and options to use information technologies for broad educational purposes.

### **Major Findings:**

- A. The interest in using the Interactive Telecommunications system and associated information technologies is growing beyond the original concept of the Community College of Maine project.
- B. Effective use of the system requires an understanding of applications that go beyond traditional academic programs.
- C. It is imperative that users be provided with significant technical support in learning how to use the interactive telecommunications technology.
- D. Expanded educational and non-educational uses will require expansion of the existing system and, possibly, development of supplemental systems.
- E. Broader public and private use of the system, or systems, will compel early attention to questions of equity in access, funding and policy decisions. These programs should be self-supporting through user fees for services.
- F. An expanded telecommunications system used by public and private organizations for education, training, information transfer, conferences and hearings will require efficiency, imagination, vision, and flexibility if it is to be more than a simple electronic highway.

### **Recommendations:**

- A. The University System should move decisively and with a sense of urgency to obtain financial resources to support its timely development of the mechanisms, facilities and equipment, and staff to support interactive telecommunications for users and uses above and beyond traditional classroom instruction. Further, the University System should encourage the development of proposals to national foundations as well as from private funding sources within the state. The development of a long-term public use interactive telecommunications system should include provisions for self-supporting fees and other revenue sources to insure its financial viability.
- B. The University of Maine System, in concert with State government, municipal governments and regional agencies, public schools, private educational institutions, nonprofit organizations, business and labor organizations, should form a consortium to design appropriate mechanisms for setting policies, funding, and managing a telecommunications and information technology system to support the State's education and training, public policy development, inter-regional communication, and cultural needs.
- C. The University System should continue to have an advisory body that can assist the University in the immediate needs related to the development and use of its existing system for teaching and learning outside traditional classrooms, exchange of information, and public policy discussion and debate.

## DISCUSSION OF FINDINGS

### A. Expansion of Original Concept of the Community College of Maine

The Commission examined several examples of information technology applications that support learning, research and information transfer. Much of the discussion focussed on potential uses of the University of Maine System's interactive telecommunications system. That system offers the most promise for early distribution of information technology services outside the University.

The University System's initiative in establishing an Interactive Telecommunications Network for the State of Maine holds great promise for education, training, transfer of information, public policy development, and the elimination of artificial communication barriers. The interactive system can further communications between different institutions, social and economic groups, and different regions of the state. It can also offer expanded opportunities for communication with other states and with the adjacent Canadian provinces. It can increase aspirations of Maine people and elevate the level of public discourse.

The University System's initiative comes at a time when the need for increased access to information and educational opportunities is accelerating under the pressures for increased capacity to compete in a world economy and greater demands for timely decisions in public policy. Interest in using the Interactive Telecommunications Network is expanding rapidly beyond the Community College of Maine, undergraduate and graduate course offerings, elementary and secondary school programs, Vocational Technical Institute courses, and Maine Maritime Academy programs that were originally contemplated.

### B. Application Beyond Traditional Academic Programs

The Maine IT system, developed for use by the Community College of Maine, the University System campuses, the Maine Maritime Academy, the Vocational Technical Institutes, and the State's public elementary and secondary schools, is one of the most extensive and ambitious programs for general educational use of interactive telecommunications systems in the country.

Since the 1960s there have been a number of undertakings in the use of telecommunications for every of courses, credit and noncredit, in different parts of the country. Some have disappeared. Others have diminished substantially. All told, some 200-300,000 students are obtaining courses through telecommunications directly from community colleges.

The University System's IT network will have capacity in excess of the University's requirements, at least in the initial stages. That capacity permits the University System to work with other agencies and institutions on potential educational uses that go beyond University programs.

The Maine IT system, originally designed to use satellite technology, is now based on fiberoptics, microwave and Instructional Television Fixed Service (ITFS) transmission. This system has the potential of added capacity and added flexibility, so that programs can be delivered statewide, regionally or sub-regionally. Currently, the design includes two channels for ITFS transmissions and can be expanded to four channels per transmitter. A total of eight channels can be provided on an ITFS transmitter, with Federal Communications Commission approval.

Therefore, the IT system offers great promise for public agencies, not-for-profit groups, associations and private businesses to use interactive telecommunications for education and public service purposes. One of the most exciting aspect of the service is the capacity to link different parts of the state, reducing communication barriers and increasing understanding. The system will also help lessen the need for travel and the costs of lost time from work in connection with education and conference uses.

If the System is to continue encouraging uses that go beyond traditional classroom instruction, involving public service and public education programs inside the University System and outside users, care must be used in the rate of expansion and kinds of applications.

The following questions seem appropriate to ask when considering potential uses:

...which uses offer the greatest chances for success?

...which uses offer baseline measures of existing practices and outcomes and the potential for valid evaluations of IT system applications?

...among the educational institutions outside the group of initial users (University, Vocational Technical Institutes, Maine Maritime Academy, Maine Department of Educational and Cultural Services, and public school systems), which are most likely to have direct needs that could be met by the IT system? (It appears that institutions with a number of part-time, non-residential students, and with a pattern of outreach education and off-campus delivery sites are the leading candidates for participation in the system.)

...what are appropriate uses of the system by traditional, residential colleges? what conditions would have to be met to make those uses feasible? (It appears that those colleges might benefit from use of the system to expand their catalogues of courses or through sharing with their peer institutions, but the system would have to be interactive to make it attractive to participating private institutions.)

#### **C. Support in Using of Interactive Telecommunications Technology**

In the short-term, as the University System makes the IT system available for non-University and non-traditional uses, there will be substantial demands for technical preparation and support for potential users. Settings have to be right for participants to interact. Those providing instruction and those leading group discussions need assistance in making effective use of the medium. Inevitably, uncertainty about the uses of telecommunications and the need for preparation will stimulate requests for additional assistance in planning, development and implementation of projects. Several Commission members questioned whether IT projects could really be successful without organization, leadership and support from the University System, above and beyond provision of time, space and technical assistance.

#### **D. Practical Development of the Interactive Telecommunications System**

Members of the Commission have identified the following potential uses of the IT system and related information transfer services as having substantial interest for themselves or their constituencies:



**Instruction:**

...educational enrichment programs at the elementary and secondary school levels to increase student aspirations and fulfill the objectives of the "Helping Children Succeed" report and the "Aspirations Compact";

...expanded educational and training programs for adults, ranging from graduate courses to short term training sessions;

...particular programs for elementary and secondary school students, teachers and administrators, health professionals, social service professionals, public employees, and private businesses;

...courses or training sessions at the work site;

...training programs for volunteer emergency medical technicians and other community volunteers;

...programs which build on economic development advantages for western, eastern and northern sections of the state, where the availability of graduate programs and access to university resources would make it possible for corporations employing research and development personnel to locate;

...special training for health care and other workers in connection with such problems as the treatment of AIDS patients and the handling of hazardous wastes.

**Teleconferences, briefings and hearings:**

...expanded participation in conferences and committee meetings at greatly reduced travel and lost productive time costs for both the public and private sector;

...benefits for those involved in briefings for state employees, public officials, and citizens affected by State statutes or regulations;

...greatly expanded access to legislative and regulatory hearings for citizens in virtually every part of the state (recent legislative hearings on education have demonstrated the value of the system.)

**Information and data exchange:**

...support for URSUS, the System's computerized library system, with its capacity for more efficient accession of materials, access to catalogues, circulation control, inventory management, financial management and analysis of use;

...encouragement for the System's collaboration with private colleges, public libraries and the State library in development of its system and cooperation in the development of other systems with focus on compatibility between the several systems;

...access to the University's library holdings through the electronic catalogues, data bases available at or through the University, and the expansion of the availability of public and private electronic data bases in the state.

## **E. Equity in Access, Funding, and Policy Decisions**

Commission members feel the demand for use of the telecommunications system will grow as government, business, labor and non-profit organizations discover the time and money saving advantages of distance delivery of education and training programs, teleconferences, briefings, hearings and information transfer.

That growth in demand could outstrip the capacity of the existing system and suggests the need for the University System and its collaborators to work out different institutional arrangements for facilitating, organizing and managing non-University uses of the telecommunications and associated information technology systems.

Some issues that should be addressed, if the telecommunication system's potential is to be realized are discussed below.

### **Limitations to access to the system:**

The interactive television system is limited in the number of channels available for institutional (University, Maine Maritime Academy, Vocational Technical Institutes, and elementary and secondary schools) and other uses. When the seven campuses of the University system are connected, there will be three channels available on the fiberoptic network, two of which are primarily dedicated to training and instructional uses. Only two channels will be available initially on the ITFS transmitters beyond the basic "spine" connecting the seven campuses. There are also limitations in the number of studio sites and equipment available to support multiple programs.

It appears likely that in the first two years of IT operation the demand for public service uses could exceed the system's capacity. Limitations in the capacity to originate programs are particularly noticeable in the Vocational Technical Institutes and public schools, which do not have telecommunications studios or transmission facilities.

The telecommunications, studio and equipment limitations on responses to demand are short-term. The potential for expansion of the number of fiberoptic network channels is virtually infinite. Two more channels could be added to the ITFS transmitters at a modest cost. Up to eight channels can be carried on the ITFS transmitters, if approved by the Federal Communications Commission. Longer term expansion of capacity will be limited only by restrictions on financial resources.

### **Expertise in using the system:**

The potential for direct, visual two-way communication is exciting, but realization can fall short of anticipation. Studio design can inhibit a sense of being involved. Commission members found, for example, that the amphitheater classroom in Augusta made it virtually impossible to sustain a sense of informal communication even among participants in that setting. Lack of training of facilitators, group leaders and participants in the use of the medium can result in distracting lapses in use of the equipment. Absence of experience and training in the use of audiovisual techniques can diminish the effectiveness of presentations and dialogue.

### Instruction through interactive telecommunications:

Similar problems can be identified in courses taught on the IT system. Instructors without training in the demands of the medium can distract rather than involve their students. Lack of skills in using audiovisual equipment and materials, including computers, leaves an enormous gap between the actual level of teaching and learning and the potential that could be achieved with appropriate use of audiovisual and computer techniques.

It seems evident that as students and instructors become more familiar with the medium they will seek more training and more polished productions. Similar requests for training and production assistance will probably come from outside users as well. The University will face the problem of balancing pressures for improved quality against the need to hold down costs.

### Intellectual property rights:

As access to the classroom is expanded, with larger numbers of students and greater reproduction and distribution of books, journals, drawings, paintings, sculpture, photographs, films, music and other forms of intellectual property, the issue of intellectual property rights is intensified. The use of courses and materials produced by members of the University faculty as well as those produced outside the University community will be affected by intellectual property right laws and practices. The Commission understands that the University System's general counsel is reviewing this question.

## **F. Future Development of the Interactive Telecommunications System**

Instructional and conference uses of the system are still experimental. As indicated above, technical arrangements must be adjusted to support different uses of the system and users must learn different techniques for conveying information if they are to be effective in communicating on the system. It is imperative, therefore, that the University not promise too much for uses of the ITV system and that potential users understand they are engaged in an experiment in which there are no guarantees of success.

Given the potential benefits of the system, it is important that its development be supported with controlled experimentation and evaluation. The University and other users need to address such questions as: when does use of the medium work well? when does it not work well? what criteria should be used for evaluation of the uses of the medium? how can deficiencies be corrected? how can good work be improved?

Members of the Commission are skeptical of the validity of course test results for evaluation. They believe it would be valuable to broaden the statistical base of comparisons in analyzing the achievements of students in an IT learning environment against those in a non-IT classroom.

In examining other uses of the system, such as committee meetings, conferences and briefings, it will be important to formulate the right questions in evaluating the uses of the system. For example: how do the results of using the system compare with the way organizations have arranged and conducted meetings, in terms of information exchange, communication between and among participants, rate of participation, decision-making, time consumed, travel time, costs, attendance, etc.?

## DISCUSSION OF RECOMMENDATIONS

The Commission recommends the following policies and actions to take advantage of the University System's initiative in development of the interactive telecommunications system and to further effective use of information technologies on behalf of the State of Maine and its citizens:

### A. Support of Interactive Telecommunications beyond the Traditional Academic Programs

The University should continue to contribute to the dissemination and effective application of telecommunications technology outside the University community, insofar as its capacity allows, by emphasizing its role as a prime source of education and learning expertise, providing training and assistance in the use of the technology to its faculty members, other instructors using the system, and those using the system for teleconferencing, briefings, public hearings and information transfer.

The University should develop and use a rigorous evaluation program for courses, training programs, teleconferences, briefings, hearings and other uses of the system, to insure quality and appropriate use of the system, whether by members of its own faculties and staffs, or others.

The University should be selective and judicious in the development and distribution of program uses and access in the interactive telecommunications system, especially during the first several years of the system's operation. The University will need to strike a balance between responding to eagerness to use the system and insuring that program and service offerings are carefully planned and implemented and have reasonable chances for acceptance and success. Excellence in production and equal opportunity for different segments of the society are essential to realization of the system's potential and fair distribution of its benefits.

Given rapid changes in technology and changing understanding of the potential for information technology applications in learning and public service, and given Maine's state and local needs, the University should continue a vigorous planning effort that looks beyond immediate uses of existing technology.

Because of the experimental nature of the medium, which requires the development of new skills and effective applications of new technologies, the University could make a substantial contribution to its own and other uses of the ITV system by engaging in joint venture developmental programs with nonprofit institutions and public agencies directed at improving facilities, equipment, and skills. This would require some subsidies by the University and investments by the other institutions and agencies involved in the joint ventures. The University System should seek national foundation grants and other funding sources to support the developmental effort.

The development of a long-term, public use, interactive telecommunications system should include provisions for self-supporting fees and other revenue sources to insure its financial viability.

### B. Collaborative Possibilities for the Interactive Telecommunications System

If, as the Commission anticipates, the demand for expanded telecommunications and information technology systems grows beyond the initial academic programs and the supplemental

applications accommodated by the existing capacity of the University system, it will be necessary for the University and its collaborators to deal with the substantial institutional challenges in facilitating, organizing, funding and managing the broader system or systems required. The Commission recommends that the University System, possibly using the suggested successor commission or committee, explore a consortium and other models for such a collaborative effort.

### C. Advisory Committee

The Commission recommends that the Chancellor appoint a policy advisory committee to continue the work begun by this Commission. The University System and the State can benefit from an ongoing interchange between members of the University community and representatives of other institutions, agencies and groups on planning, development and application of information technology to learning and public service. We believe the sharing of ideas, information and critical assessments can contribute substantially to the quality of the University's program and to public appreciation and effective use of these technologies.

An advisory committee should include representatives of local as well as statewide interests. We recommend that such a body not only be called on for general advice, but that it be given responsibility for stimulating or providing leadership in the experimentation and evaluation of developmental uses of information technology, recommending criteria for measuring the effectiveness of internal and external uses of the technology and criteria for decisions on expansion of the ITV system and other systems applications. The commission or committee could also advise on selection of IT system uses. We recognize that the success of such an arrangement would depend on whether the Chancellor and University Board of Trustees found it useful and the degree to which members of the advisory body were committed to the undertaking.

## Appendix A

### BACKGROUND INFORMATION

The Commission met eight times. All but the first of those meetings were conducted by teleconference, using the facilities of the University's interactive telecommunications network. Most of the teleconference sessions were between the University of Maine at Augusta and the Maine Public Broadcasting Network facilities in Bangor. The University of Southern Maine and its off campus site in Sanford were also used.

Members responded to the consultant's questionnaires, discussed their own perspectives on uses of information technologies, read materials obtained by the consultant and heard presentations on various aspects of information technology applications. Presenters included: President Connick, speaking on the Community College of Maine and the IT system; University of Maine System Vice Chancellor William Sullivan, briefing the Commission on the UMS Telecommunications Committee; Jack Davidson, Director of Engineering, MPBN, speaking on the IT system; James Pendleton, professor of geology at the University of Southern Maine, discussing his experience teaching on the IT system and providing a class demonstration; and Elaine Albright, Director of The University of Maine Fogler Library, demonstrating and discussing the University's URSUS (University Resources Serving Users State-wide) automated library system.

Members were represented by alternates at several Commission meetings. Greg Scott, Jack Bryant and Greg Johnson represented Commissioner Bither at different sessions. Scott McNeil represented Ms. Reuthe. Stephen Gove represented Mr. Lockwood.

Commission members spent considerable time in meetings and in interviews with the Commission chairman and consultant exploring potential applications of the system that would be of particular interest to their constituencies or that they considered important to the state as a whole. The following sections present interests and concerns expressed by particular constituencies, especially in relation to priority uses:

#### 1. Public Schools

Department of Educational and Cultural Services Commissioner Eve Bither called attention to the fact that Maine's educational needs are exaggerated by distances. She noted, for example, that a two hour session for DECS mathematics consultants at Presque Isle schools consumes one and a half days of time under present circumstances. She sees in the telecommunications system a way to multiply fifty times the kinds of advice and assistance in new techniques of teaching and learning that can be made available to teachers. Both consultants and teacher training programs can make good use of the system.

Ten thousand teachers and administrators in the public school systems need training in special education in order to fulfill a state requirement that is mandated for completion within five years.

Maine is the fifth best state in terms of ratio of teachers to students, but it has a low percentage (28%) of teachers with masters degrees, compared with the national average of 58%. Similarly, problems for administrators need additional graduate education opportunities. The telecommunications system can help both groups.

Ms. Bither connected the need for more education on international relationships, foreign cultures, and foreign languages and the potential uses of the telecommunications system. She believes in-service training for foreign language teachers in Russian, Japanese, and Chinese, where there is a shortage of qualified teachers, and direct classroom instruction are both suited to telecommunications delivery.

The telecommunications system and information technology applications can support the Aspirations program by helping students to broaden their horizons geographically and educationally. Ms. Bither noted the opportunity, for example, for high school students to talk directly with college students, using the interactive telecommunications system. She also noted that parents could come into local schools and, using the IT system, talk directly with experts on student aid programs and applications. Some of the obstacles to students and families considering education beyond high school would then be removed.

Ms. Bither also saw a need for more training in early childhood education. The many families in which both parents work -- 63% of mothers with children are now working and the percentage is expected to increase -- need child care that is not simply custodial. Therefore, there are needs to educate families on developmentally appropriate child care and to provide expanded training for childhood education programs like Head Start. Since transportation is a major problem for working parents and many of those involved in the early childhood programs, the telecommunications system would be of significant value in overcoming barriers to education and training opportunities. She thought there might be federal funding of such programs.

Ms. Bither advocated pursuing developmental programs (e.g., the federal Star Schools project) that involve teachers in the preparation and implementation of new learning techniques. She considers Maine unique in its readiness to use the telecommunications system and related information technologies.

Ms. Bither said the critical issue in all the potential applications and development of information technology systems would be quality. She stressed the importance of first impressions of classes taught on the medium. Therefore, she thought it important to do a few things extremely well, rather than pushing for immediate broadcast applications. Citing the multiple talent requirements for using the medium effectively, she said support staff are needed in the Department as well as in the University System.

## **2. Maine Vocational Technical Institutes**

Executive Director Audni Miller-Beach reports strong interest among a number of faculty members in the several VTIs, particularly in areas of statewide concern such as training for electricians. The VTIs wish to become sending as well as receiving sites, participating as full partners in using the system.

Ms. Miller-Beach saw important links with two general themes expressed by Commission members: support for the Aspirations programs for secondary students and opportunities for providing in-house training for business and industry.

Ms. Miller-Beach, as did other members of the Commission, said that much staff development would be needed to use the system and in working out decisions on core curriculum, selective programs and potential internal uses. The technology can be threatening to the sense of identity of faculty members and individual Institutes. General education programs at the Institutes feel most at risk, and there is some fear of inter-Institute competition. Faculty members must be helped through

the change process triggered by use of telecommunications. They must be assisted in adapting to use of the technology and in understanding the implications for changes in curriculum and institutional relationships.

Ms. Miller-Beach said the VTIs were moving slowly on other information technology applications such as computer assisted instruction and preferred to work in collaboration with other institutions in developing and using such techniques.

Ms. Miller-Beach stressed short-term emphasis on programs that had a promise of success. She said staff for coordination and support was imperative. In the longer term participating institutions must have access to the system and have a part in governance of the system. She coupled that observation with the importance of having financial investments from members of any user consortium.

### **3. Private Educational Institutions**

Among the possible users of the System's telecommunications facilities are the private institutions of higher learning in the state. Dr. Cotter, President of Colby College, is a member of the Commission. Discussions have also been held with the presidents of some of the other institutions, including Husson College and Thomas College and the University of New England.

Given their pattern of residential students and on-campus instruction, colleges such as Bates, Bowdoin and Colby, are not at this point likely to be interested in using interactive television for classes. Only as technology changes, becomes less costly, and perhaps more user-friendly, would it be feasible for them to undertake such a mode of instruction. Of more immediate significance for these three colleges is the information exchange potential dealing with the libraries and the computerization of the catalogues. This capability is virtually completely "on line" within the university system; the three colleges are in various stages of developing a common system for their libraries. Presumably these two networks will be compatible and would eventually allow for complete exchange of information among the several collections. Not the least advantage of this exchange would be the capability of scanning periodical tables of contents and the consequent "faxing" of articles from one institution to the other.

Higher education institutions such as Husson and Thomas Colleges and the University of New England have a more immediate potential for using the System interactive telecommunications network, inasmuch as all three carry on extensions courses and degree programs off-campus. For instance, Husson College, located in Bangor, offers business programs at sites in Portland, Ellsworth, Caribou, and three other locations. All three schools could obviously benefit if they could televise courses from their main campus to the off-campus sites. For all of them the capital costs in establishing their studio facility and transmitting capability at the campus would be a significant factor. In some cases it might be possible, although not likely, that they could use studio/classroom facilities of the University itself. A greater concern for those institutions, however, is that the availability of time on the network might be short-term. There is a natural fear that as the University System's needs increase, all the available time will be taken up by University programming. Without some guarantee for the long-term, the small colleges may well be hesitant to make the financial and other commitments that would be involved.

The smaller educational institutions, with their very limited library facilities, have a strong desire to link with the computer catalogue system being developed. However there are serious problems with that prospective linkage. In most cases, use of the system would flow from the System to the college. The University must ask what its obligation is to provide library services to private institutions in the absence of reciprocal services.



The smaller colleges are also interested in the use of the telecommunications system for lectures, concerts and other cultural events for their students. Their ability to attract and support distinguished artists and lecturers is limited. Television, including the interactive features of the University's system, could promote wider availability of lectures, concerts, dance, theater, and art exhibits. Questions have been raised as to whether the University should take the lead role in such an arrangement, what governance would be appropriate, how access would be controlled, and whether continued availability of the service could be guaranteed, but the potential has great appeal for University campuses as well as the private colleges.

Apart from the use of the telecommunications network to enrich programs within the private schools, there may well be some outreach activities sponsored by those institutions that would warrant cooperative action by the University. A case in point is the Area Health Education Center (AHEC) program operated by the University of New England under a federal grant. The AHEC is targeted to the nine western and northern counties of Maine (Oxford, Franklin, Somerset, Piscataquis, Penobscot, Waldo, Hancock, Washington and Aroostook). It is designed to alleviate health provider shortages in those rural areas. Training efforts directed to enhance staff capability of delivering health services in the region is a most important component of the program and television can make a significant contribution to such training. In this case, the University's ability to use its IT system on a regional basis is an added advantage.

#### 4. Labor

Union leaders in Maine have a strong interest in making use of the interactive telecommunications system to develop cooperative labor and management programs on occupational safety. That subject was the highest on Commission member Charles O'Leary's list of priorities. He observed that the job safety issue has leaped in importance in the last several years, and Maine is particularly sensitive to its poor standing in national statistics. John Hanson, director of the Bureau of Labor Education (BLE) at the University of Maine, supported the proposal to have joint programs on occupational safety with employees and managers and stressed the importance of interactive programs.

A number of videotape instruction programs are available to teach job safety, but the BLE has found that workers and managers always have questions on how the lessons apply in local situations. BLE thought IT could answer the problem of getting participation, particularly from small companies that could not afford to send their workers and managers any distance to training sessions. BLE also saw the IT program as an asset in permitting questions and interactions with instructors and others to insure a local perspective.

Mr. O'Leary also expressed interest in using the system to conduct conferences on major public policy issues such as safety, child abuse, substance abuse, and AIDS.

Mr. O'Leary and Mr. Hanson also saw opportunities for programs involving the Maine Labor Group on Health, both in education and training and in conferences. They suggested possible public policy discussions in this area where different groups (labor, management, public agencies) would have an opportunity to air and discuss their differences. Presenting divergent opinions would inform Maine people about job safety enforcement, education, and engineering needs.

Both Mr. O'Leary and Mr. Hanson felt the IT system had great promise for education, training, and teleconferences, but they emphasized the importance of moving carefully in order to meet the very high expectations for the system. Noting the problems they had encountered with national satellite teleconferences, they recommended allowing time and resources for experimentation, ensuring

that the technical systems (video and audio) were working well, designing the settings to suit the occasions (classroom instruction, group meetings, etc.), and providing participants with technical assistance in preparing for the uses of the system. They also said it was important to have a knowledgeable, skillful facilitator for teleconferences. They recommended choosing subjects that participants feel strongly about.

Mr. Hanson suggested that those working on the inside of the system should be clear on the longer term objectives of the system and that those using the system should be helped to understand that teleconferences and learning through telecommunications are new and experimental in many ways; it is less than the Ringling Brothers Circus today, but it can become that with help and time and effort.

## 5. The Legislature

The Legislature expects to use the telecommunications system in several ways. Commission member John Bailey anticipates that the Legislature will want to conduct public hearings, both as interactive and non-interactive sessions. Using the system to bring hearings to citizens in their own communities would be consistent with the emphasis on increasing citizen access to the Legislature. Mr. Bailey has also suggested using the telecommunications system to support an electronic bulletin board that would increase access to status reports on legislation, texts of bills and hearing notices. It would give citizens a window on State government. He pointed out that electronic access could actually cut costs for the Legislature and for interested citizens. Citizens could gain access through their own computers or through computer terminals at schools, libraries, municipal or county buildings, and state regional offices.

Mr. Bailey also foresees opportunities for improved communications and coordination between the State executive and legislative branches and the University System. The telecommunications system should enable the System to act as a research agency for State government. It could also initiate shared appointments between University departments and State agencies by increasing opportunities for teleconferences and rapid exchanges of information. The current obstacles to improved communication between the University and State government are the lack of familiarity, time limitations and the cost of travel. The telecommunications system would help to eliminate all three obstacles. Information exchanges through the telecommunications system would also provide more efficient ways to tap information bases. The electronic highway would be a building block in more efficient management and application of information.

Senator Thomas Andrews expressed his strong interest in using the system to facilitate the Maine Studies Institute program, aimed at improving the curriculum for Maine studies in elementary and secondary schools and in expanding students' knowledge of other cultures. He believes government leaders can be effective teachers, using the facilities of the system and other information technology techniques. He suggested the possibility of using the system for debates, issues forums, and interstate and international conferences. In all of those areas, support from the University System is essential for effective use of the media. He related his interests to the efforts of the University to make teaching and learning more effective.

Senator Andrews also endorsed the proposal to use electronic bulletin boards for informing citizens about legislative activities, suggesting the possibility of electronic bulletin boards for legislators to communicate with their constituents. He supported the use of the system for public hearings, suggesting the possibility of expanding coverage through cable systems in communities around the state.

The conversation with Mr. Bailey and Senator Andrews led to the question of expansion of the telecommunications concept beyond the campus and outreach sites to broader distribution of programs of public interest, using cable systems. The possible expansion of the system and multiplication of users suggest the need for careful planning.

## **6. Executive Branch**

Commission member Charles Morrison identified a number of specific areas of interest for the executive branch of State government, starting with training programs for the State's far-flung work force. He suggested using the system for employee training programs, getting people ready for the workplace. He noted the costs in time and money for orientation and other training programs that could be saved by using the telecommunications system. Similar savings could be generated by holding meetings by teleconference. Those meetings could be intra- or interstate, involving, among others, the Governor and staff, and the Congressional delegation.

Mr. Morrison also emphasized the opportunities of communication between State agencies and counties, municipalities, nonprofit agencies, citizens groups and individuals. He thought State government could use the telecommunications system to transfer information to citizens on such questions as filling out a tax form. He pointed out how much more effective those instructions could be with visualization and the opportunity for interactive discussions. He thought broadcast public information programs, using the Maine Public Broadcasting Network (MPBN), and targeted programs on the IT system could be coordinated. He also suggested use of the systems for environmental, permitting and licensing interactive briefings and explanations for regulated groups. In general he thought virtually any department in State government could, by asking how it affects the public, identify areas in which the telecommunications system could enhance communication and information transfer. He said he thought health related programs might be the place to start.

Finally, Mr. Morrison suggested expanded use of the University's data base and information transfer systems, including development of software for data retrieval and analysis.

Mr. Morrison stressed the importance of having settings that are suited to the purpose of the program, whether it is an education session, a hearing, or a meeting. He also emphasized the importance of technical assistance to participants to help them get used to the system. He thought training is important to help people get comfortable with an unfamiliar technology with which they are not familiar.

Commission member Jean Mattimore emphasized the importance of costs in developing a telecommunications system beyond the University System program. She saw promise in a consortium or public corporation with authority to develop a broader system and stressed the importance of corporate or consortium member financial contributions. She noted that federal and state governments had supported development of the system to date. In the longer run, she felt, users must pay for the system. The State cannot be expected to foot the whole bill. She observed also that the University System could not be expected to continue to put more and more of its resources into expansion of a telecommunications system.

Ms. Mattimore recommended development of the system or systems in response to demand, not getting romanced by the "gee whiz" aspects of the program. She advocated further examination of how other states are dealing with the development of telecommunications systems. She emphasized steady development by practical steps, aimed at targets of opportunity.

## **7. Maine Development Foundation**

Commission member Henry Bourgeois sees the telecommunications system as a way to pull the state together, to help business people in Portland, for example, understand what it is like to do business in Presque Isle. He suggested the possibility of having a regular public policy forum on the system, sponsored by the Legislature, the Chamber of Commerce, and Industry and the Maine Development Foundation, and using participants from different parts of the state to discuss current issues. He would aim to have such forums once a week, focused on issues of local pertinence. He thought such a program would improve intrastate communication and help develop knowledge and critical thinking about issues.

Mr. Bourgeois also recommended that statewide study and advisory commissions use the system regularly on such issues as transportation and infrastructure, health care access, etc.

He expressed a strong interest in using the telecommunications system for promoting aspirations for education among young people.

In discussing the potential uses of the system Mr. Bourgeois called attention to the need for technical skills, prudent development of a schedule, the importance of effective moderators and facilitators, and appropriate facilities. He said the system would not happen by itself. Making the programs work -- exciting as the possibilities are -- will require leadership and staff work.

## **8. Private Business**

Commission member Elizabeth Reuthe observed that the telecommunications system and required support are not cheap. In the private sector it would be necessary to capture the imagination of management about their critical needs. For her, the major issue is competition in a world environment. That, in turn, means effective education and training of employees, supervisors, and management, especially in the development of team skills. Ms. Reuthe stressed the importance of investing in people through education and training: "people are our only asset that appreciates." She said she thought the telecommunications system, wisely used, could be very effective in expanding training in team skills in companies throughout the state, an effort she considers essential to Maine's future economic well-being. She would concentrate on using the telecommunications system to train trainers.

## **9. Municipal Government**

Commission member Edward Barrett expressed a strong interest in the availability of graduate courses for municipal staff members. He thought a number of municipal managers throughout the state would be interested in the possibilities of using the system to study for a Master in Public Administration degree.

He echoed Mr. Bailey's suggestion for a State electronic bulletin board on public hearings, etc. He noted that he had been considering such an arrangement for citizens at the local level. He also suggested the possibility of making available schedules, bills and legislative status reports by electronic bulletin board as a substitute for the current mailing system. He endorsed the concept of public hearings on the telecommunications system and the possibility of hearings and interactive conferences

for interested and affected groups when the Governor is developing his legislative program. He thought both the legislative and executive branches could use the system for training sessions on public programs.

He suggested expanding the University library electronic catalogue to private colleges, companies and other organizations as "affiliates" who might pay for the service.

He thought the Maine Municipal Association and its members would be interested in using the system for training, teleconferencing and briefing sessions on legislative and regulatory issues.

Mr. Barrett emphasized the importance of providing training and support for those using the IT system, insuring appropriate physical settings for different kinds of uses. He said it was important to identify the groups that are likely to benefit from using the system and then assist them. The University System needs to be a catalyst and support, or the system won't happen. He also noted that, as the system gets used, it will be necessary to look at the expansion requirements of the ITV system and to plan for that expansion. He saw the potential need for an institutional framework that goes beyond the existing arrangements.

### Maine Municipal Association

Stephen Gove, the Maine Municipal Association's Director of Communications and Member Services, submitted a memorandum to the Commission, presenting the Association's "suggested uses of the University's telecommunications system." The text of his memorandum follows:

The Association has a great interest in the development of this important technology and its potential uses for the strengthening of local government and the enhancement of citizen participation at the state and local levels.

One of MMA's primary missions is to improve the quality of local government and provide local elected and appointed officials with the information and skills needed to undertake their responsibilities. To this end, the Association commits a great deal of its time and resources to training. MMA conducts a variety of training programs for elected and appointed municipal officials and coordinates the training offered by its affiliate groups of municipal managers, clerks, tax collectors, treasurers, and other municipal professionals.

In 1988, the Association conducted and coordinated over 30 training programs attended by nearly 4,000 municipal officials throughout the state. One of MMA's most successful training programs is conducted for newly elected officials.

MMA offers its municipal members group self-insured programs to meet their statutory obligation for Workers' Compensation insurance coverage and to cover their property and casualty liability exposures. Both the MMA Workers' Compensation Fund and Property and Casualty Risk Pool Program employ active loss prevention and risk management programs. These programs offer training to municipal employees in safety and loss prevention. In addition, MMA administers the Maine Municipal Employees Health Trust, a medical insurance plan covering nearly 7,000 municipal employees throughout the state. The Health Trust program offers an extensive health education and promotion program aimed at reducing employee health risk factors and changing unhealthy life-styles. The telecommunications system could be used for these loss prevention and wellness programs.

The Association is very interested in the use of the interactive telecommunications system for all its training programs. The system would allow MMA to reach a greater number of municipal officials and municipal employees in a more cost efficient manner.

MMA is also interested in potential uses of the telecommunications systems for its legislative and regulatory policy development and communications processes. The system would allow for broader input from municipal officials in the policy development process and the opportunity to conduct briefings on state and federal issues of concern to municipal officials. The system would work well for the Association's 69-member Legislative Policy Committee, the Governor's Municipal Advisory Council and the Congressional-Municipal Advisory Councils.

MMA endorses proposed uses of the IT system as an "electronic bulletin board" for legislative hearings, updates on the status of bills and the activities of regulatory agencies and special study commissions.

MMA hopes that the University or an appropriate system management organization will provide the technical support and guidance needed to ensure for the best uses of the system.

## 10. Health Care

Mr. Fredericks sees many opportunities for education and training of health professionals. He cited, for example, the need to provide training to upgrade certified nurse assistants (CNA) to licensed practical nurses (LPN), and to offer education for LPNs to advance to the status of registered nurses (RN). Other critical areas for education and training for health care institutions include physical therapists, laboratory technicians, medical records technology, speech and occupational therapy, pharmacists, and ultrasonography. Health care administrators would like to have the training for upgrading provided on a part-time basis in cooperation with employers and consistent with the life-style requirements of employees, especially in more rural areas. Interactive telecommunications could be an important component of such a flexible education and training program.

Increases in skill levels are also essential in hospitals and other health care institutions. New requirements are being imposed steadily, as in the case of the Joint Commission on Accreditation of Health Care Organizations (JCAHO). Mr. Fredericks said he agreed heartily with Mr. O'Leary on the need for training on AIDS, substance abuse, child abuse and work safety. All of those kinds of training could be provided through the use of information technology. He also noted training needs related to the Occupational Health and Safety Administration (OSHA) requirements, confidentiality of patient information, cardio-pulmonary resuscitation, basic and advanced life support, emergency medical services (EMS), management, hazardous materials handling (fire, police, and hospital) and coordination of HAZMAT (hazardous materials) drills.

He said he thought continuing medical education could benefit from sharing programs, curtailing costs and improving quality.

The interactive telecommunications system could be used for meetings and hearings on such topics as public education on health, health care financing.

Programs to educate patients about their own medical problems is another area of interest for telecommunications applications, so long as the programs are professionally appropriate and well produced. Mr. Fredericks suggested the possibility of shared planning and development of new programs as well as using good programs already produced. He noted that there are videotapes available for review on treatments, procedures, and updates on techniques.

Mr. Fredericks expressed particular interest in expanded access to data bases for information on such issues as disposal of infectious materials. It would also be valuable to have ready access to JCAHO outcome criteria for diagnoses and treatment modalities. He thought it would be valuable to use information systems for access to hospital data comparisons, such as the American Hospital Association's MONITREND, if security and confidentiality problems could be overcome. Such data base access could also be a management aid in the financial area. He expressed an interest in a health electronic bulletin board.

Mr. Fredericks supported expansion of the system beyond the traditional academic arena, but emphasized that users should pay for the service.

## **11. University of Maine System**

President Connick has been involved in extensive inquiries into the development of distance learning programs throughout the United States as part of his development of the Community College of Maine and the Interactive Telecommunications system for the University of Maine System.

His principal concern is to move beyond fascination with the technology to use it in comprehensive ways to reform education. He believes the technology can be used to improve the quality of education and to alleviate some of the problems of the projected shortage of teachers, especially at the elementary and secondary level. He stressed the importance of planning and support from senior administration, as well as training of staff.

Mr. Connick also noted the growing interest of institutions and businesses in reform of education and training programs that would place a heavy emphasis on uses of information technology.

In light of the demands, Mr. Connick said it was important to place the issues of planning, training and organization at the front end of any development program. He said all users would require orientation, technical assistance and training. He also said that users outside the University would need to have assurance of continuity in the availability of telecommunications and other information technology services. They would also have to feel part of the system. In a sense, the users would have to own the system, paying for the services. It would also be essential to have the system managed by the University System, since it has the expertise to do so.

## Appendix B

### **COMMUNITY COLLEGE OF MAINE/TELECOMMUNICATIONS SYSTEM**

The University of Maine System's interactive telecommunications network was designed for and is being developed to serve the Community College of Maine, the System's seven campuses, off-campus centers, the Maine System of Vocational Technical Institutes, the Maine Maritime Academy, and public elementary and secondary schools throughout the state. Ultimately, the network is intended to reach 250 locations in the state.

The President of the University of Maine at Augusta is responsible for development and operation of the CCM/T program. The Academic Council of the Community College of Maine/Telecommunications System, with representatives from each of the campuses, is the academic planning body. The Maine Public Broadcasting Network is designing and building the system.

The University campuses will be linked by a fiber optic spine that will allow every campus to originate programs. Each campus will be able to transmit courses to the off-campus centers and high school sites in its region or to all locations throughout the state. Several off-campus centers (Sanford, Lewiston/Auburn, Bath/Brunswick and Thomaston) will also have transmission capability when the network is complete.

The fiber optic lines can carry three channels of full duplex video, audio, and data. Instructional Television Fixed Services (ITFS) microwave transmitters will carry two channels of video, audio, and data to multiple off-campus locations. An audio return system will allow students at remote sites to interact with instructors. Examinations, syllabi, data, and other materials can be distributed electronically or by mail.

Each originating classroom will be equipped with three video cameras: one focused on the instructor, one on the class, and one, an overhead unit, used by the instructor for graphic materials. A control room outside the classroom will be equipped to support the use of slides, videotapes and other audio/visual techniques. Each receiving classroom will have at least one television monitor, a videocassette recorder, and microphones or telephone sets for communication with the instructor.

A total of fifty locations will be linked by September 1989. Eleven off-campus centers will be operating: Saco, Sanford, Lewiston, Bath/Brunswick, Thomaston, Rumford/Mexico, Calais, Ellsworth, East Millinocket, Houlton, and Limestone. A center at the Fort Kent campus will serve the St. John Valley. Professional staff will administer those centers, providing academic and student support services such as advising, career counseling, regional educational needs assessment, testing, and developmental coursework.

Forty college and vocational courses are being planned for offering in the inaugural year. High school students will be able to take college level courses or secondary level courses provided by the Maine Department of Educational and Cultural Services.

A map of the initial system follows.



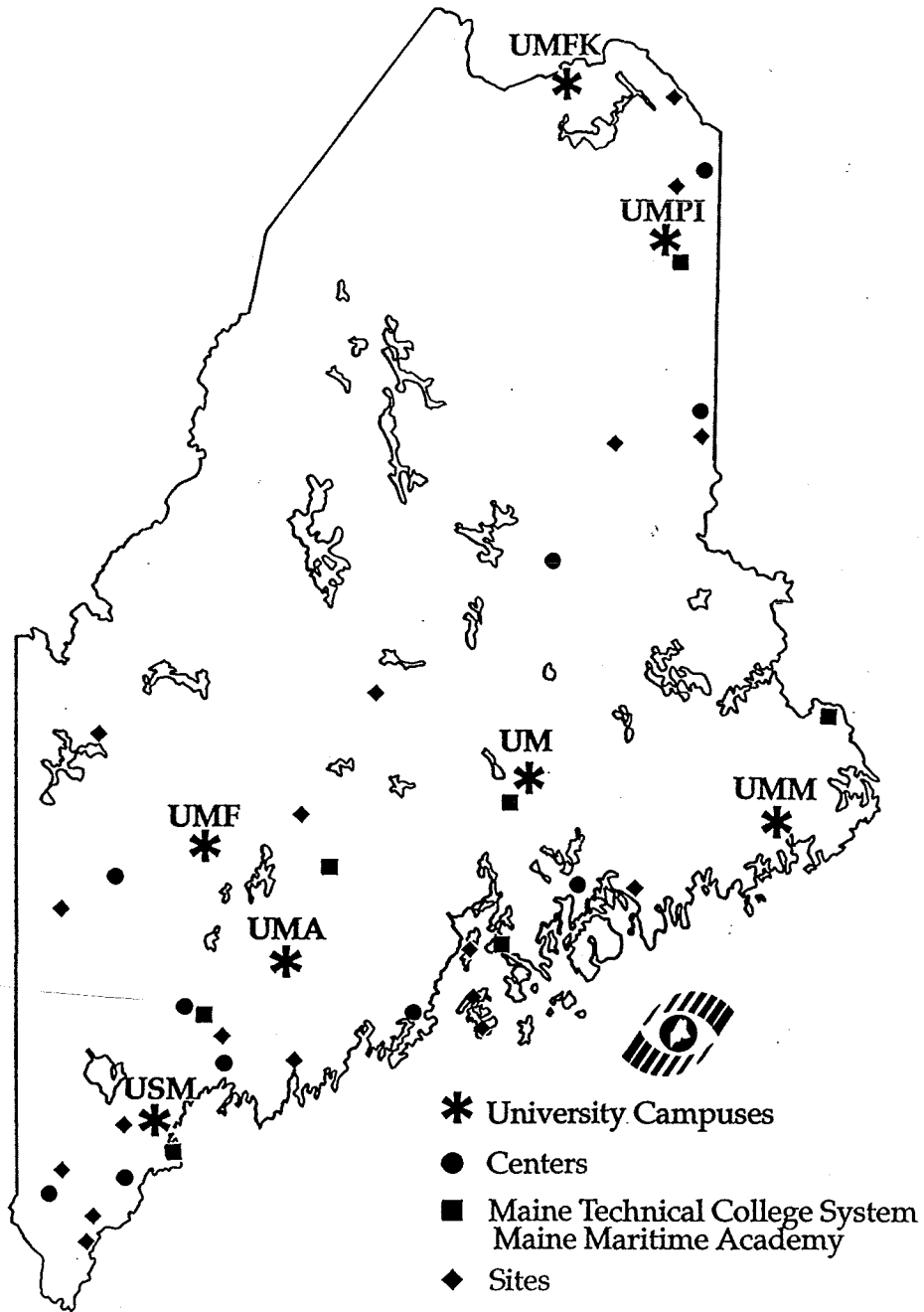
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UNIVERSITY OF MAINE SYSTEM

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*Community College of Maine*

Site Plan for the  
Interactive Telecommunications System  
*September 1989*



## Appendix C

### **URSUS (UNIVERSITY RESOURCES SERVING USERS STATE-WIDE)**

URSUS is the name of the University of Maine System's online public access library catalogue and circulation control services. URSUS provides faculty, students, and staff with a dramatic increase in access to the library resources of the University of Maine System. At the same time it enhances efficiency and accuracy in locating and using library materials. The initial database load includes over 450,000 titles and 600,000 volumes. Faculty, students, and staff are able to obtain information on library holdings at any of the campuses through campus library computer terminals, or through office and off-campus computers with modems.

URSUS is a "user friendly" system that guides the user with on screen prompts. Searches for library materials can be made by author, title, subject, Library of Congress call number, Dewey or other call numbers, document or report numbers, or words in the title being sought. The user can literally browse through the catalogues of all the campuses at the same time, obtaining information on library materials, their location, and their status -- all without physically going to each of the libraries in the system.

The University of Maine System, with leadership from Elaine Albright, Director of University of Maine Fogler Library, worked with Innovative Interfaces, Inc., Berkeley, California, and Digital Equipment Corporation to develop INNOPAC, the software for URSUS. Operating on Digital hardware, INNOPAC is the first Digital-based Innovative Interfaces installation to provide automated services linking eight campus libraries.

The University of Maine System Computing and Data Processing Center (CAPS) provides technical support for URSUS. The initial installation, started in June 1988, will support over 150 simultaneous users system-wide. Access to the VAX computer at CAPS on the University of Maine campus will be available by existing switches and dial-up lines for campus buildings and offices, from off-campus.

Further information on URSUS can be obtained by calling the Systems Librarian at 207/581-1658.

**COMMITTEE ON EDUCATION AND CULTURAL SERVICES**

**Materials Distributed**

**8/19 - 9/1**

pursue new and innovative strategies to raise the schools' performance. (Section 7)

- The State Board will establish standards for assessing the performance of school districts. If a school district consistently fails to meet its improvement goals, the superintendent and board members may be removed and replaced by new members appointed by the State Board to serve until the district's performance improves. (Section 10)

#### Professional Development

- There will be increased efforts to provide professional development opportunities for teachers and other certified employees. (Section 12)

#### School-based Decision Making

- By January, 1991, each local board must have a policy for school-based decision making; by the 1991-92 school year, each district must have at least one school with school-based decision making; each participating school must have a council composed of parents, teachers, and an administrator, to adopt policies relating to instructional materials, personnel, curriculum, extracurricular programs, and other aspects of school management. School-based decision making must be implemented at any school where two-thirds of the faculty vote for it; all schools must participate by July, 1996; with approval, schools may implement different models for school-based decision making, or may qualify for an exemption. (Section 14)

#### Preschool Programs

- Preschool education programs are to be provided for four-year olds who are determined to be at risk of educational failure and for as many other four-year-olds as possible. Upon approval, schools which lack facilities may delay this program until the 1991-92 school year. (Section 16)
- Any handicapped child who is three or four years of age or may become five after October 1 will be eligible for free and appropriate preschool education and related services. (Section 17)

#### Family Resource Centers and Youth Services Centers

- Plans will be developed for family resource centers and youth services centers to be started over the next five years in or near certain schools; the centers will provide services to students and families in areas where at least 20 percent of the students qualify for free school meals. The family resource centers will be in or near elementary schools and the youth services centers will be in or near schools serving students 12 years of age or older. (Section 18)

#### Technology in Education

- There will be greater emphasis on the use of technology in public education; the Council on Education Technology will make recommendations for a five-year plan for purchasing, developing and using technology in public education. A program will assist teachers in purchasing and using personal computers. This program is to be fully implemented by 1992-93. (Sections 19-23)

#### Primary School Reform

- A primary school program will be started to replace that part of elementary school from the beginning of school to the beginning of fourth grade; successful completion of the program will be required before a student is allowed to enter fourth grade. (Section 25)

#### Kindergarten

- Kindergarten must be provided at least one-half day, five days a week, for a full school year for each kindergarten pupil. (Section 94)

#### Continuing Education for Students

- Schools must provide continuing education, including extended days, extended weeks, or extended years for students who need additional time for instruction. Local school districts are to receive state grants for continuing education. (Section 27)

#### Age for Compulsory School Attendance

- The Commissioner of Education will make a recommendation to the 1992 General Assembly regarding raising the age for compulsory school attendance from 16 to 18. (Section 29)

## Governance

### State Board for Elementary and Secondary Education

- This new board will consist of 11 members appointed by the Governor, confirmed by House and Senate. Membership will include representation from each of the seven Supreme Court districts and four at-large members. (Section 35)
- The Board will be responsible for adopting policies by which the Department of Education is to be governed. (Section 35)
- The board is responsible for hiring the Commissioner of Education. (Section 36)

### Superintendent of Public Instruction

- Superintendent of Public Instruction is the chief state school officer until the close of business on December 31, 1990, at which time all duties presently assigned are removed. (Section 40)
- The Superintendent's salary is reduced to \$3,000 annually, effective January 6, 1992. (Section 40)

### Commissioner of Education

- A temporary Education Management Selection Commission is created to conduct a national search for the first Commissioner of Education. The commission consists of persons appointed by the Governor and the legislative leaders. Its decision must be unanimous. (Section 36)
- The first Commissioner of Education is to be appointed to assume duties as the chief state school officer on January 1, 1991. (Section 39)
- The Commissioner of Education is the executive officer of the State Board for Elementary and Secondary Education, implementing educational policies and directing all persons employed in the Department of Education. (Section 41)

### Department of Education

- All positions in the Department of Education are abolished, and all employees terminated at the close of business on June 30, 1991. The Department will be reorganized as of July 1, 1991, with new positions and qualifications established by the Commissioner of Education. Current Department employees may be rehired. (Section 42)

- The reorganized Department will provide services including assistance with curriculum design, school administration and finance, monitoring the management of school districts, and research and planning. (Section 43)
- Regional service centers are to be established in 1992 with a primary focus on professional development of school district employees. (Section 44)
- The Department is to establish a Principals' Assessment Center which will administer the process that a principal must complete to be qualified for initial or continued employment as a principal. (Section 45)
- The Department is to establish a Superintendents' Training Program and Assessment Center to provide a training process in certain subjects that a superintendent must successfully complete to be qualified for initial or continued employment. (Section 46)

### State Board for Adult and Technical Education

- The current State Board for Adult, Vocational Education, and Vocational Rehabilitation will retain its present composition and will be transferred under its new name to the new Workforce Development Cabinet. (House Bill 814)

### Certification Authority

- The Education Professional Standards Board is created to establish requirements for obtaining and maintaining a teaching certificate, to evaluate college and school district programs for preparing school personnel, and to issue and revoke teaching certificates (Sections 56-57). The Board will also implement an alternative certification program, administer the principal testing and internship program, and administer the adjunct instructor certificate program. (Sections 58-61)

### Local Boards of Education

- School board members in county school districts will continue to be elected from divisions, and in independent school districts the members of the school board will continue to be elected from the entire district. (Section 69)
- After July, 1990, a person elected to a local board must have at least a high school education or GED certificate. (Section 71)

- Except in certain limited circumstances, after July, 1990, a person will be ineligible for election to a local board if he has a relative employed by the school district. (Section 71)
- Board members are prohibited from attempting to influence the hiring of any school employee, except the superintendent and the school board attorney. (Section 71)
- The local superintendent is appointed by the local board after the board receives the recommendations of a screening committee consisting of two teachers, one board member, one principal, and one parent. The local board is not bound by the committee's recommendation. (Sections 75-76)
- Campaign contributions to local board candidates' races are limited to \$100 from an individual and \$200 from a PAC. (Section 73)
- Candidates for local school board are prohibited from soliciting or accepting any money or services from any employee of the school district. (Section 79)

#### Local Superintendent

- The superintendent is responsible for all personnel actions, including hiring, transfer, dismissal, suspension, promotion, and demotion, and for reporting the actions to the local board. (Section 90)
- The local superintendent's employment contract may be terminated by the local board only upon approval of the Commissioner of Education. (Section 75)
- Except in certain limited circumstances, effective July 1, 1991, the superintendent is prohibited from hiring his relatives and board members' relatives to work for the local district. Also, vacancies in the local districts must be reported to the Department of Education and, unless a waiver is obtained under certain conditions, they must be posted in the board office for 30 days prior to filling the position. (Section 78)

#### School Employees

- Except in certain limited circumstances, relatives of a principal cannot be employed in the principal's school. (Section 78)
- School district employees are prohibited from activity in school board campaigns. (Section 79)

- All classified school employees initially hired after the effective date of the Education Reform Act must have a high school degree, GED certificate, or show progress toward obtaining a GED. (Section 54)
- The law requiring that certain procedures be followed in demoting administrative personnel is amended to exclude principals from its coverage. (Sections 80 & 283)
- The procedure for terminating a teacher's contract for cause has been changed. Now the superintendent will notify the local board of the dismissal with cause. If the dismissal is appealed, the Commissioner of Education will appoint a three-member tribunal, including one teacher, one administrator, and a lay person, to hear and decide the appeal (instead of its being decided by the local board of education). All three members of the tribunal must reside outside the county. The decision of the tribunal may be appealed on the record to the circuit court. (Section 85)

#### ✱ Education Accountability Office

- The Office of Education Accountability is established under the Legislative Research Commission (LRC) as an independent arm of the legislature. The purpose of the office is to monitor the education system and implementation of the Education Reform Act; review the state's system of school finance; verify accuracy of school district and state performance; investigate unresolved allegations of wrongdoing at the state, regional or district level; and, report to the LRC. (Section 92)

#### Finance

##### State Support

- The Support Education Excellence in Kentucky (SEEK) fund is established.
  1. A guaranteed amount of money per pupil is provided throughout Kentucky. (Sections 94, 95, 96) In 1990-91, the amount is \$2,305 per pupil; in 1991-92, it is \$2,420 per pupil. (House Bill 799)
  2. Calculation of SEEK funding is based on the previous year's average daily attendance. (Section 97)

# WHAT WORK REQUIRES OF SCHOOLS

★ ★ ★ ★ ★  
A SCANS REPORT FOR  
AMERICA 2000

THE SECRETARY'S COMMISSION ON ACHIEVING NECESSARY SKILLS  
U.S. DEPARTMENT OF LABOR





# TABLE OF CONTENTS

LETTER TO PARENTS, EMPLOYERS, AND EDUCATORS	v
LETTER OF TRANSMITTAL	xiii
EXECUTIVE SUMMARY	xv
REPORT	
I. HIGH-PERFORMANCE WORK AND SCHOOLS	1
II. WHAT IS WORK LIKE TODAY?	7
III. IMPLICATIONS FOR LEARNING	19
APPENDICES	
A. ACKNOWLEDGMENTS	A-1
B. DEFINITIONS: THE COMPETENCIES	B-1
C. DEFINITIONS: THE FOUNDATION	C-1
D. JOB ANALYSIS	D-1
FIGURES	
A. CHARACTERISTICS OF TODAY'S AND TOMORROW'S WORKPLACE	3
B. FIVE COMPETENCIES	12
C. A THREE-PART FOUNDATION	16
D. WORKPLACE KNOW-HOW: WHAT WORK REQUIRES OF SCHOOLS	21
E. CHARACTERISTICS OF TODAY'S AND TOMORROW'S SCHOOLS	22
F. SERVICE KNOW-HOW: LEVEL OF COMPETENCE EXPECTED FOR ENTRY ON A CAREER LADDER	26
G. MANUFACTURING KNOW-HOW: LEVEL OF COMPETENCE EXPECTED FOR ENTRY ON A CAREER LADDER	28





# A LETTER TO PARENTS, EMPLOYERS, AND EDUCATORS

## FROM THE SECRETARY OF LABOR AND THE SECRETARY'S COMMISSION ON ACHIEVING NECESSARY SKILLS

We, your Secretary of Labor and members of the Secretary's Commission on Achieving Necessary Skills (SCANS), write as concerned representatives of the nation's schools, businesses, unions, and government. We have completed our initial examination of changes in the world of work and the implications of those changes for learning.

We understand that schools do more than simply prepare people to make a living. They prepare people to live full lives—to participate in their communities, to raise families, and to enjoy the leisure that is the fruit of their labor. A solid education is its own reward.

This report concerns only one part of that education, the part that involves how schools prepare young people for work. It does not deal with other, equally important, concerns that are also the proper responsibility of our educators. We do not want to be misinterpreted. We are not calling for a narrow work-focused education. Our future demands more.

For most of this century, as this nation took its goods and know-how to the world, America did not have to worry about competition from abroad. At home, the technology of mass production emphasized discipline to the assembly line. Today, the demands on business and workers are different. Firms must meet world class standards and so must workers. Employers seek adaptability and the ability to learn and work in teams.

This change has many implications. We focus on one: more than half of our young people leave school without the knowledge or foundation required to find and hold a good job. Unless all of us work to turn this situation around, these young people, and those who employ them, will pay a very high price. Low skills lead to low wages and low profits. Many of these youth will never be able to earn a decent living. And, in the long run, this will damage severely the quality of life everyone hopes to enjoy. None of us, and none of you, wants to stand by while this happens.

The Commission spent 12 months talking to business owners, to public employers, to the people who manage employees daily, to union officials, and to workers on the line and at their desks. We have talked to them in their stores, shops, government offices, and manufacturing facilities. Their message to us was the same across the country and in every kind of job: good jobs depend on people who can put knowledge to work. New workers must be creative and responsible problem solvers and have the skills and attitudes on which employers can build. Traditional jobs are changing and new jobs are created everyday. High paying but unskilled jobs are disappearing. Employers and employees share the belief that all workplaces must "work smarter."

From these conversations, we have drawn three major conclusions:

**All American high school students must develop a new set of competencies and foundation skills if they are to enjoy a productive, full, and satisfying life.** Whether they go next to work, apprenticeship, the armed services, or college, all young Americans should leave high school with the know-how they need to make their way in the world. In this document, know-how has two parts: competence and a foundation of skills and personal qualities. Less than one-half of our young people possess it. This know-how will be important to those who will be developing the World Class Standards for educational performance called for by President Bush in April 1991 when he announced a new education strategy, "AMERICA 2000."

**The qualities of high performance that today characterize our most competitive companies must become the standard for the vast majority of our companies, large and small, local and global.** By "high performance" we mean work settings relentlessly committed to excellence, product quality, and customer satisfaction. These goals are pursued by combining technology and people in new ways. Decisions must be made closer to the frontline and draw upon the abilities of workers to think creatively and solve problems. Above all, these goals depend on people—on managers committed to high performance and to the competence of their workforce and on responsible employees comfortable with technology and complex systems, skilled as members of teams, and with a passion for continuous learning.

**The nation's schools must be transformed into high-performance organizations in their own right.** Despite a decade of reform efforts,

we can demonstrate little improvement in student achievement. We are failing to develop the full academic abilities of most students and utterly failing the majority of poor, disadvantaged, and minority youngsters. By transforming the nation's schools into high-performance organizations, we mean schools relentlessly committed to producing skilled graduates as the norm, not the exception. That, in fact, is the goal of President Bush's education strategy.

But, these convictions remain abstract issues unless you can understand them in the world of your child's education, your business needs, and the standards of your school. This document lays out what these convictions mean in practice, on the job and in the school. Most important, it defines what you must do to protect the future of your child, your business, and the health of American education.

This report identifies five competencies, which, in conjunction with a three-part foundation of skills and personal qualities, lie at the heart of job performance today. (See page vii.) These eight areas represent essential preparation for all students, both those going directly to work and those planning further education. All eight must be an integral part of every young person's school life.

Seldom does one of these eight components stand alone in job performance. They are highly integrated, and most tasks require workers to draw on several of them simultaneously. Take an example far removed from the everyday world of work most of us experience: the men and women whose work involved planning and executing Operation Desert Storm had to apply all of the



competencies to the problems before them. They did not categorize the problems encountered into five domains of competence and a three-part foundation. Instead, the officers solved problems by bringing their know-how to bear on the situation in the Middle East. The soldiers who executed the orders of the officers had to bring the same kinds of know-how to bear at their level.

On a different front, American manufacturing exports have surged since 1984, driven in part by radical improvements in quality, lower costs, and improved efficiency. Both of these situations demonstrate what hundreds of thou-

sands of Americans can do with solid training. There is every reason to believe that similar success can be duplicated school-by-school, worker-by-worker, and manager-by-manager in the competitive environment that tests the United States today.

The SCANS skills defined in this document carry serious implications for parents, employers, and educators.

**Parents** must insist that their sons and daughters master this know-how and that their local schools teach it. Unless you do, your children are unlikely to earn a decent living. If your

## WORKPLACE KNOW-HOW

The know-how identified by SCANS is made up of five competencies and a three-part foundation of skills and personal qualities that are needed for solid job performance. These include:

**COMPETENCIES**—effective workers can productively use:

- **Resources**—allocating time, money, materials, space, and staff;
- **Interpersonal Skills**—working on teams, teaching others, serving customers, leading, negotiating, and working well with people from culturally diverse backgrounds;
- **Information**—acquiring and evaluating data, organizing and maintaining files, interpreting and communicating, and using computers to process information;
- **Systems**—understanding social, organizational, and technological systems, monitoring and correcting performance, and designing or improving systems;
- **Technology**—selecting equipment and tools, applying technology to specific tasks, and maintaining and troubleshooting technologies.

**THE FOUNDATION**—competence requires:

- **Basic Skills**—reading, writing, arithmetic and mathematics, speaking, and listening;
- **Thinking Skills**—thinking creatively, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, and reasoning;
- **Personal Qualities**—individual responsibility, self-esteem, sociability, self-management, and integrity.



children cannot learn these skills by the time they leave high school, they face bleak prospects—dead-end work, interrupted only by periods of unemployment, with little chance to climb a career ladder.

Polls indicate that most Americans believe that schools, in general, need improvement. But they also believe the school their child attends is fine. Both conditions cannot be true at the same time. The larger national problem begins in each of our neighborhood schools.

You can do several things to improve American education. First, display the SCANS skills prominently in your home and discuss them, often, with your children. Make sure they understand what you expect. Second, take the list with you to your child's school and find out where and how the school is equipping your child with these skills. Organize a parents' meeting to discuss the SCANS findings and what your school is doing about them. Finally, make sure that your school superintendent and your school board know of your interest in these competencies and this foundation.

**Employers** must orient their business practices to hiring and developing this know-how in employees. If you do not develop a world class workforce, your business inevitably will be at risk. If, for example, only 60 percent of your employees have these skills, and 90 percent of Japanese and German workers possess them, you are wasting much more on rework, poor quality, and late deliveries than are your competitors.

Here is what you can do. First, reorganize your workplace into the high-performance envi-

ronment of the future. Nine out of ten employers are operating on yesterday's workplace assumptions. Do not be one of them. Second, invest in your employees so that they can obtain the skills needed to succeed in this new environment. Third, tell educators clearly what you need and work with them to accomplish it. You know that students have to believe that you care about what they learn. Employers who value performance in high school when they make their hiring decisions provide students with the right signal: learning and earning are related activities.

Finally, use the materials the Department of Labor can provide to confirm that the SCANS skills accurately reflect your local workforce requirements. Having confirmed these skills, make sure your local school board never loses sight of them in its instructional planning. By doing so, you will support the President of the United States in his efforts to put World Class Standards—incorporating the SCANS vision—into American schools and workplaces.

**Educators** have to instill in students the perspective on results that the SCANS skills demand. If you do not, you will be failing your students and your community as they try to adjust to the next century. You, more than anyone, are responsible for helping our children develop the skills they need.

Here is how you can help. First, tell your students what the standards are—what is expected of them. Second, give them the benefit of a fair and firm assessment of where they stand and what they need to do. If they pass from grade to grade and receive diplomas without mastering these skills, they cannot make their



way in the world of work. Third, inject the competencies and the foundation we have defined into every nook and cranny of the school curriculum. Your most gifted students need this know-how, and so do those experiencing the greatest difficulties in the classroom. We are convinced that if students are taught the know-how in the context of relevant problems, you will find them more attentive, more interested—indeed, more teachable—because they will find the coursework challenging and relevant. Finally, ask for the materials the Department of Labor can make available to you. Use them with your colleagues and the local business community to have your students confirm that the SCANS skills represent real work in your home town.

We know that some schools are already transforming themselves. They serve as the inspiration for President Bush's recent proposals to build "a New Generation of American Schools." We know, too, that many teachers are accomplishing wonders against formidable odds, and that most would do the same if given the opportunity. We hope to encourage these developments so that all schools, for every student, can be transformed.

Above all, we know that many students work very hard. But many more do not because they do not believe the lessons they are learning are connected to the real world or that the diplomas they are earning will bring them a brighter future.

This report addresses one obstacle that stands in the way of that future. Employers have never clearly told educators what students need to know and be able to do in order to succeed. Those requirements, as this Commission sees them, are described in the following pages.

This document is our opening statement about the future of your children, your business, and your school. It provides a general description of what is required. We have created this first statement with the advice of experts, educators, employees, supervisors, and business and labor leaders from around the nation. Do not take our word for it. Our conclusions must be tested in your homes, schools, and places of business. Join us in this conversation and share your thoughts with us. Write, call, and visit the Department of Labor for more information and for the tools and materials that can help you test these ideas and propositions for yourself.

June 28, 1991

Lynn Martin  
Secretary of Labor

William E. Brock  
The Brock Group, SCANS Chairman

Edward Aguirre  
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**U.S. Department of Labor**

Secretary's Commission on Achieving Necessary Skills  
**SCANS**

Washington, D.C. 20210

May 31, 1991

The Honorable Lynn Martin  
Secretary of Labor  
Washington, D.C.

Dear Madam Secretary:

The Secretary's Commission on Achieving Necessary Skills (SCANS) was asked to examine the demands of the workplace and whether our young people are capable of meeting those demands. Specifically, the Commission was directed to advise the Secretary on the level of skills required to enter employment.

It is my privilege to chair this effort. We began in May 1990 to engage businesses, schools, unions, and parents in a dialogue about the future they hold in common. On behalf of my colleagues on the Commission, I am pleased to transmit to you the results of our first year's work.

This document deals with two of our tasks—defining the skills needed and proposing acceptable levels of proficiency for them. A technical report expanding on the themes of this document will be provided later this year and a final report on our work will be available in February 1992.

Sincerely,

William E. Brock  
Chairman





# EXECUTIVE SUMMARY

The Secretary's Commission on Achieving Necessary Skills (SCANS) was asked to examine the demands of the workplace and whether our young people are capable of meeting those demands.

Specifically, the Commission was directed to advise the Secretary on the level of skills required to enter employment. In carrying out this charge, the Commission was asked to:

- Define the skills needed for employment;
- Propose acceptable levels of proficiency;
- Suggest effective ways to assess proficiency; and
- Develop a dissemination strategy for the nation's schools, businesses, and homes.

This report results from our discussions and meetings with business owners, public employers, unions, and workers and supervisors in shops, plants, and stores. It builds on the work of six special panels we established to examine all manner of jobs from manufacturing to government employment. We also commissioned researchers to conduct lengthy interviews with workers in a wide range of jobs.

The message to us was universal: good jobs will increasingly depend on people who can put knowledge to work. What we found was disturbing: more than half our young people leave school without the knowledge or foundation required to find and hold a good job. These young people will pay a very high price. They face the bleak prospects of dead-end work interrupted only by periods of unemployment.

Two conditions that arose in the last quarter of the 20th Century have changed the terms for our young people's entry into the world of work: the globalization of commerce and industry and the explosive growth of technology on the job. These developments have barely been reflected in how we prepare young people for work or in how many of our workplaces are organized. Schools need to do a better job and so do employers. Students and workers must work smarter. Unless they do, neither our schools, our students, nor our businesses can prosper.

SCANS research verifies that what we call *workplace know-how* defines effective job performance today. This know-how has two elements: *competencies* and a *foundation*. This report identifies five competencies and a three-part foundation of skills and personal qualities that lie at the heart of job-performance. (See pages xvii and xviii.) These eight requirements are essential preparation for all students, both those going directly to work and those planning further education. Thus, the competencies and the foundation should be taught and understood in an integrated fashion that reflects the workplace *contexts* in which they are applied.

We believe, after examining the findings of cognitive science, that the most effective way of learning skills is "in context," placing learning objectives within a real environment rather than insisting that students first learn in the abstract what they will be expected to apply.

The five SCANS competencies span the chasm between school and the workplace. Because



they are needed in workplaces dedicated to excellence, they are hallmarks of today's expert worker. And they lie behind the quality of every product and service offered on today's market.

The competencies differ from a person's technical knowledge. For example, both accountants and engineers manage resources, information, systems, and technology. They require competence in these areas even though building a bridge has little to do with balancing a set of books. But in each profession, the competencies are at least as important as technical expertise. The members of the Commission believe these competencies are applicable from the shop floor to the executive suite. In the broadest sense, the competencies represent the attributes that today's high-performance employer seeks in tomorrow's employee.

To describe how this know-how is used on the job, our report provides a series of five scenarios that portray work requirements in the context of the real world. The scenarios show that work involves a complex interplay among the five competencies we have identified and the three elements of the foundation—the **basic skills**, higher order **thinking skills**, and diligent application of **personal qualities**.

The scenarios make clear that tomorrow's career ladders require even the basic skills—the old 3 Rs—to take on a new meaning. First, all employees will have to **read** well enough to understand and interpret diagrams, directories, correspondence, manuals, records, charts, graphs, tables, and specifications. Without the ability to read a diverse set of materials, workers cannot locate the descriptive and quantitative informa-

tion needed to make decisions or to recommend courses of action. What do these reading requirements mean on the job? They might involve:

- interpreting blueprints and materials catalogues;
- dealing with letters and written policy on complaints;
- reading patients' medical records and medication instructions; and
- reading the text of technical manuals from equipment vendors.

At the same time, most jobs will call for **writing skills** to prepare correspondence, instructions, charts, graphs, and proposals, in order to make requests, explain, illustrate, and convince. On the job this might require:

- writing memoranda to justify resources or explain plans;
- preparing instructions for operating simple machines;
- developing a narrative to explain graphs or tables; and
- drafting suggested modifications in company procedures.

**Mathematics and computational skills** will also be essential. Virtually all employees will be required to maintain records, estimate results, use spreadsheets, or apply statistical process controls as they negotiate, identify trends, or suggest new courses of action. Most of us will not leave our mathematics behind us in school. Instead, we will find ourselves using it on the job, for example, to:

- reconcile differences between inventory and financial records;



## 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



- estimate discounts on the spot while negotiating sales;
- use spreadsheet programs to monitor expenditures;
- employ statistical process control procedures to check quality; and
- project resource needs over the next planning period.

Finally, very few of us will work totally by ourselves. More and more, work involves listening carefully to clients and co-workers and clearly articulating one's own point of view. Today's

## 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



worker has to **listen** and **speak** well enough to **explain** schedules and procedures, communicate with customers, work in teams, understand customer concerns, describe complex systems and procedures, probe for hidden meanings, teach others, and solve problems. On the job, these skills may translate readily into:

- training new workers or explaining new schedules to a work team;
- describing plans to supervisors or clients;
- questioning customers to diagnose malfunctions; and
- answering questions from customers about post-sales service.

SCANS estimates that less than half of all young adults have achieved these reading and writing minimums; even fewer can handle the mathematics; and, schools today only indirectly address listening and speaking skills.

Defining the minimum levels of proficiency in the SCANS competencies is also a crucial part of the Commission's task. It requires judgments about the learning possible in yet-to-be designed schools. It also requires imagining what the workplaces of the year 2000 could and should look like.

Our work on these required levels of proficiency is not complete. We have examined less than a third of the jobs we intend to research. We also wish to hear what others think of our initial efforts. The insert at the top of page xx is illustrative of our initial estimates of work-ready levels of proficiency in the five competencies. Proficiency in each competency requires proficiency in the foundation. The contexts displayed come from more extensive scenarios contained in our

report. The point we wish to make is that young people leaving school should have both a sufficient foundation and level of understanding of the competencies to exhibit performances like those illustrated.

The minimums we propose will define what makes a young person ready for work at entry levels on career ladders. They represent neither the first nor last step in a process of life-long learning. Instead, the minimums will be a second step in a progression of skills acquisition. For example, consider scheduling time, part of the SCANS resources competency. A young student (at the preparatory stage) might be expected to make a schedule for him or herself. Being *work-ready* would require making a schedule for others. At the extreme, a specialist might develop schedules for an airline. (See insert at bottom of page xx.)

In September 1989 President Bush and the nation's governors agreed to six national goals in education to be achieved by the year 2000. By April 1991 a four-part strategy to attain these six goals was announced by President Bush and Secretary of Education Lamar Alexander. This report of the Secretary of Labor's Commission on Achieving Necessary Skills speaks directly to those goals and to that strategy. It defines what our young people must know and be able to do in order to hold a decent job and earn a decent living.

Our work pertains directly to National Goals #3 and #5 which state:

- Goal #3 American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English,



**KNOW-HOW:  
WORK-READY LEVEL OF PROFICIENCY**

COMPETENCE	EXAMPLE OF LEVEL
<b>RESOURCES</b>	Develop cost estimates and write proposals to justify the expense of replacing kitchen equipment. Develop schedule for equipment delivery to avoid closing restaurant. Read construction blueprints and manufacturers' installation requirements to place and install equipment in the kitchen.*
<b>INTERPERSONAL</b>	Participate in team training and problem-solving session with multi-cultural staff of waiters and waitresses. Focus on upcoming Saturday night when local club has reserved restaurant after midnight for party. Three people cannot work and team has to address the staffing problem and prepare for handling possible complaints about prices, food quality, or service.*
<b>INFORMATION</b>	Analyze statistical control charts to monitor error rate. Develop, with other team members, a way to bring performance in production line up to that of best practice in competing plants.**
<b>SYSTEMS</b>	As part of information analysis above, analyze painting system and suggest how improvements can be made to minimize system downtime and improve paint finish.**
<b>TECHNOLOGY</b>	Evaluate three new paint spray guns from the point of view of costs, health and safety, and speed. Vendors describe performance with charts and written specifications. Call vendors' representatives to clarify claims and seek the names of others using their equipment. Call and interview references before preparing a report on the spray guns and making a presentation to management.**

**PROGRESS IN ACQUIRING SKILLS**

PROFICIENCY LEVEL	PERFORMANCE BENCHMARK
<b>PREPARATORY</b>	Scheduling oneself
<b>WORK-READY</b>	Scheduling small work team
<b>INTERMEDIATE</b>	Scheduling a production line or substantial construction project
<b>ADVANCED</b>	Developing roll-out schedule for new product or production plant
<b>SPECIALIST</b>	Develop algorithm for scheduling airline

\*Competence as demonstrated in a service sector application.

\*\*Competence as demonstrated in a manufacturing sector application.



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.* (emphasis added)

Goal #5 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. (emphasis added)

Our report is intended to contribute to all four parts of the strategy put forth by President Bush in AMERICA 2000 as shown below.

Workforce know-how will be part of the new World Class Standards. However, defining competencies and a foundation is not enough. Schools

must teach them. Students must learn them. And, they should be assessed as part of the AMERICA 2000 agenda. Our work on these issues will continue over the coming months. Among the concrete steps SCANS will take in the future are efforts to:

- examine how to create an assessment system that helps students understand what they have to learn and certifies that they have mastered the competencies so that employers and colleges will honor their record of high school performance;
- consider the implications of the SCANS findings for curriculum development, school organization, teacher training, and instructional materials and technology; and
- help the Administration establish the public-private partnership called for in the education strategy, "AMERICA 2000."

The President of the United States has encouraged all of us to become revolutionaries in the cause of education. For over 200 years

### EXCERPTS FROM AMERICA 2000's FOUR-PART STRATEGY<sup>1</sup>

#### Part 1.

*"For Today's Students: Better and More Accountable Schools—World Class Standards: . . . These standards will incorporate both knowledge and skills, to ensure that, when they leave school, young Americans are prepared for further study and the work force."*

#### Part 2.

*"For Tomorrow's Students: A New Generation of American Schools. New American Schools: help communities create schools that will reach the national education goals, including World Class Standards."*

#### Part 3.

*"For the Rest of Us (Yesterday's Students/Today's Work Force): A Nation of Students—Private-Sector Skills and Standards: Business and labor will be asked...to establish job-related skill standards, built around core proficiencies..."*

#### Part 4.

*"Communities Where Learning Can Happen." AMERICA 2000 Communities. The president is challenging every city, town, and neighborhood... to adopt the six national education goals... [and] develop a report card for measuring progress."*

<sup>1</sup>The White House, April 18, 1991.



Americans have worked to make education part of their national vision, indispensable to democracy and to individual freedom. For at least the last 40 years, we have worked to further the ideal of equity—for minority Americans, for the disabled, and for immigrants. With that work still incomplete, we are called to still another

revolution—to create an entire people trained to think and equipped with the know-how to make their knowledge productive.

This new revolution is no less exciting or challenging than those we have already completed. Nor is its outcome more certain. All that is certain is that we must begin.





# I. HIGH-PERFORMANCE WORK AND SCHOOLS

On April 18, 1991, when the President of the United States announced a new education strategy, "AMERICA 2000," he said, "Think about every problem, every challenge, we face. The solution to each starts with education. For the sake of the future of our children and the nation, we must transform America's schools. The days of the status quo are over."

We understand that schools do more than simply prepare people to make a living. They prepare people to live full lives—to participate in their communities, to raise families, to enjoy the leisure that is the fruit of their labor. A solid education is its own reward and has value beyond specific skills.

This report concerns one part of the transformation the President has described, the part that involves how our schools prepare our young people for work. It does not deal with other, equally important, concerns that are also the proper responsibility of our educators, such as providing comprehensive instruction in history, literature, geography, and theoretical science and mathematics so our young people can live the full lives we wish for them. Competency in these five core subjects remains relevant to the "real world." This report should not be misconstrued as suggesting that schools abandon these subjects in favor of workplace skills training.

This document describes fundamental changes in the nature of work, and the implica-

tions those changes hold for the kinds of workers and workplaces the nation must create. It defines "workplace know-how"—a quality that workers must possess if they are to grow, produce, and succeed. It is about changes in how we should think about the connections between education and earning a living. This report is about helping our youth enter the workforce prepared with the know-how they need to master whatever challenges work and life will place before them.

## THE WORLD HAS CHANGED

A strong back, the willingness to work, and a high school diploma were once all that was needed to make a start in America. They are no longer. A well-developed mind, a passion to learn, and the ability to put knowledge to work are the new keys to the future of our young people, the success of our businesses, and the economic well-being of the nation.

Two events of the last generation serve as metaphors for how radically and irreversibly the economic environment for all work has changed, both for Americans and for the rest of the world. In 1973, the OPEC oil embargo made it unmistakably clear that our nation's economic future was no longer ours alone to decide. Since then, the lessons of globalization and interdependence have been reinforced at every turn. In many ways, 1973 was a boundary line defining new territory.

Two years later, the first plans for an unheard of new product—a personal computer—appeared in a popular scientific magazine. That device has altered both the speed with which work is done and its very nature. It has reconfigured the world of work as have perhaps no other inventions since electricity or the assembly line. It has created not only a new industry; it has redefined the way thousands of different kinds of work are now carried out.

Globalization and technology contain both threat and promise. The threat is easily summarized in the economic implications of energy dependence, disappointing productivity growth, and stagnant wages. For example:

- **Productivity.** Productivity growth (output per hour) in the United States slowed significantly after 1973. Labor productivity actually declined in 1989 and 1990. Some estimate that if current international productivity trends continue, nine countries may exceed the U.S. in output per worker-hour by the year 2020.
- **Earnings and Income.** Stagnant productivity has seriously affected workers' earnings. Median family income increased nearly three percent a year between 1947 and 1973. Since 1973, it has scarcely increased at all. Families with heads of households under the age of 34 have watched their real income decline since 1979.
- **Jobs.** Job opportunities in the United States are changing. Twenty years ago, manufacturing accounted for 27 percent of all nonagricultural employment in the U.S.; services and retail trade for 32 percent. By 1990, manufacturing accounted for only 17 percent of these jobs, while services and retail trade made up 44 percent. In 1990, manufacturing jobs paid an average of \$10.84 per hour;

while service jobs paid \$9.86 and jobs in retail trade paid only \$6.78.

But the promise of an internationalized economic environment and a workplace grounded in new technologies is equally dramatic. The promise is a healthy economy that improves the standard of living for all by growing—by increasing productivity, creating new jobs, and meeting the challenges placed before it.

## WORK IS CHANGING

To paraphrase futurist Alvin Toffler, we are now caught up in a “third wave” of industrialization. Just as the United States powered its early industrial growth with steam and built a manufacturing empire on the assembly line, it can now catch the crest of computer technology to create a high-wage, high-skill future.

That future depends on high-performance work organizations and a highly competent workforce. It will be as different from our present as today's most advanced work and workplace are different from Henry Ford's assembly line. As a corporate member of the commission observed, in reviewing preliminary descriptions of the workplace developed during this project, “What startles me about these descriptions is the realization that they are accurate, but ten years ago I could not possibly have imagined them. What concerns me is this lack of imagination. What will our workplace look like ten years from today?”

Figure A on the following page, adapted from a chart developed by the Congressional Office of Technology Assessment, summarizes the major differences between the traditional workplace and the leading-edge, high-performance work-



places that are beginning to develop. These differences were also found by the MIT Commission on Industrial Productivity that reported in 1989. The members of SCANS believe these new workplaces should become the norm, not the exception.

In most workplaces of today, work is routinized, repetitive, and organized along hierarchical lines. Perhaps its most prominent feature is that it emphasizes mass production by workers who are not asked to think about what they are doing. It leaves quality to be inspected into the

product after-the-fact, i.e., by weeding out defects through a separate quality control process.

High performance workplaces, by contrast, stand as a model for a successful future. In this new environment, work is problem-oriented, flexible, and organized in teams; labor is not a cost but an investment. Most important, the high-performance organization recognizes that producing a defective product costs more than producing a high-quality one. The solution: design quality into the product development proc-

**FIGURE A**

<b>CHARACTERISTICS OF TODAY'S AND TOMORROW'S WORKPLACE<sup>1</sup></b>	
<b>TRADITIONAL MODEL</b>	<b>HIGH PERFORMANCE MODEL</b>
<b>STRATEGY</b>	
<ul style="list-style-type: none"> <li>• mass production</li> <li>• long production runs</li> <li>• centralized control</li> </ul>	<ul style="list-style-type: none"> <li>• flexible production</li> <li>• customized production</li> <li>• decentralized control</li> </ul>
<b>PRODUCTION</b>	
<ul style="list-style-type: none"> <li>• fixed automation</li> <li>• end-of-line quality control</li> <li>• fragmentation of tasks</li> <li>• authority vested in supervisor</li> </ul>	<ul style="list-style-type: none"> <li>• flexible automation</li> <li>• on-line quality control</li> <li>• work teams, multi-skilled workers</li> <li>• authority delegated to worker</li> </ul>
<b>HIRING AND HUMAN RESOURCES</b>	
<ul style="list-style-type: none"> <li>• labor-management confrontation</li> <li>• minimal qualifications accepted</li> <li>• workers as a cost</li> </ul>	<ul style="list-style-type: none"> <li>• labor-management cooperation</li> <li>• screening for basic skills abilities</li> <li>• workforce as an investment</li> </ul>
<b>JOB LADDERS</b>	
<ul style="list-style-type: none"> <li>• internal labor market</li> <li>• advancement by seniority</li> </ul>	<ul style="list-style-type: none"> <li>• limited internal labor market</li> <li>• advancement by certified skills</li> </ul>
<b>TRAINING</b>	
<ul style="list-style-type: none"> <li>• minimal for production workers</li> <li>• specialized for craft workers</li> </ul>	<ul style="list-style-type: none"> <li>• training sessions for everyone</li> <li>• broader skills sought</li> </ul>

<sup>1</sup>Source: "Competing in the New International Economy." Washington: Office of Technology Assessment, 1990.

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ess itself, particularly by enabling workers to make on-the-spot decisions.

Workplaces organized along the lines of the traditional mass production model can no longer prosper. Like the dinosaur with its limited intelligence, doomed to extinction at the hands of smaller but craftier animals, the traditional model cannot survive the competition from high-performance organizations that depend on the intelligence and ingenuity of their managers and employees. High-performance organizations are relentlessly committed to excellence, to product quality, and to customer service. These are the organizations that have revived American manufacturing competitiveness and compete for the nation's mark of business distinction—the Department of Commerce's Baldrige Award. One of the defining characteristics of these firms is a workforce with the skills outlined in this document.

#### THE EDUCATIONAL SIDE OF THE EQUATION

The world has changed. Work is changing. But despite their best efforts, most schools have not changed fast enough or moved far enough. For nearly a decade, education reform and its relationship to America's place in the world have been high on the public's agenda. Reports have been developed, meetings convened, and announcements and calls to arms issued. Literally hundreds of specific recommendations have been put forward by researchers, public leaders, opinion molders, and school officials.

Many educators have responded. Most communities in the United States have felt the impact: new curricula, adult literacy efforts, compensatory programs, in-school child care, new teacher training efforts—all of these and more have been

tried. Yet, despite some promising exceptions, we are unable to demonstrate that things are, on the whole, much better. In terms of achieving results, not much has changed despite great effort and significant increases in funding.

It is time to ask: Why is that so? How is it that all this time, energy, and effort have been expended to so little avail? The problem is complex and so are the answers. Part of the difficulty is that employers and school personnel are passing each other like ships in the night: one speaks in Morse code, the other signals with flags. As a consequence of the miscommunication, secondary school students often see little connection between what they do in school and how they expect to make a living. They, therefore, invest very little effort in their education. The average American high school junior puts in half of the 60 hours a week that a Japanese peer devotes to schoolwork.

#### Miscommunication

One reason for the lack of educational improvement lies in the confusing signals exchanged between the education and the business communities. The educator asks, "What do you want in our graduates? We are confident we can produce it." The response is, too frequently, a set of contradictory cues.

- The local tour bus operator responds, "I want graduates who can diagnose and repair diesel engines and who know something about air brakes. That's my first priority. I don't have time to train these kids."
- The local bank vice president says, "I want clean and attractively dressed young people, with a solid grasp of the basics—reading, writing, and computation—and we will teach them the banking business."



- The owner of a small manufacturing firm asks for dependable, reliable graduates who will show up on time with enough technological skill to immediately step into the CAD-CAM (Computer-Assisted Design and Computer-Assisted Manufacturing) operation.

Researchers' efforts have proven equally unhelpful. Most attempts to characterize work skills focus either on general human characteristics (e.g., intelligence, reasoning ability, reaction time) or on the characteristics of specific jobs (e.g., ability to assemble items or route packages). The level of detail communicated varies from the very general (ability to solve problems) to the very specific (perform a tack weld on sheet metal). As a result, the operational implications and meaning of these lists are frequently difficult to determine. They do not provide direct links to the "stuff" of schools or a sense of the work enabled by the skills identified.

Frustrated, the school finds that the business world has not defined what schools should be doing. To the extent that individual business leaders are clear, they often convey an unrealistic expectation that schools serve as their firm's training institution with their specific training requirements at the front of the line.

The results are predictable. Despite sincere, well-intentioned efforts to respond, the schools—lacking clear and consistent guidance—continue with the system and methodologies they inherited from a system designed nearly 100 years ago for the needs of business organizations that are now quite different.

### **The Student**

The disjointed conversation between the schools and employers creates a situation in which students understand intuitively, often

correctly, that what they are doing in school today bears little resemblance to what they will be expected to do in the workplace tomorrow. Many students, both those expecting to go to work immediately after 12th grade and those going to most colleges, simply do not consider high school work as worth serious effort.

The sense that students clearly distinguish between what goes on in their classrooms and what goes on in the "real world" was palpable in focus groups convened as part of the SCANS research. Not one of the students in these groups believe that a high school diploma by itself guarantees a job in today's economy. All of them, in fact—whether bound for college or work—believe that job skills, by and large, are learned on the job, by hands-on experience, through extra-curricular activities, or by osmosis. In other words, they believe that the skills needed in the real world are, in the words of one student, just "picked up."

But the massive training budgets of today's corporations are powerful evidence that workforce know-how cannot be simply "picked up." When students fail to associate "school" work with "real" work, they draw the wrong conclusion—that "school" work is not "real." In fact, however, the task of learning is the real work of today, whether at school, in the university, on the job, or in the White House. It is this task young people must master in every environment.

### **THE CHALLENGE**

The challenge this situation places before the nation's business and educational communities is three-fold. The first task is to develop a better means of communicating, a common vocabulary to guide the conversation between



the business and school communities. The following chapter suggests such a vocabulary. The second task is to set clear-cut standards and then convince students that effort invested in meeting these standards today will be rewarded in the world of work tomorrow. A major part of this task involves persuading students, teachers,

parents, and business leaders that workplace know-how is not something "you just pick up." It can be defined. It should be taught. It must be learned. The third task is to assess and certify students' workplace readiness so that students, their parents, and employers will know where they stand.



## II. WHAT IS WORK LIKE TODAY?

In arguing that today's employers have been inconsistent and contradictory in their messages to the schools, we have pointed out that different employers have different needs—that the manufacturing plant differs from the machine shop and that neither bears much relationship to the typical office environment. All of that is true. But the diversity is largely a fog obscuring what is, in fact, a set of common competencies and skills shared by all workers. SCANS understands these competencies and skills as “workplace know-how.”

### FIVE SCENARIOS

This chapter explores that know-how. It does so, first, by examining the world of work through five short “scenarios” describing what high school graduates are actually expected to do when they enter high-performance work environments. We go on to draw from these scenarios the competencies and skills that will define effective work performance for the year 2000.

The five scenarios come from the following sectors of the economy:

- Manufacturing;
- Health Services;
- Retail Trade;
- Accommodations and Food Services; and
- Office Services.

We recognize that not all workplaces in these sectors are currently organized to draw upon the skills displayed by the workers in the scenarios. But we believe that the increasingly competitive

environment businesses face is forcing more of them to reorganize to make better use of more highly-skilled workers. This means that those students who leave school prepared to enter such workplaces will get the best jobs with the most stable and rewarding futures. The student who leaves school with the workplace know-how described in these scenarios will be the prepared worker America requires in the next century.

### Manufacturing

Kareem is an electronics specialist working as an electrician in a newly designed “Big Three” automobile assembly plant (AAP) in the Midwest. He had previously spent two years in the Army as an electronics specialist. The plant is a state-of-the-art production facility employing 2,900 hourly workers. About two years ago, assembly line automation was completed with the selection and installation of a new robotics painting system. Kareem was involved in the selection of this equipment, which Alice, the procurement specialist in the engineering department chose with advice from line workers. But a pressing issue developed on the operating line: how to train people to properly use, maintain, and troubleshoot the system.

The vendor for the painting system had provided initial training in the system's programmable logic. But, after the vendor left, Kareem found himself frequently on-call to troubleshoot the problems of the new system because the other shop electricians were not able to maintain it. The other electricians, who had been



hired from an older AAP plant on the basis of seniority, were what are called "pipe, wire, and relay" electricians who had a difficult time making the transition to electronics concepts. It appeared that while the vendor had provided solid training in generalized troubleshooting, they had not provided sufficient training in how to troubleshoot the system as integrated into an automotive plant.

Kareem worked with the head of high-technology training at AAP and the vendor to revise the training to emphasize a broad array of maintenance skills needed on the line. The goal, in part, was to reduce the costs associated with repeated calls for assistance from the vendor.

The coursework, which was taught by Kareem, included a review of basic electrical theory and training in basic electronics concepts. It also included work in pneumatics and hydraulics. It heavily emphasized the use of computer consoles with on-the-floor simulations of equipment operation.

One result of this ongoing training is a more confident team of electricians who can provide immediate assistance to the line. Another is equally impressive: system downtime (which can cost automakers more than \$1 million daily) has been reduced by 22 percent at AAP.

### **Health Services**

Luretta is the registrar in the emergency room of City Hospital, a large public facility on the West Coast serving a diverse, urban population. She is the first person patients meet when they enter the hospital. Stress in the emergency room is almost tangible, particularly on weekends. Residents of nearby low-income neighbor-

hoods use the facility for routine health care; accident victims from all over the area are frequently brought to City; and gang violence produces many severely wounded patients. This combination threatens to overwhelm the emergency room on weekends.

On Friday evening, the emergency room staff is just recovering from a very difficult afternoon. Seven children, injured when their school bus was hit by a delivery van, were brought to the emergency room between 3:30 and 4:00 p.m. As Luretta takes a breather, an ambulance crew brings in a local college student suffering from a drug overdose. Luretta processes his papers from information provided by the ambulance crew and turns him over to a Licensed Practical Nurse (LPN). As the LPN leaves, a gunshot victim staggers in on the arm of a friend. Luretta grabs the friend to get information on the victim and has an orderly wheel the victim back to an examining room. At that very moment, a distraught mother arrives with her teenage daughter who is wheezing, clearly in severe respiratory distress.

Confident that the first two patients are in good hands, Luretta turns her attention to the mother and daughter only to find that neither speaks English. The girl is choking; the mother, unable to make herself understood, becomes hysterical. Frank, a Registered Nurse (RN) who hears the commotion, arrives and takes the girl to an examining room. As the RN leaves he instructs Luretta to get an attending physician and an interpreter.

Luretta locates Dr. Paula Jones in the next room and asks her to come to the examining room. Next, she calls the Community Affairs





office and gets an interpreter on the phone with the mother and herself. The interpreter informs Loretta that the girl is asthmatic and that she has been treated at the hospital before. Loretta smiles at the mother to reassure her that everything is under control and goes to her computer terminal to locate the daughter's hospital records. Loretta hands a copy of the records to Dr. Jones who completes the examination of the girl and prescribes medication to relieve her distress.

### **Retail Trade**

Mickey is a salesperson at a computer store on Main Street in a small northeastern city. The store carries a basic line of computers and printers from five different manufacturers, about 15 pieces of equipment in all, varying in size, price, and capabilities. The store also carries a wide range of software, from word processing to database management programs, as well as paper, diskettes, add-on peripherals such as modems, and miscellaneous supplies.

This week the company has a sale on laptop computers. Moreover, each member of the sales force who sells 10 or more laptops will receive one free for his or her own use. Mickey goes to the database he maintains on his computer to search his customer records for promising purchasers. He first lists owners of laptops from the same manufacturer, then owners of other laptops, and begins placing calls.

At this point, a customer walks into the store. The customer owns a seven-person real estate company. She complains that her salespeople travel so much throughout the region that they cannot stay on top of mortgage rates from different banks or new listings throughout the

state. As a result they are losing sales. Mickey responds, "You've come to the right place. Portable computers—laptops—can solve this problem for you. And, we have a terrific sale on them right now."

"This model has a built-in modem. If you equip your cars with phones, your employees could download all the information they need just by dialing your office from the car. You also need a desktop computer at your office to answer the phone, but your salespeople could connect with it directly; or, we have a software package called Real Estate Monitor which hooks you up directly to an on-line information service that has up-to-the-minute real estate listings and mortgage rates."

The customer is intrigued, but worried about the costs. Mickey nods, "Even with the sale we are offering, seven or eight computers is a substantial investment for a small firm. But let me ask you this. You tell me you are losing two or more sales a week because your sales force can't stay on top of listings and mortgage rates. If this system helps you recoup just one of those sales a week, isn't it true that it will pay for itself in a month or two?"

"That may be about right," responds the customer. "My name is Joan Lewis. Let's sit down and talk about precisely how much this is going to cost me."

### **Accommodations and Food Services**

Greg, Anthony, and Kathleen are on the verge of realizing an entrepreneurial dream—opening their own restaurant (The Three Chefs) in a growing southern town. Independently they have worked hard to reach this point, spending



10 or more years learning the restaurant business, pooling their savings, and borrowing from friends and family to raise the start-up capital they needed. Greg took out a second mortgage on his home to satisfy the local bank's demand for security on a line of credit.

Greg serves as manager and "front-of-the-house" shift supervisor during the day. Kathleen is the lunchtime chef and evening manager. Anthony trains the staff, does the bookkeeping, and prepares the evening meals. Renovation has been completed on the restaurant, and most of the new kitchen equipment has been installed. Waiters and waitresses have completed their training and have worked two practice shifts to iron out problems.

Kathleen and Anthony analyzed the "back-of-the-house" work flow during the practice shifts and developed a plan for improving the kitchen's output. They can improve efficiency in the kitchen by almost 20 percent by starting food preparation an hour early and moving one of the work stations to the front of the house. After some discussion, the three of them realized that although the repositioning makes sense, it will probably cost them between \$7,000 and \$10,000, which they do not have. If their projections are correct, they might be able to afford it after they have made about \$250,000 in sales, i.e., in three to four months, if all goes well. They opt to make minor adjustments to the system and refrain from expensive changes until they have seen how the first month's sales and expenses look.

"Here's another way we can control our costs," says Kathleen. "I've come across a new management information system that can generate inventory reports, sales reports, and pricing

charts. We can integrate the inventory reports and pricing data to project costs and make menu changes. I've also been looking at several different accounting software packages. I think the software our accountant recommended is the most suitable for our needs. There is a large pool of programmers who know that software, making it easier for us to obtain a consultant on short notice to tailor it to our operation."

### Office Services

Verbatim Transcription Service (VTS) provides written records of meetings, legal proceedings, and conferences. The firm employs 24 people, including six transcribers, but today only four of the transcribers are available. The transcriber's job is to decipher tapes received from stenographers and recorders and create a written record. Accuracy and timeliness are critical elements of the transcriber's work which undergirds the firm's success.

Gabriela is a top-notch transcriber at VTS. This has been a particularly busy week, and today she has six tapes in various stages of conversion. Three of the clients have asked for their documentation by the following morning. One law firm has a court case approaching. The minutes of a controversial school board budget hearing are to be delivered to the local newspaper tomorrow for publication the following day and the president of a local university (one of VTS's largest clients) wants immediate service on the tapes of a book she is dictating, regardless of how many other clients are inconvenienced.

Gabriela doesn't think she can finish all the tapes on time and goes to Nan, her supervisor, to discuss the problem and possible solutions. She and Nan decide to call in a freelance transcriber



they have hired previously to work with legal clients. Gabriela then calls the school board president and the local newspaper. She arranges to have the minutes reviewed that evening by school board staff so that she can make corrections and deliver them to the newspaper by the editor's "drop-dead" deadline. She is able to reach the university president with whom she discusses her time constraints and negotiates a reprieve. Gabriela works out a schedule whereby she will have the president's transcript ready two days later by 4:00 p.m.

After finishing her scheduled daily work, Gabriela looks over the first draft of a new transcriber hired to work exclusively with a local teaching hospital to determine if his knowledge of medical terms is adequate. Otherwise, he will be sent to a specialized training course. Gabriela tells Nan that, in her opinion, they have hired the right person and no further training is needed.

#### **COMMON ELEMENTS: FIVE COMPETENCIES**

The benefit of these scenarios is that they begin to do justice to the rich complexity—the problems, demands, rewards and satisfactions—of high-performance work. They capture what some men and women face and actually do in today's workplace. They confirm that when employers say they want people comfortable with technology and capable of solving problems, they are realistic. They confirm, too, that reading, writing, and basic arithmetic are not enough. These skills must be integrated with other kinds of competency to make them fully operational. But these scenarios range from the effort to make a sale to the work of saving lives in hospital emergency rooms. What do they have in com-

mon? Are there competencies that are generic to the entire economy?

**The common elements in each of the scenarios are exceptional performance in five competencies.** (See Figure B.) These five competencies rest on a three-part foundation of skills and personal qualities that we will address later. The competencies span the chasm between the worlds of the school and the workplace. They are the basis of the modern workplace dedicated to excellence. They are the hallmark of today's expert worker. And they lie behind every product and service offered on today's market—putting food on tables, travellers in rooms, airplane passengers at their destination, patients in the operating room, and automobiles on the street.

The expert worker of tomorrow will not simply "pick-up" these competencies. Their acquisition must begin in the schools and be refined through on-the-job experience and further training. Teaching and learning the competencies must become the tasks of our schools and students.

In each scenario, competent workers demonstrate their skill in managing or using:

1. **Resources.** Workers schedule time, budget funds, arrange space, or assign staff.
2. **Interpersonal Skills.** Competent employees are skilled team members and teachers of new workers; they serve clients directly and persuade co-workers either individually or in groups; they negotiate with others to solve problems or reach decisions; they work comfortably with colleagues from diverse backgrounds; and they responsibly challenge existing procedures and policies.



## FIGURE B

### FIVE COMPETENCIES<sup>2</sup>

**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

<sup>2</sup>More complete definitions can be found in Appendix B.



3. **Information.** Workers are expected to identify, assimilate, and integrate information from diverse sources; they prepare, maintain, and interpret quantitative and qualitative records; they convert information from one form to another and are comfortable conveying information, orally and in writing, as the need arises.
4. **Systems.** Workers should understand their own work in the context of the work of those around them; they understand how parts of systems are connected, anticipate consequences, and monitor and correct their own performance; they can identify trends and anomalies in system performance, integrate multiple displays of data, and link symbols (e.g., displays on a computer screen) with real phenomena (e.g., machine performance).
5. **Technology.** Technology today is everywhere, demanding high levels of competence in selecting and using appropriate technology, visualizing operations, using technology to monitor tasks, and maintaining and troubleshooting complex equipment.

The competencies differ from a person's technical knowledge. For example, both accountants and engineers manage resources, information, systems, and technology. They require competence in these areas even though building a bridge has little to do with balancing a set of books. But in each profession, the competencies are at least as important as technical expertise.

The members of SCANS believe these competencies are applicable from the shop floor to the executive suite. They are generic; all are needed across industries and at many steps on a career ladder. (See page 14.) In the broadest sense, the competencies represent the attributes employers seek in today's and tomorrow's employee.

Returning to the scenarios, we can see clearly how essential these five competencies are for effective performance across the job spectrum.

#### **Resources**

Whether it was Kareem in the automobile factory, Kathleen and her partners in the restaurant, or Gabriela at VTS, all demonstrated their ability to manage resources. Kareem understood that time is a resource and that downtime costs money. The entrepreneurial chefs had put their life savings on the line and their analyses of costs, procedures, and the best use of their own time were designed to protect that investment. Gabriela made exceptional use of the human resources and time available to her in meeting a time crunch with serious implications for VTS's reputation.

#### **Interpersonal**

Interpersonal competence is the lubricant of the workplace, minimizing friction and the daily wear and tear of work. It also undergirds restructured work organizations in factories and provides the "service" in service firms. It is required if teams are to solve problems that they jointly face. All of these competent workers function effectively in quite complicated interpersonal environments. A false step in most of these situations invites resistance from colleagues or clients and could, in some situations, threaten lives.

Far from looking down his nose at the traditional "pipe, wire, and relay" electricians, Kareem understood that manufacturing quality products is a team effort. He needed his experience as an electrician with AAP to develop effective training programs to make the most of the plant's state-of-the-art equipment. Gabriela's skills helped her



## COMPETENCE NEEDED ACROSS THE BOARD

Who needs the SCANS competencies? Everyone from the entry-level clerk to managers, executives, or partners in professional corporations. Take the high-pressure world of a major law firm as an example of how competence is required across the board:

**Receptionists** are expected to demonstrate personable "front-desk" skills (meeting clients and identifying their needs) and to manage complex telecommunications systems without difficulty.

**Secretaries** are routinely called on to work with associates and partners with different, often difficult, working styles and to manipulate computer-based data, graphics, and information systems on different kinds of equipment.

**Legal Administrators** help select and oversee the installation of state-of-the-art telecommunications and information systems to meet lawyers' needs and they also ensure that all support personnel are trained in these systems.

**Associates** (junior attorneys) having spent three years learning the rudiments of the legal system and its precedents stretching back to common law, are now expected to put that knowledge to work on specialized problems situated in complex modern systems, e.g., corporations, hospitals, contracts, or civil rights law, and to search for precedents supporting the client's legal position.

**The Managing Partner** is responsible for ensuring that the cogs and gears of the entire firm operate as a harmonious system—that the support system meets the demands the firm places on it; that the accounting and finance systems follow and recover costs; that the background of the lawyers meshes with the legal specialty of the firm; and that potentially profitable new areas of client interest can be accommodated.

negotiate a potentially troubling work conflict. Mickey took his customer's concern about costs seriously, but turned the issue to his advantage. Loretta, in perhaps the most pressure driven of these situations, went out of her way to reassure the distraught mother, while seeking help in two directions simultaneously, from a doctor and an interpreter.

### Information

Loretta, staring at a potentially life-threatening situation, could do nothing to help until she obtained the information needed by the doctors. Calmly, in the face of this stress, she called in an interpreter and, armed with the knowledge of the patient's history and the location of her records, expertly manipulated a com-

puterized information system to locate the records that City Hospital doctors had to have. Gabriela's job at VTS is essentially transforming information from one form (audio tapes or stenographic notes) to another, a written record.

The heart of Mickey's job is not so much selling as showing his customers how the equipment he has to offer can solve their information problems. If he can do that, the technology sells itself. In the scenario Mickey solicited information from the customer about the customer's information needs. Using that knowledge, he was able to describe how laptops, modems, telephones, and specialized software could make information an asset in the world of real estate, instead of a problem.



### Systems

As the world of work has become more complex, all workers have been required to understand their own work in the context of that of others. They must think of discrete tasks as part of a coherent whole. Greg, Kathleen, and Anthony understood that the "front-of-the-house" could not begin to function without an effective operation in the "back-of-the-house." Moreover, they correctly viewed portions, menus, and inventory control not as discrete problems, but as integral parts of the restaurant's cost structure, susceptible to a single cost-control system.

On one level, Kareem's troubleshooting of the computerized painting equipment is simply part of his job. Kareem's special contribution was to understand that his job affected the entire operation and the profitability of the plant. He then drew on the engineering department, his co-workers with outdated skills, the training department, and the strengths of the vendor.

Luretta's job as registrar placed her in a pivotal position for the systems revolving around her—ambulance crews, nursing staff, physicians, orderlies, the police, and community affairs specialists. Luretta might easily have satisfied herself with jotting down the information the interpreter gave her, leaving Dr. Jones to worry about obtaining the patient's records. She did not. Dr. Jones did not have to. And the patient received immediate attention.

### Technology

Nobody today can avoid technology; it has penetrated every aspect of life from the home to the job. Those unable to use it face a lifetime of menial work. Mickey obviously spends his working life fitting technologies to his client's needs.

But he also uses the technology himself to stay in contact with his customers. Kareem worked with the engineering department to select and install the new robot painting system. His knowledge of the electronics of this new technology propelled him from the ranks of the electricians, first to troubleshooter, and then to a leadership position in the new training effort. At the heart of the inventory and cost control efforts of the three chefs, we find a technology-based information system which will make or break their restaurant.

### THE FOUNDATION

What of the employer's other significant requests of the schools, that they provide students with the basic skills of reading, writing, and computation or that they teach punctuality and responsibility? Are these traditional functions of American schools now outdated, overwhelmed by the new demands of the workplace? On the contrary, SCANS research has identified a three-part foundation of intellectual skills and personal qualities that are part of each of the five competencies. (See Figure C.)

The foundation includes three parts:

- **Basic Skills.** Reading, writing, mathematics (arithmetical computation and mathematical reasoning), listening, and speaking;
- **Thinking Skills.** Creative thinking, making decisions, solving problems, seeing things in the mind's eye, knowing how to learn, and reasoning; and
- **Personal Qualities.** Individual responsibility as well as self-esteem, sociability, self-management, and integrity.

The scenarios are a useful device for exploring how the foundation both contributes to excellent performance and serves as a floor under the



## FIGURE C

### A THREE-PART FOUNDATION<sup>3</sup>

**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 in 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

<sup>3</sup>More complete definitions can be found in Appendix C.



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five competencies. The competent performance described in the scenarios would have been impossible without sufficient proficiency in both the basic and thinking skills, as well as responsible personal behavior.

The basic skills are the irreducible minimum for anyone who wants to get even a low-skill job. They will not guarantee a career or access to a college education, but their absence will ensure that the door of opportunity remains closed. The thinking skills, by contrast, permit workers to analyze, synthesize, and evaluate complexity. They are the true raw materials from which the five competencies are built because they make workers the masters of their work instead of its servants.

The personal qualities are attributes that employers would like to be able to take for granted, but cannot. They are so important that their absence can quickly disqualify any job seeker at any level of accomplishment. Schools normally do not "teach" these qualities in the classroom itself but weave them into the life and structure of the school environment—in the expectations that the school holds for student behavior and in the consequences it exacts if those expectations are not met.

Effective performance in today's workplace absolutely requires high levels of performance in all three parts of the foundation. There is no point in belaboring the obvious. People who cannot read, write, and communicate cannot be trusted in a transcription service. The rude salesman who alienates customers will not make sales. The cashier with a hand in the till cheats the business and ultimately the customers. The electrician who cannot solve technical problems threatens the production line. And restaurant owners who cannot creatively approach problems will probably not be in business for long.

The foundation is far too often viewed as the most we can hope for from a public education. In fact, it is the point from which real competence is built. If the foundation is all we can hope for, that is all we will get, and we will have settled for far too little. The term "foundation" means just that. It supports the possibilities and potentials that most of our young people sense in themselves, and that schools must bring out. By learning the competencies as they learn the foundations, each intertwined with the other, our young people will be ready to enter and thrive in the workplace of tomorrow.



### III.

# IMPLICATIONS FOR LEARNING

The SCANS goal is increased educational achievement for all segments of the population. We intend to transform perceptions about the preparation essential for work. If all of tomorrow's students are to master the full repertoire of SCANS competencies and their foundation, schools must change. The know-how we have defined is also important for further learning beyond high school. If yesterday's students, that is, today's workers— are to acquire these competencies—then workplaces must also be restructured and so must the adult education providers that serve them.

Students will not acquire what they need to progress in life by osmosis, either in school or in the workplace. Learning through experience is okay only if all students and workers are exposed to the right experiences. The SCANS skills can be taught. Schools and workplaces must provide structured opportunity for their acquisition.

#### TODAY'S SCHOOLS

Today's schools must determine new standards, curricula, teaching methods, and materials. Although SCANS believes that a total reorientation is required, with foresight and planning the know-how we have defined can be incorporated in the five core subjects (history, geography, science, English, and mathematics) as well as in other subjects and the extracurricular activity of schools.

SCANS believes that teachers and schools must begin early to help students see the rela-

tionships between what they study and its applications in real-world contexts. It is not true that everything we need to know in life we learned in kindergarten; it is true, however, that we can begin that early to learn what life requires.

We believe, after examining the findings of cognitive science, that the most effective way of teaching skills is "in context." Placing learning objectives within real environments is better than insisting that students first learn in the abstract what they will then be expected to apply. SCANS suggests three principles from cognitive science to guide real contextual learning in all our schools:

- Students do not need to learn basic skills before they learn problem-solving skills. The two go together. They are not sequential but mutually reinforcing;
- Learning should be reoriented away from mere mastery of information and toward encouraging students to recognize and solve problems; and
- Real know-how—foundation and competencies—cannot be taught in isolation; students need practice in the application of these skills.

The foundation is best learned in the context of the competencies that it supports. Reading and mathematics become less abstract and more concrete when they are embedded in one or more of the competencies; that is, when the learning is "situated" in a systems or a technological problem. When skills are taught in the context of the competencies, students will learn the skill more rapidly and will be more likely to



apply it in real situations. Personal characteristics such as self-esteem and responsibility, to use another example, are best developed in teamwork efforts. Choosing between teaching the foundation and the competencies is false; students usually become more proficient faster if they learn both simultaneously. In sum, learning in order "to know" must never be separated from learning in order "to do." Knowledge and its uses belong together. (See Figure D.)

Finally, in the Commission's view, the foundation skills should be assessed along with competencies. Deficiencies in basic or thinking skills will be found in the performance of the competencies. These deficiencies need to be pointed out to the student and immediately remedied. But if students can demonstrate the competency properly, they can be assumed to have the foundation they need.

AMERICA 2000 calls for radically improving all 110,000 of today's schools, making them better and more accountable. The SCANS competencies are our contribution to that effort.

### THE SCHOOL OF TOMORROW

Just as our workplaces are being reshaped, so too are our schools. As others have said, the school of tomorrow can be as different from today as overnight delivery is from the pony express. On May 22, 1991, President Bush sent Congress the AMERICA 2000 Excellence in Education Act. The bill included the *New American Schools* program for starting "break-the-mold schools." The first wave will create 535 such entities and more are anticipated by the year 2000. Students in these new schools will be learning the SCANS skills in new ways.

Imagine the challenge to education at the turn of the century in AMERICA 2000. School and work have been restructured and both are far more productive than they are today. (See Figure E.) Students of all ages learn more per hour in schools of all sorts and workers earn more per hour on the job.

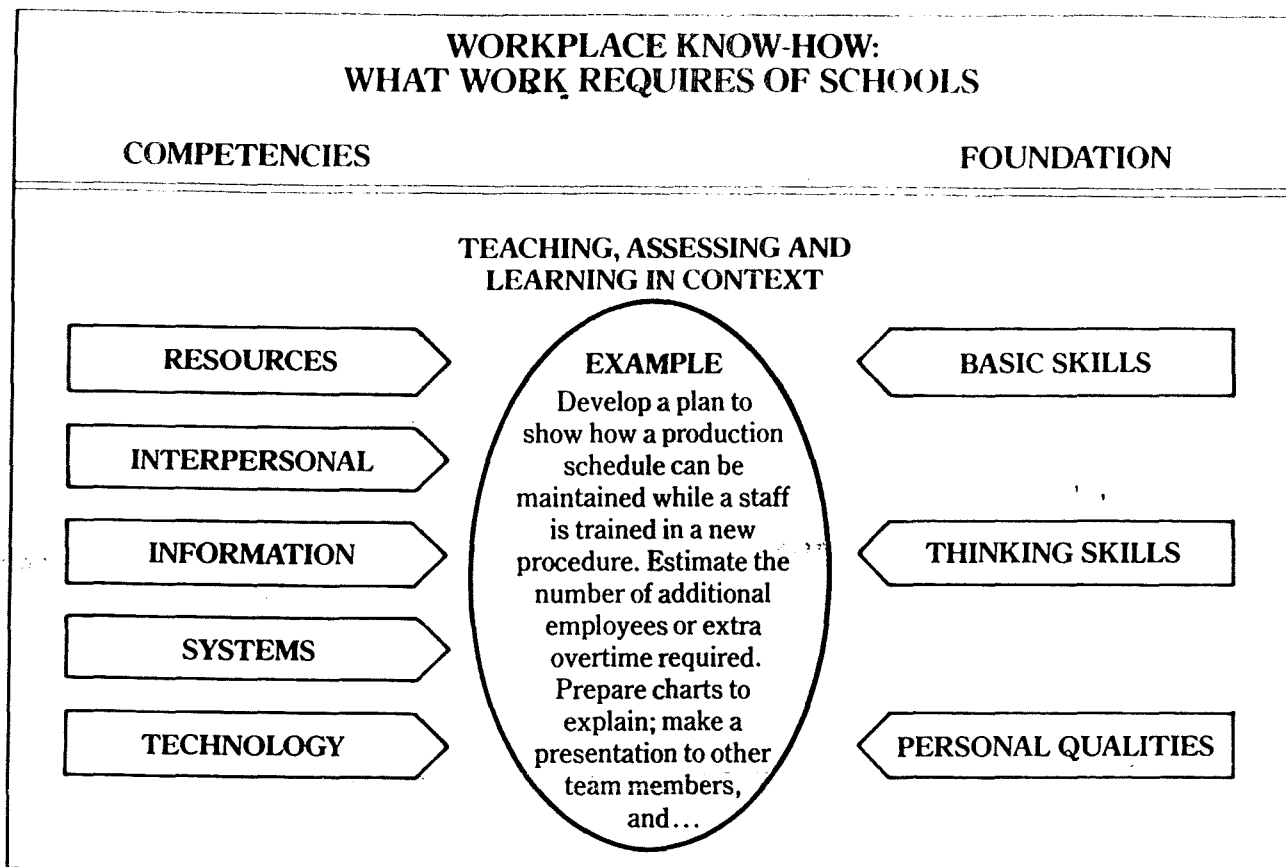
The emphasis on quality means fewer dropouts from schools and fewer rejects on the production line. Our children are internationally competitive in math and science and, partly as a result, so are American goods and services.

In junior and senior high schools, all students are studying the five core subjects defined by President Bush: English, mathematics, science, history, and geography. They are regularly assessed in these subjects by means of formal, nationally-comparable assessments made in the 4th, 8th, and 12th grades. Proficiency in the SCANS competencies is determined from the assessment for grades 8 and 12.

The 8th grade SCANS assessment is a benchmark for each student. It tells where more effort is needed if the student is to aspire to a decent job or to higher education. Daily, less formal assessments are guiding teacher and student alike. Learning a musical instrument is a sound analogy—the formal assessment is a recital, but the daily assessment comes in practice. Response is instantaneous and continual at each rehearsal. The SCANS competencies are tested in the same way—formal assessments at grades 8 and 12, but daily reinforcement occurs in curriculum activities centered on team efforts, school projects, and diaries, notebooks, and records of experiments maintained in each student's portfolio.



FIGURE D



Assessments of student competency in the 12th grade are taken into consideration by college admissions officials. But there is a new development: employers are also paying attention to assessments of the SCANS skills in their hiring and placement decisions.

Moreover, all students are able to acquire the assessed skills with study. Indeed, the portions of the assessments related to the know-how defined by SCANS are publicly available, so teachers can teach the SCANS skills, and students can understand what they must learn. This is not curriculum driven by multiple choice tests; it is assessment to guide learning. High-

performance firms build in quality; they do not test it in at the end of the production line. The schools of the future will, in a similar way, integrate assessment and instruction.

The SCANS competencies and skills are not intended for special tracks labeled "general" or "career" or "vocational" education. All teachers, in all disciplines, are expected to incorporate them into their classwork. The challenge here is to teach the know-how that young people need as an essential element of learning across the curriculum, including the five core subjects. Students will find the content more relevant and challenging. Teachers will find their classes more



**FIGURE E**

<b>CHARACTERISTICS OF TODAY'S AND TOMORROW'S SCHOOLS</b>	
<b>SCHOOLS OF TODAY</b>	<b>SCHOOLS OF TOMORROW</b>
<b>STRATEGY</b>	
<ul style="list-style-type: none"> <li>• Focus on development of basic skills</li> <li>• Testing separate from teaching</li> </ul>	<ul style="list-style-type: none"> <li>• Focus on development of thinking skills</li> <li>• Assessment integral to teaching</li> </ul>
<b>LEARNING ENVIRONMENT</b>	
<ul style="list-style-type: none"> <li>• Recitation and recall from short-term memory</li> <li>• Students work as individuals</li> <li>• Hierarchically sequenced—basics before higher order</li> </ul>	<ul style="list-style-type: none"> <li>• Students actively construct knowledge for themselves</li> <li>• Cooperative problem solving</li> <li>• Skills learned in context of real problems</li> </ul>
<b>MANAGEMENT</b>	
<ul style="list-style-type: none"> <li>• Supervision by administration</li> </ul>	<ul style="list-style-type: none"> <li>• Learner-centered, teacher directed</li> </ul>
<b>OUTCOME</b>	
<ul style="list-style-type: none"> <li>• Only some students learn to think</li> </ul>	<ul style="list-style-type: none"> <li>• All students learn to think</li> </ul>

attentive and interested. Employers and college officials will be delighted with the results because the curriculum will be tied to real things in the real world.

The know-how defined by SCANS should be the responsibility of teachers in every curricular and extra-curricular area. These skills can and should be developed in the five core courses, in art and music, in foreign languages, in vocational education, on the school newspaper, or on athletic teams. Take the five core subject areas as examples (and these are only examples, as SCANS will not be prescribing curricula):

- **Allocating resources** can be taught in almost any of the five core subjects. Space

and material resources are a natural object of inquiry in both history and geography. In both, students can study how the environment and natural resources shaped tribes and nations. Budgets—from simple addition, to percentages, to algebra imbedded in sophisticated spreadsheets—can be covered in mathematics. Learning how to compute percentages in the context of a realistic budget problem will be much more profitable than if taught in the abstract or with artificial word problems.

- **Systems and technology** have a natural home in science courses. Students might learn about computer networks—or electrical or hydraulic or ecological systems—and be asked to evaluate alternative equipment possibilities in laboratory experiments. At higher levels of mathematics, students



might learn statistical process control techniques as part of competence with systems.

- **Social systems and information** can again be taken up in history and geography. Students could be asked to compare the colonial "system" to the representational system that emerged from the Constitutional Convention.
- **Basic skills** find a natural home in English classes—reading, writing, listening, and speaking. What may not be as obvious are the possibilities for covering competence in information as well. Communications skills and the use of the computer for word-processing, graphics, multi-media (video and audio), and manipulating databases can all be taught in the context of solving relevant problems.
- **Interpersonal** competence can be covered in all five core subjects, using cooperative learning opportunities to encourage teamwork and evaluation of the team's solutions. Teachers might, at the beginning of the term, tell students that they will have the opportunity to teach. Students would understand that their grade, in part, depends on how well their classmates learn the material they teach.

Future SCANS reports will discuss further the relationship between the SCANS competencies and achievements in the five core subjects. Clearly, the idea is that as students advance they will become more proficient in each of the SCANS five competencies. Performance in the 12th grade should be far superior to performance in the 8th. Performance after postsecondary school, training in the armed services, an apprenticeship program, or workplace-based training should be at a higher level still. SCANS believes that all students should be able to demonstrate their mastery of these skills by the time they can legally leave high school, age 16 in most states.

## YESTERDAY'S STUDENT/ TODAY'S WORKER

Most of those graduating high school this June, or in previous years, have not had an opportunity to learn the SCANS competencies. Four of every five of those who will be earning their living in the year 2000 are already beyond high school age. Yet, all these workers need to understand systems, allocate resources, and so on.

Fortunately, learning opportunities do not end with high school graduation. And these opportunities will have to be increased if Goal #5 of the six National Goals, agreed to by President Bush and the governors, is to be achieved. That goal states in part:

*"Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy...."*

Meeting the goal means that programs that serve workers must teach the SCANS know-how. They need to be part of the curriculum goals for programs offered by companies at the workplace. They should also be present where unions and companies jointly participate—as the United Auto Workers does with the auto firms, and the Communication Workers of America and the International Brotherhood of Electrical Workers do with AT&T.

The SCANS proficiencies should also be sought by workers whose firms do not provide them with training or who are looking for work and are served by adult education and training programs including those administered by the Department of Labor under the Job Training Partnership Act or the Department of Health and Human Services under the Family Assistance Act.



AMERICA 2000 seeks to transform the United States from a "Nation at Risk" to a "Nation of Students." The strategy would change life-long learning from a slogan to a reality for all. Responsibility for the transformation must be assumed by all sectors of society, including employers. Neither presidents nor parents will be heeded for long if employers do not value and reward additional skills. Figure A in Chapter I listed the characteristics of high-performance employers. These include investment in workers and promotion for skills attained. It makes no sense for schools to teach self-management if employers want to vest all authority in supervisors. Speaking skills will atrophy if workers are only expected to listen. Traditional mass production factories often viewed creativity as a liability rather than as an asset in a worker; and they certainly did not need workers who could "challenge existing procedures." Understanding systems yields no advantage if tasks are fragmented. Knowing how to schedule is an unnecessary skill if workers are subject to the routine of the traditional production lines.

In short, most employers have to require and be able to use productively the SCANS competencies. Otherwise, schools, students, and workers will not put forth the effort needed. In the words of an earlier Commission, America will have to choose a high-skilled, high-wage future. Workplaces must reorganize to use SCANS skills and become a learning environment for them. This choice will have to be made by service firms, as well as by manufacturers who produce for international markets. Hospitals, restaurants, and government offices will have to become high-performance workplaces.

AMERICA 2000 speaks of a public-private partnership to "establish job-related... skill standards, built around core proficiencies." This document provides a first definition of the core proficiencies. As such, it defines the end point for high school work and the beginning point for further learning on the job or in a postsecondary institution. This Commission is defining a level of proficiency within a spectrum that extends back into middle and elementary school and forward to higher education. It is the seam in life-long learning between high school and further study.

#### LEVELS OF PROFICIENCY

In addition to defining the skills needed for employment, the Commission was asked to propose acceptable levels of proficiency; that is, to answer the question: What is the threshold level for each competency and foundation skill for entry-level work? How much know-how is enough for a typical job ladder? If these questions cannot be answered with precision, the SCANS task will not be accomplished.

Proposing levels of proficiency is a difficult assignment. It requires judgment and a leap of imagination into a future world where schools and work are restructured. What *could* students and workers learn if the educational system fully responded to the strategy contained in AMERICA 2000? What *would* be required to access a career ladder if the high-performance model shown in Figure A became the norm? The proficiency levels are what makes the definitions meaningful. The verb "reading" is almost meaningless until an object such as "a computer manual" is attached. Is the minimum level for entering a high-



performance workplace reading an instructional manual or a learned paper on advanced physics? Must an entry-level worker be able to listen to a customer with a complaint or to a lecture on advanced statistics?

SCANS proposes a proficiency scale that ranges from “preparatory” (suitable only for unskilled work) to “specialist” (suitable for jobs requiring special expertise). With proper preparation, all students could achieve at least the work-ready level on this scale. This level marks readiness to enter a job on a career ladder, one with real possibilities for decent pay and advancement in the workplace. In terms of just one area of competence—managing time as a resource—the proficiency scale might look like the following:

Proficiency Level	Performance Benchmark
Preparatory	Scheduling oneself
Work-ready	Scheduling small work team
Intermediate	Scheduling a production line or substantial construction project
Advanced	Developing roll-out schedule for new product or production plant
Specialist	Develop algorithm for scheduling airline

The following Figures F and G illustrate SCANS initial estimates of *work-ready* levels of proficiency required for entry into a career-ladder job today. These estimates may be modified as our research continues and as members of the public respond to this report; they are set forth to elicit reaction. Many people may believe these estimates are too high. They are certainly higher

than most of us would expect today from all students. It would be surprising if most adults had these skills unless and until the competencies defined in this report are routinely taught in the schools. SCANS believes, however, that the competencies underlying the performances illustrated in these figures can be taught to, and learned by, every teenager.

Figures F and G describe the kinds of tasks performed by all employees in the high-performance workplace of today. These tasks define how the SCANS skills and competencies are used. Students who expect a promising career ladder must leave school with enough of this know-how to give employers some confidence that they can progress in the world of work.

Tomorrow’s career ladders require even the basic skills to take on new meaning. As shown in the figures, future jobs will require employees who can **read** well enough to understand and interpret diagrams, directories, correspondence, manuals, records, charts, graphs, tables, and specifications. Without the ability to read a diverse set of materials, employees will not be able to locate the descriptive and quantitative information needed to make decisions or to recommend courses of action. On the job, for example, this may mean reading well enough to:

- interpret blueprints and catalogues to estimate material costs;
- deal with complaint letters and company policy manuals describing complaint policy;
- understand patients’ medical records and instructions for administering medication; and
- read the text of technical manuals from equipment vendors.





FIGURE F

<b>SERVICE KNOW-HOW: LEVEL OF COMPETENCE EXPECTED FOR ENTRY ON A CAREER LADDER</b> (See Accommodations and Personal Services Scenario, Chapter II)	
<b>COMPETENCE</b>	<b>EXAMPLE OF WORK-READY LEVEL</b>
<b>RESOURCES</b>	Develop cost estimates and write proposals to justify the expense of replacing kitchen equipment. Develop a schedule for equipment delivery to avoid closing restaurant. Read construction blueprints and manufacturers' installation requirements to place and install equipment in the kitchen.
<b>INTERPERSONAL</b>	Participate in team-training and problem-solving session with multi-cultural staff of waiters and waitresses. Focus on an upcoming Saturday night when a local club has reserved the restaurant after midnight for a party. Three people cannot work and the team has to address the staffing problem and prepare for handling possible complaints about prices, food quality, or service.
<b>INFORMATION</b>	Learn how to use a spreadsheet program to estimate the food costs of alternative menus and daily specials. Make up weekly menu and print it with desk-top publishing software.
<b>SYSTEMS</b>	Analyze "system" that determines the average and maximum wait from the time customers sit down until they receive the appetizer and then the entree. Modify system to reduce both the average and maximum waiting time by 20 percent. Determine expected increase in the number of customers served.
<b>TECHNOLOGY</b>	Read the specifications and listen to salespeople describe three competing ovens for the kitchen. Write a report evaluating the ovens and making a recommendation. Set the automatic controls on the chosen oven to prepare a sample dish.

At the same time, most jobs will call for **writing skills** to prepare correspondence, instructions, charts, graphs, and proposals, in order to make requests, explain, illustrate, or convince. This may mean, for example:

- writing a memo to justify additional resources;
- preparing instructions for operating simple machines;

- developing a narrative to explain graphs and tables; and
- drafting suggested modifications in company procedures.

**Mathematics and computational skills** are also essential. Virtually all employees should be prepared to maintain records, estimate results, use spreadsheets, or apply statistical process



controls as they negotiate, identify trends, or suggest new courses of action. Mathematics skills are the foundation of such actions as:

- reconciling differences in inventory records;
- mentally estimating discounts while negotiating sales;
- using spreadsheet programs to track expenditures;
- using statistical process control procedures to maintain quality; and
- projecting resource needs over the next planning period.

Finally, very few of us will work by ourselves. More and more work involves listening carefully to clients and co-workers and clearly articulating one's point of view. Tomorrow's worker will have to **listen** and **speak** well enough to explain schedules and procedures, communicate with customers, work in teams, understand customer concerns, describe complex systems and procedures, probe for hidden meanings, teach others, and solve problems. On the job this might mean:

- explaining new production schedules to a work team;
- describing plans to supervisors and clients;
- questioning customers to diagnose malfunctions; and
- answering questions from customers about services offered.

Today, we cannot precisely determine how many youngsters have skills at the SCANS work-ready level. Our only data source is the 1986 National Assessment of Educational Progress (NAEP) survey of 21 to 25-year-olds. Our staff compared the tasks in Figures F and G with those assessed by the NAEP. On this basis we

estimate that less than half of young adults can demonstrate the SCANS reading and writing minimums; even fewer can handle the mathematics. NAEP does not assess the competencies. But since they are rarely explicitly taught or assessed in school, it is likely that reading, writing, and mathematics performance represents the upper limits of student proficiency. Further, today most schools do not address the listening and speaking skills directly.

Figures F and G also illustrate that all three parts of the foundation are required in work settings and are part of the competencies. Meeting the challenges presented in both figures obviously requires basic skills. But higher order thinking skills are also needed. Proposing an effective menu requires creativity and mental visualization. Learning how to use a spreadsheet program—by definition—cannot be accomplished without knowing how to learn. Recommending equipment requires decision making. Developing a training plan that does not upset production schedules requires problem-solving and reasoning skills.

The same observation can be made for the personal qualities that are part of the foundation; these qualities are essential for performance. Irresponsible workers or those lacking self-esteem are unlikely to contribute in team problem-solving efforts. No firm wants discourteous employees without social skills dealing with vendors or salespeople, let alone with fellow employees or customers. Without the capacity for self-management, a worker cannot be given a lengthy assignment, such as analyzing statistical charts and finding ways to improve quality or analyzing the waiting time in a restaurant; those who are not self-starters will be looking for step-by-step



**FIGURE G**

<b>MANUFACTURING KNOW HOW: LEVEL OF COMPETENCE EXPECTED FOR ENTRY ON A CAREER LADDER</b> (See Manufacturing Scenario, Chapter II)	
<b>COMPETENCE</b>	<b>EXAMPLE OF WORK-READY LEVEL</b>
<b>RESOURCES</b>	Develop a plan to show how the production schedule can be maintained while the staff is trained in a new procedure. Estimate the number of additional employees or overtime required so that training can occur. Prepare charts to explain schedule to management and employees; make a presentation and answer questions about it.
<b>INTERPERSONAL</b>	Join a production team brainstorming to find ways to include two new workers who speak limited English in the plant's improvement program. The goal is to have all team members, whatever their English skills, make weekly suggestions to improve product quality.
<b>INFORMATION</b>	Analyze statistical control charts to monitor error rate. Develop, with other team members, a way to bring performance in your production line up to that of best practice in competing plants.
<b>SYSTEMS</b>	As part of information analysis above, analyze painting system and suggest how improvements can be made to minimize system downtime and improve paint finish.
<b>TECHNOLOGY</b>	Evaluate three new paint spray guns from the point of view of costs, health and safety, and speed. Vendors describe performance with charts and written specifications. Call vendors' representatives to clarify claims and seek the names of others using their equipment. Call and interview references before preparing a report on the spray guns and making a presentation to management.

instructions until it becomes easier for the manager to do the job him or herself. Finally, no firm can afford having workers whose integrity cannot be trusted involved in matters dealing with vendors or safety.

As the letter to parents, employers, and educators that preceded this document states: the real world does not "...categorize problems into

five domains of competence and a three-part foundation. Instead, all eight [are applied] to the situation..." Figures F and G are intended to illustrate that idea.

#### **FUTURE WORK**

This report is the first product of the SCANS Commission. It defines the skills needed for



employment and contains our initial proposals for acceptable levels of proficiency.

As this report is in preparation, SCANS is continuing its analysis of performance requirements for 50 jobs, including chefs, electricians, bank tellers, truck drivers, and numeric control drill press operators.<sup>4</sup> When that analysis is complete, SCANS will be in a position to more accurately describe job performance requirements at the work-ready proficiency level for each of the five competencies.

The Commission's activities will conclude in February 1992. In the remaining months of the Commission's service, we will continue our efforts to propose acceptable levels of proficiency and turn our attention to the other two tasks with which we have been charged:

- suggesting effective ways to assess proficiency; and
- developing a dissemination strategy for the nation's schools, business, unions, and homes.

The work will be undertaken by a series of SCANS Committees that will address: Assessment, Changes in K-12 Education, Changes in Education for Today's Workers, and How Technology Can Support Educational Change. We also have created a special group to address the role of Government as Employer.

#### **Assessment**

President Bush has called for a nationwide voluntary assessment of our young people in grades 4, 8, and 12 in five core subjects: English, mathematics, science, history, and geography. We believe measurement of the SCANS competencies should inform the development of those

assessments in grades 8 and 12. The President's program states, "Colleges will be urged to use the American Achievement Tests in admissions; employers will be urged to pay attention to them in hiring."

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**In the next six months, SCANS will consider the major issues involved in creating an assessment system for the competencies and the foundation.**

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SCANS understands that the large numbers of local, state, and nationwide examinations that are already administered in the nation's schools add up to a nearly overwhelming burden in the nation's classrooms. We have no desire to add to a testing system that is already extensive. At the same time, SCANS is convinced that most existing tests—largely pencil and paper, multiple-choice tests of short-term memory—do little to advance the cause of learning. Effective assessment techniques should support instruction and students' knowledge of their progress.

The assessment process we will examine further will be aimed at ensuring fairness for students from different social, racial, and economic backgrounds. The standards embodied in this assessment process should not be a barrier to student success but a gateway to a new future. This can be accomplished with an open assessment system in which the criteria for performance are crystal clear. Assessments must be designed so that, when teachers teach and students study, both are engaged in authentic practice of valued competencies. SCANS will not develop the assessment process; we will, however, consider and report on the issues involved.

<sup>4</sup>See Appendix D.



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**As part of that effort, SCANS will explore the idea of certifying that the competencies have been acquired.**

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SCANS aims to promote the development and use of assessments that can provide the basis for a new kind of high school credential. This credential will measure mastery of specific, learnable competencies. This approach is intended to renew the dignity of the high school diploma, giving it real meaning as a mark of competence.

Certifying the five competencies can serve several purposes not now being achieved. They will link school credentials, student effort, and student achievement; they will provide an incentive for students to study; and they will give employers a reason to pay attention to school records. Finally, they will provide a clear target for instruction and learning. Assessment can thus help improve achievement, not simply monitor it.

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**In response to President Bush's request that business and labor leaders help create "World Class Standards" of student performance, SCANS will work with the Departments of Labor and Education to "spearhead a public-private partnership" as called for in AMERICA 2000. This entity will advise education officials about work-relevant skills and knowledge as described in the President's education strategy.**

---

The President has charged SCANS to inform the Secretaries of Labor and Education as they develop voluntary standards for all industries.

We will review this charge under AMERICA 2000 before issuing our final report.

As the Secretary of Education has said, "AMERICA 2000 is not a program but a crusade." If that crusade is to succeed, education must effectively be linked to work. Employers and labor leaders, therefore, must participate in decisions about what future American schools will look like, what kinds of skills and knowledge they will teach, and what kinds of certificates of competence will accompany the high school diploma.

#### **Dissemination**

Developing a strategy to assure that the SCANS competencies become a part of the learning opportunity for every child in this nation is a formidable task. There are many issues to be considered if schools are to integrate instruction in these competencies into their current programs.

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**In the next six months, the Commission will consider the implications of the SCANS competencies and foundation for curriculum, instructional materials, school organization, and teacher training.**

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The members of SCANS understand that what they are proposing presents major new challenges to the nation's schools and educators. Schools of the future, capable of developing these competencies and skills in every student, will not spring up overnight. Creating schools of the future will require focusing on their organization and related concerns of curriculum, instructional materials, and teacher training.

We realize that these changes will not be free of charge. For example, the AMERICA 2000



Excellence in Education Act calls for Governors' Academies for School Leaders and for Teachers. We also realize that good schools will use their resources efficiently and effectively. In the remaining months left to SCANS, we will consider how educators might proceed.

Again, SCANS will not produce curricula or instructional materials. We will, however, examine the implications of our recommendations for these components of the learning process.

### A BEGINNING

President Bush has encouraged all of us to be revolutionaries in the cause of education. The revolution required in education will not be easy to accomplish. But the members of the SCANS Commission remain optimistic. Many students and teachers are working wonders against great odds; many schools have begun the work of reshaping themselves. A review of our nation's history demonstrates that the success of the United States has always been rooted in the ability of its people to rise to new challenges. The knowledge that our education system is not keeping pace with change must be tempered with the recognition that these same schools produced men and women who have created changes undreamed of in the world.

For over 200 years Americans have worked to make education part of their national vision, indispensable to democracy and to individual freedom. For at least the last 40 years, we have worked to join the power of education to the ideal of equity—for minority Americans, for the dis-

abled, and for immigrants. With that work still incomplete, we are called to still another revolution—to create an entire people trained to think and equipped with the know-how to make their knowledge productive.

This new revolution is no less exciting or challenging than those we have already completed. Nor is its outcome more certain. All that is certain is that we must begin.

To that end, SCANS contributes this document to the discussion. We do not pretend to have the final word. As a report on work in progress, our conclusions are tentative and incomplete. Nevertheless, we believe that what we have outlined here represents a genuine addition to the conversation. We offer it as a contribution to the national dialogue about education in America.

We ask all who care about that future to join us in this conversation. Is the vocabulary we have provided helpful? Are we on the right track with our definition of the know-how needed by young Americans? Are the competencies and skills we have defined being taught in your child's school or at your place of work? Your participation in this conversation can help refine, correct, and focus SCANS thinking as we continue our work. We invite you to be in touch with the Department of Labor for more information about these issues and for the tools and materials it can provide to help you test these ideas in your own community.

# WHAT WORK REQUIRES OF SCHOOLS

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A SCANS REPORT FOR  
AMERICA 2000

THE SECRETARY'S COMMISSION ON ACHIEVING NECESSARY SKILLS  
U.S. DEPARTMENT OF LABOR





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**EMPLOYERS:** Aetna Life and Casualty, American Institutes for Research, Bell Atlantic, Cafe Atlantico, Chrysler Motors, Cigna, Farmers National Bank, Federal Express, FETE Accomplie, GE Aircraft Systems, Greater Southeast Community Hospital, Group Health Association, Hyatt Regency, International Brotherhood of Electrical Workers, M. Hali Stanton Elementary School, Marriott, MB Graphics, MCI Communications, Mildred D. Monroe Elementary School, National Security Agency, National Joint Apprenticeship and Training Committee, Nordstroms, Ross Dress For Less, Sheraton Park Avenue, Sibley Memorial Hospital, Sovran Bank, St. Joseph Hospital, TGI Fridays, The Hartford, The New Journal, Truland, UPS, Wachovia Bank, and Westmoreland Elementary School.





# APPENDIX B

## DEFINITIONS: THE COMPETENCIES

### RESOURCES

**Allocates Time.** Selects relevant, goal-related activities, ranks them in order of importance, allocates time to activities, and understands, prepares, and follows schedules.

**Allocates Money.** Uses or prepares budgets, including making cost and revenue forecasts, keeps detailed records to track budget performance, and makes appropriate adjustments.

**Allocates Material and Facility Resources.** Acquires, stores, and distributes materials, supplies, parts, equipment, space, or final products in order to make the best use of them.

**Allocates Human Resources.** Assesses knowledge and skills and distributes work accordingly, evaluates performance, and provides feedback.

### INTERPERSONAL

**Participates as a Member of a Team.** Works cooperatively with others and contributes to group with ideas, suggestions, and effort.

**Teaches Others.** Helps others learn.

**Serves Clients/Customers.** Works and communicates with clients and customers to satisfy their expectations.

**Exercises Leadership.** Communicates thoughts, feelings, and ideas to justify a position, encourages, persuades, convinces, or otherwise motivates an individual or groups,

including responsibly challenging existing procedures, policies, or authority.

**Negotiates.** Works towards an agreement that may involve exchanging specific resources or resolving divergent interests.

**Works with Cultural Diversity.** Works well with men and women and with a variety of ethnic, social, or educational backgrounds.

### INFORMATION

**Acquires and Evaluates Information.** Identifies need for data, obtains it from existing sources or creates it, and evaluates its relevance and accuracy.

**Organizes and Maintains Information.** Organizes, processes, and maintains written or computerized records and other forms of information in a systematic fashion.

**Interprets and Communicates Information.** Selects and analyzes information and communicates the results to others using oral, written, graphic, pictorial, or multi-media methods.

**Uses Computers to Process Information.** Employs computers to acquire, organize, analyze, and communicate information.

### SYSTEMS

**Understands Systems.** Knows how social, organizational, and technological systems work and operates effectively within them.



**Monitors and Corrects Performance.** Distinguishes trends, predicts impact of actions on system operations, diagnoses deviations in the function of a system/organization, and takes necessary action to correct performance.

**Improves and Designs Systems.** Makes suggestions to modify existing systems to improve products or services, and develops new or alternative systems.

## TECHNOLOGY

**Selects Technology.** Judges which set of procedures, tools, or machines, including computers and their programs, will produce the desired results.

**Applies Technology to Task.** Understands the overall intent and the proper procedures for setting up and operating machines, including computers and their programming systems.

**Maintains and Troubleshoots Technology.** Prevents, identifies, or solves problems in machines, computers, and other technologies.



# APPENDIX C

## DEFINITIONS: THE FOUNDATION

### BASIC SKILLS

**Reading.** Locates, understands, and interprets written information in prose and documents—including manuals, graphs, and schedules—to perform tasks; learns from text by determining the main idea or essential message; identifies relevant details, facts, and specifications; infers or locates the meaning of unknown or technical vocabulary; and judges the accuracy, appropriateness, style, and plausibility of reports, proposals, or theories of other writers.

**Writing.** Communicates thoughts, ideas, information, and messages in writing; records information completely and accurately; composes and creates documents such as letters, directions, manuals, reports, proposals, graphs, flow charts; uses language, style, organization, and format appropriate to the subject matter, purpose, and audience. Includes supporting documentation and attends to level of detail; checks, edits, and revises for correct information, appropriate emphasis, form, grammar, spelling, and punctuation.

**Arithmetic.** Performs basic computations; uses basic numerical concepts such as whole numbers and percentages in practical situations; makes reasonable estimates of arithmetic results without a calculator; and uses tables, graphs, diagrams, and charts to obtain or convey quantitative information.

**Mathematics.** Approaches practical problems by choosing appropriately from a variety of mathematical techniques; uses quantitative data to construct logical explanations for real world situations;

expresses mathematical ideas and concepts orally and in writing; and understands the role of chance in the occurrence and prediction of events.

**Listening.** Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to the purpose; for example, to comprehend; to learn; to critically evaluate; to appreciate; or to support the speaker.

**Speaking.** Organizes ideas and communicates oral messages appropriate to listeners and situations; participates in conversation, discussion, and group presentations; selects an appropriate medium for conveying a message; uses verbal language and other cues such as body language appropriate in style, tone, and level of complexity to the audience and the occasion; speaks clearly and communicates a message; understands and responds to listener feedback; and asks questions when needed.

### THINKING SKILLS

**Creative Thinking.** Uses imagination freely, combines ideas or information in new ways, makes connections between seemingly unrelated ideas, and reshapes goals in ways that reveal new possibilities.

**Decision Making.** Specifies goals and constraints, generates alternatives, considers risks, and evaluates and chooses best alternatives.

**Problem Solving.** Recognizes that a problem exists (i.e., there is a discrepancy between what



is and what should or could be), identifies possible reasons for the discrepancy, and devises and implements a plan of action to resolve it. Evaluates and monitors progress, and revises plan as indicated by findings.

**Seeing Things in the Mind's Eye.** Organizes and processes symbols, pictures, graphs, objects or other information; for example, sees a building from a blueprint, a system's operation from schematics, the flow of work activities from narrative descriptions, or the taste of food from reading a recipe.

**Knowing How to Learn.** Recognizes and can use learning techniques to apply and adapt new knowledge and skills in both familiar and changing situations. Involves being aware of learning tools such as personal learning styles (visual, aural, etc.), formal learning strategies (notetaking or clustering items that share some characteristics), and informal learning strategies (awareness of unidentified false assumptions that may lead to faulty conclusions).

**Reasoning.** Discovers a rule or principle underlying the relationship between two or more objects and applies it in solving a problem. For example, uses logic to draw conclusions from available information, extracts rules or principles from a set of objects or written text; applies rules and principles to a new situation, or determines which conclusions are correct when given a set of facts and a set of conclusions.

## PERSONAL QUALITIES

**Responsibility.** Exerts a high level of effort and perseverance towards goal attainment. Works hard to become excellent at doing tasks by set-

ting high standards, paying attention to details, working well, and displaying a high level of concentration even when assigned an unpleasant task. Displays high standards of attendance, punctuality, enthusiasm, vitality, and optimism in approaching and completing tasks.

**Self-Esteem.** Believes in own self-worth and maintains a positive view of self; demonstrates knowledge of own skills and abilities; is aware of impact on others; and knows own emotional capacity and needs and how to address them.

**Sociability.** Demonstrates understanding, friendliness, adaptability, empathy, and politeness in new and on-going group settings. Asserts self in familiar and unfamiliar social situations; relates well to others; responds appropriately as the situation requires; and takes an interest in what others say and do.

**Self-Management.** Assesses own knowledge, skills, and abilities accurately; sets well-defined and realistic personal goals; monitors progress toward goal attainment and motivates self through goal achievement; exhibits self-control and responds to feedback unemotionally and non-defensively; is a "self-starter."

**Integrity/Honesty.** Can be trusted. Recognizes when faced with making a decision or exhibiting behavior that may break with commonly-held personal or societal values; understands the impact of violating these beliefs and codes on an organization, self, and others; and chooses an ethical course of action.

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## APPENDIX D JOBS ANALYSIS

The SCANS concepts of competencies and a foundation, and the use of scenarios describing work in context, was developed by the Commission and staff based on a review of the literature and advice from numerous experts. Convinced that this new language represented a promising start, SCANS extended this conversation into the research and business communities. We wanted to ensure that the five competencies and the foundation were, in fact, critical to job performance. We also worked to ensure that the workplace scenarios represented expert reflection on what today's worker actually does.

During Phase I of this effort 15 jobs have been analyzed through detailed, in-depth interviews, lasting up to four hours each, with job holders or their supervisors. The interviews explored the general job description, confirmed ratings of the importance of skills, and inquired about "critical incidents" and illustrative tasks and tools used on the job.

The 15 jobs, by employment sector, are:

- **Restaurant and Accommodations**
  - Chefs
  - Front Desk Clerks
  - Assistant Housekeepers
- **Manufacturing and Construction**
  - Electricians
  - Numeric Control Drill Operators
  - Offset Lithographer Press Operators
- **Office and Finance**
  - Bank Tellers
  - Underwriter Assistants

– Secretaries

- **Health and Human Services**
  - Medical Record Technicians
  - Registered Nurses
  - Teacher's Aides
- **Trade and Communications**
  - Truck Drivers
  - Retail Salespeople
  - Inside Equipment Technicians.

In Phase 2 of the SCANS research, the following 35 jobs will be added to the research base:

- **Manufacturing, Agri-Business, Mining, and Construction**
  - Plastic Molding Machine Operator
  - Blue Collar Worker Supervisor
  - Farmer
  - Excavating Machine Operator
  - Carpenter
  - Expeditor/Purchasing Agent
  - Construction Contractor
- **Health and Human Services**
  - Childcare Aide
  - Dental Hygienist
  - Dietary Manager
  - Licensed Practical Nurse
  - Medical Assistant
  - Medical Technician/Technologist
  - Optician
- **Office, Financial Services, and Government**
  - Graphics Designer
  - Computer Operator
  - Accounting/Financial Analyst



- Programming Technician
- Personnel Specialist
- Law Enforcement Officer
- Quality Control Inspector
- **Accommodations and Personal Services**
  - Food Service Unit Manager
  - Waiter/Waitress
  - Industry Training Specialist
  - Account Executive/Executive Meeting Manager
  - Hairstylist/Cosmetologist/  
Esthetician
- **Trade, Transportation, and Communications**
  - Beauty Shop Owner
  - Show Operations Supervisor
  - Order Filler
  - Traffic, Shipping and Receiving Clerk
  - Outside Equipment Technician
  - Truck Delivery Salesperson
  - Telemarketing Representative
  - Travel Agent
  - Customer Service Representative



**FOR ADDITIONAL INFORMATION AND MATERIALS,  
CONTACT:**

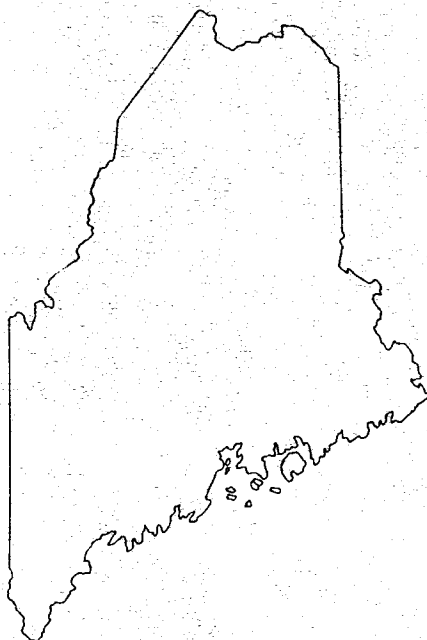
U.S. Department of Labor  
Secretary's Commission on Achieving Necessary Skills  
200 Constitution Avenue, N.W.  
Washington, D.C. 20210

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**MAINE  
SPECIAL EDUCATION DATA  
SUMMARY REPORT**

**1989-90**

**AS REPORTED FOR THE  
P.L. 94-142 AND P.L. 89-313 PROGRAMS**



**APRIL, 1991**

**Compiled by John T. Kierstead and Donna M. Gray-Hanc  
Division of Special Education, Maine Department of Education  
Station 23, Augusta, ME 04333**

*Dist. 8/23*



## TABLE OF CONTENTS

### Introduction

Highlights of 1989-90 Special Education Data.....	1-2
Exceptionality Data.....	3-5
Educational Placement Data.....	6-7
Related Services Data.....	8-9
Exit Data (14-21 year olds).....	10-11
Anticipated Services Needed Data (14-21 year olds).....	12-13
Personnel Employed.....	14
Anticipated Personnel Needed.....	15-16
Comparison of P.L. 94-142 Data for 1987-88, 1988-89 & 1989-90.....	17-26

The Maine Department of Education insures equal employment, equal educational opportunities, and affirmative action regardless of race, sex, color, national origin, religion, marital status, age or handicap.

## INTRODUCTION

In 1986-87 the Maine Department of Education, Division of Special Education converted its data collection system for P.L. 94-142, Part B, Education of all Handicapped Children's Act (EHA) from age and exceptionality to a system based on student information. The change was made to meet data requirements under P.L. 98-199, Amendments to P.L. 94-142, EHA. Current information collected include: name, date of birth, gender, exceptionality, educational placement, related services, exiting status and anticipated services needed. Personnel data is also collected, and includes: personnel employed (special education teachers and other personnel) and anticipated personnel needed (special education teachers and other personnel).

Changes were made in the data collection system for P.L. 89-313, ECIA in the 1987-88 school year. These two programs now incorporate the same data elements. This year's Special Education Data Summary Report encompasses data on both the P.L. 94-142 and P.L. 89-313 programs for the 1989-90 school year.

The Division of Special Education has come a long way in its data collection efforts over the past five years thanks to John T. Kierstead, Donna Gray-Hanc and the Data Advisory Committee established in 1986. The Division of Special Education has attempted to make this information relevant to special educators in the State of Maine and at the same time meet it's responsibility for reporting to the Office of Special Education Programs, U.S.O.E.

We are pleased to be able to provide you with the fourth annual State summary of data on exceptional students. This publication includes the following:

- Exceptionality Data
- Educational Placement Data
- Related Services Data
- Exit Data (14-21 yr olds)
- Anticipated Services Needed Data (14-21 yr olds)
- Personnel Employed
- Anticipated Personnel Needed
- 1987-88, 1988-89 and 1989-90 comparisons (P.L. 94-142 only)

We encourage you to examine your school unit's data with the state data provided. (Superintendents of Schools and Directors of State Operated/State Supported Programs have been provided a copy of their individual school unit data.) This information should prove useful in program planning, management and budgeting. Packets of county data are available on request.

Please feel free to copy this booklet or any of the information contained within. Copies have been sent to superintendents, special education directors, directors of state operated/state supported programs, preschool coordination sites and special education faculty in the University of Maine system.

As feedback on the utility of the information provided in the Special Education Data Summary Report is important to us, we have designed an evaluation form which you will find inserted in this publication. Please take a few moments to fill out this evaluation form, providing any comments, constructive criticism and/or suggestions you may have.

## HIGHLIGHTS OF 1989-90 SPECIAL EDUCATION DATA

- \* 28,223 students ages 3-21 received special education and related services in 1989-90 (a 1% increase from 1988-89). This figure represents 13.3% of the school-age (5-17) population in Maine.
- \* Nationally, 4,687,620 students ages 3-21 received special education and related services (a 2% increase from 1988-89). This represents 9.9% of national school enrollment.
- \* Four types of exceptionalities account for 90% of the students served in Maine: learning disabled (39%), speech/language impaired (28%), behaviorally impaired (15%) and mentally retarded (8%).
- \* Nationally, these same four exceptionalities account for 94% of the students served: learning disabled (49%), speech/language impaired (23%), mentally retarded (13%) and behaviorally impaired (9%).
- \* The number of behaviorally impaired students in Maine has remained fairly constant over the past 3 years. This was not expected due to the change in Maine's Special Education Regulations in August, 1988 which defined behavioral impairment more restrictively, excluding socially maladjusted students from the definition.
- \* Over the past three years, students identified as mentally retarded have declined by approximately 32%, while students identified as speech/language impaired have increased by 11%. Nationally the number of mentally retarded and speech/language impaired students both continue to decline.
- \* Approximately 93% of exceptional students ages 3-21 received special education and related services in regular school buildings (regular classrooms, resource rooms, or self-contained classes). Nationally, the figure was 93% for 1988-89.
- \* 51% were served in regular classes, 31% in resource room/resource room composite classes, and 12% in self-contained/self-contained composite classes. The national figures for 1988-89 are 31% regular class, 37% resource room and 24% self-contained.
- \* For all exceptionalities except mental retardation and multihandicapped, the primary educational placement was in regular class settings. The primary placement for students with mental retardation and multihandicaps was in self-contained settings.

- \* Of the 1299 exceptional students ages 14-21 who left special education services in 1989-90 by way of graduating with diploma, graduating with certificate, reaching maximum age, dropping out, or status unknown, 57% graduated with a diploma and 27% dropped out. Nationally the figures for 1988-89 were 44% graduated with a diploma and 27% dropped out.
- \* 50% of the students who dropped out are behaviorally impaired, and 33% are learning disabled.
- \* 55% of the students who dropped out are sixteen and seventeen year olds.
- \* Over the past 3 years, there has been a substantial increase (83%) in the number of students exiting to regular education (approximately half of the increase is due to the addition of 14 and 15 year olds in the data collected).
- \* The number of students who are identified as having an unknown status has increased by 63% over the past three years.
- \* The number of special education teachers employed to teach exceptional students ages 3-21 showed no change between 1988-89 and 1989-90, while the number of other personnel employed increased by 3%.
- \* 52% of the increase in other personnel employed is in the teacher aide category.
- \* The number of special education teachers needed to teach exceptional students ages 3-21 decreased by 18%, while the number of other personnel needed increased by 29%.
- \* The majority of special education teachers needed continue to be teachers of the learning disabled, speech/language impaired and behaviorally impaired.
- \* 63% of other personnel needed are teacher aides.
- \* An approximate ratio of teachers to students is 1:16. Nationally, the ratio is 1:15.

## EXCEPTIONALITY DATA

A total of 28,223 students ages 3-21 were provided special education and related services in 1989-90 (as reported on the EF-S-05 and EF-S-204/A). This represents 13.3% of the school aged (5-17) population in Maine (211,422 on the October 1st enrollment).

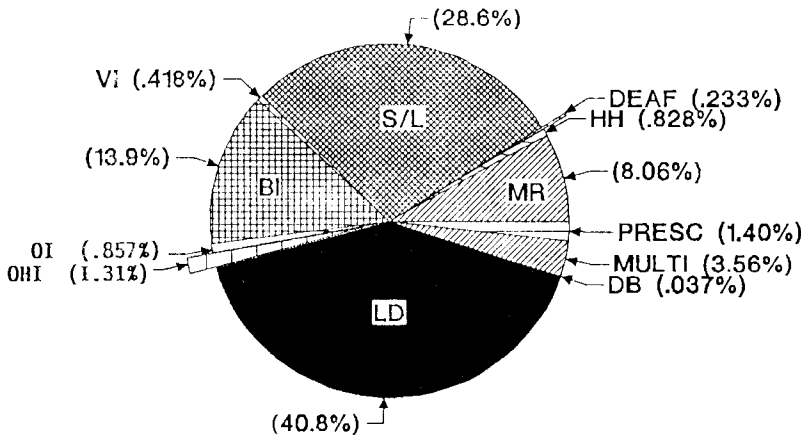
Four Most Frequently Identified Exceptionalities:

	P.L. 94-142	P.L. 89-313	Totals	<u>MAINE</u> % Total Sp.Ed.	<u>NATIONAL</u> % Total Sp.Ed.	<u>MAINE</u> % Total Sch.Enr.
Mental Retardation	2,181 (8.1%)	191 (16.5%)	2,372	8.4%	13.3%	1.1%
Speech/ Language	7,742 (28.6%)	32 (2.8%)	7,774	27.5%	22.9%	3.7%
Behavioral Impairment	3,772 (13.9%)	576 (49.6%)	4,348	15.4%	9.0%	2.1%
Learning Disabilities	11,028 (40.8%)	58 (5.0%)	11,086	39.3%	48.5%	5.2%

While the majority of students under P.L. 94-142 are reported in the four exceptionalities in the order shown in the above chart, the majority of students under P.L. 89-313 are reported in the following exceptionalities: Behavioral Impairment 576 (49.6%), Multihandicapped 213 (18.4%), Mental Retardation 191 (16.5%), and Learning Disabilities 58 (5.0%). This reflects the severity of the exceptionalities served under the P.L. 89-313 program.

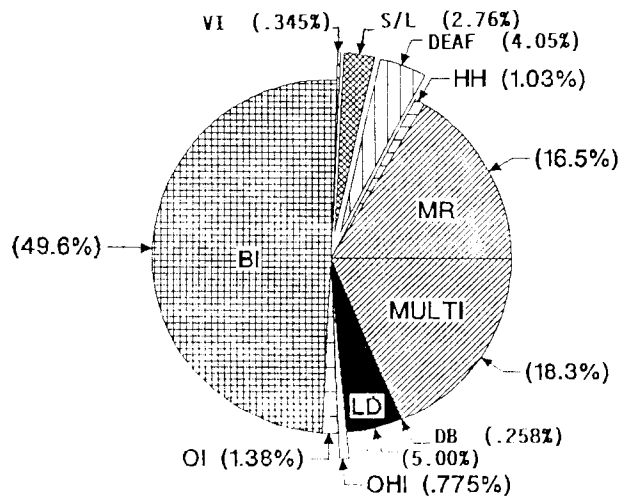
### P.L. 94-142

Enrollment of Exceptional Students



### P.L. 89-313

Enrollment of Exceptional Students



**EXCEPTIONALITY DATA (P.L. 94-142)  
AS REPORTED ON THE EF-S-05**

**STATE TOTALS**

EXCEPTIONALITY	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
1. MENTAL RETARDATION		8	6	35	58	92	115	150	178	191	167	177	199	187	191	187	152	81	7	-	2181
2. HARD OF HEARING		14	21	10	14	21	11	16	13	18	16	16	11	10	15	9	5	3	1	-	224
3. DEAF		7	5	1	7	6	4	5	6	7	3	4	2	1	2	3	-	-	-	-	63
4. SPEECH & LANGUAGE IMPAIRMENT		474	862	768	1006	1118	993	773	569	415	286	166	122	61	59	40	22	8	-	-	7742
5. VISUAL IMPAIRMENT		11	14	7	4	7	8	7	8	7	9	7	5	7	4	3	3	2	-	-	113
6. BEHAVIORAL IMPAIRMENT		76	122	76	115	147	232	290	305	328	348	348	351	339	316	243	102	32	2	-	3772
7. ORTHOPEDIC IMPAIRMENT		16	28	17	15	14	24	22	27	15	10	6	11	7	5	7	7	1	-	-	232
8. OTHER HEALTH IMPAIRMENT		46	50	18	12	19	16	21	24	27	18	20	15	17	16	25	7	3	1	-	355
9. LEARNING DISABILITY		-	1	13	77	357	781	1126	1208	1233	1197	1050	986	925	854	660	457	98	5	-	11028
10. DEAF/BLIND		-	-	-	2	1	-	1	2	1	-	-	1	1	-	-	-	-	1	-	10
11. MULTIHANDICAPPED		60	103	62	68	55	80	72	49	69	58	60	63	46	34	29	36	15	5	-	964
12. PRESCHOOL NON-CATEGORICAL		144	188	46	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	378
<b>TOTALS</b>		<b>856</b>	<b>1400</b>	<b>1053</b>	<b>1378</b>	<b>1837</b>	<b>2264</b>	<b>2483</b>	<b>2389</b>	<b>2311</b>	<b>2112</b>	<b>1854</b>	<b>1766</b>	<b>1601</b>	<b>1496</b>	<b>1206</b>	<b>791</b>	<b>243</b>	<b>22</b>	<b>-</b>	<b>27062</b>

EXCEPTIONALITY	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
1. MENTAL RETARDATION	49	.18	784	2.90	1108	4.09	240	.89	2181	8.06
2. HARD OF HEARING	45	.17	93	.34	77	.29	9	.03	224	.83
3. DEAF	13	.05	35	.13	15	.06	-	-	63	.23
4. SPEECH & LANGUAGE IMPAIRMENT	2104	7.78	4874	18.01	734	2.71	30	.11	7742	28.61
5. VISUAL IMPAIRMENT	32	.12	41	.15	35	.13	5	.02	113	.42
6. BEHAVIORAL IMPAIRMENT	274	1.01	1417	5.24	1945	7.19	136	.50	3772	13.94
7. ORTHOPEDIC IMPAIRMENT	61	.23	117	.43	46	.17	8	.03	232	.86
8. OTHER HEALTH IMPAIRMENT	114	.42	119	.44	111	.41	11	.04	355	1.31
9. LEARNING DISABILITY	14	.05	4782	17.67	5672	20.96	560	2.07	11028	40.75
10. DEAF/BLIND	-	-	7	.03	2	.01	1	-	10	.04
11. MULTIHANDICAPPED	225	.83	393	1.45	290	1.07	56	.21	964	3.56
12. PRESCHOOL NON-CATEGORICAL	378	1.40	-	-	-	-	-	-	378	1.40
<b>TOTALS</b>	<b>3309</b>	<b>12.23</b>	<b>12662</b>	<b>46.79</b>	<b>10035</b>	<b>37.08</b>	<b>1056</b>	<b>3.90</b>	<b>27062</b>	<b>100.00</b>

**EXCEPTIONALITY DATA (P.L. 89-313)  
AS REPORTED ON THE EF-S-204/A**

**STATE TOTALS**

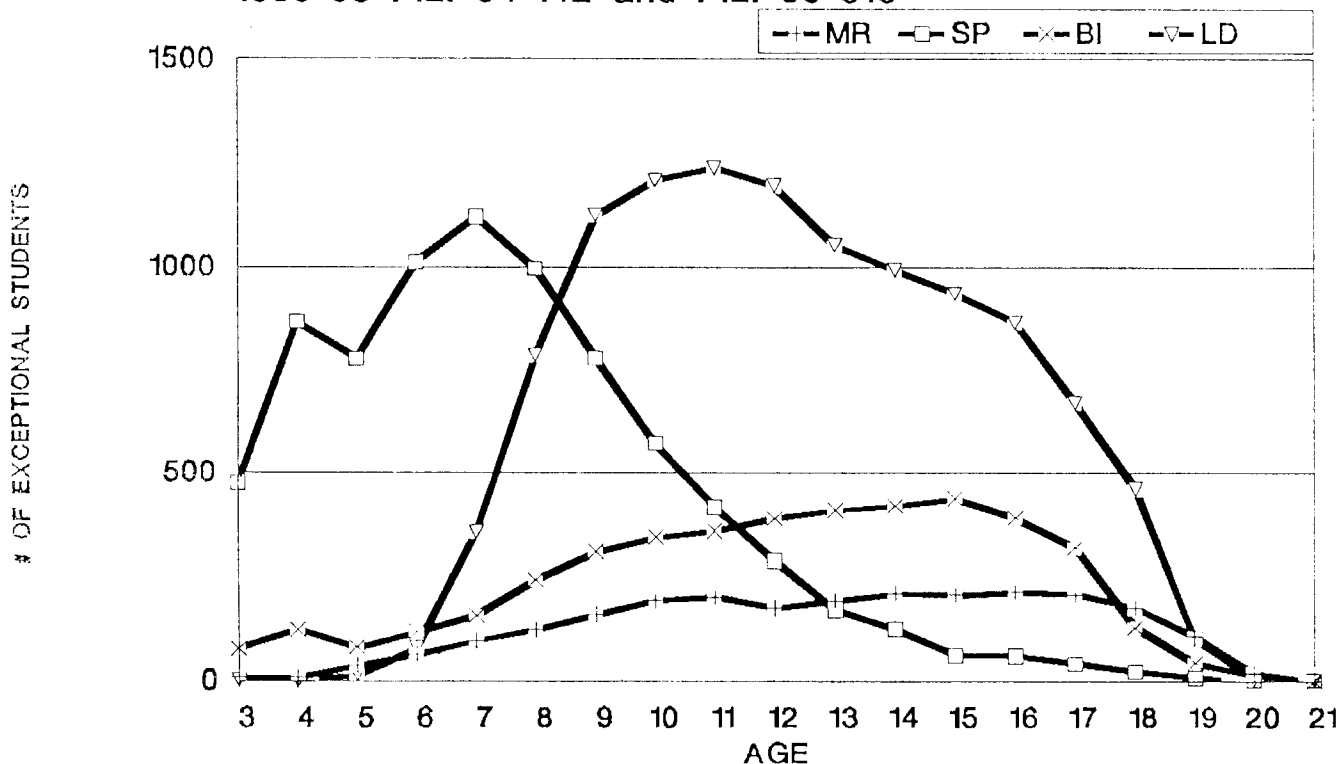
HANDICAP CONDITION	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
1. MENTAL RETARDATION		1	2	2	5	3	7	8	12	8	6	14	10	18	21	19	22	23	10	-	191
2. HARD OF HEARING		2	1	1	1	2	1	-	-	1	-	-	1	1	-	-	-	1	-	-	12
3. DEAF		2	1	-	4	2	4	4	3	3	2	2	6	2	3	3	6	-	-	-	47
4. SPEECH & LANGUAGE IMPAIRMENT		1	6	7	4	3	3	1	1	1	2	1	-	-	1	-	-	-	-	-	32
5. VISUAL IMPAIRMENT		-	-	-	-	-	-	1	-	1	1	-	-	-	1	-	-	-	-	-	4
6. BEHAVIORAL IMPAIRMENT		-	3	1	8	9	19	39	31	42	61	69	98	75	76	25	10	9	1	-	576
7. ORTHOPEDIC IMPAIRMENT		1	1	-	3	1	3	1	1	-	-	1	-	1	2	1	-	-	-	-	16
8. OTHER HEALTH IMPAIRMENT		-	2	-	-	-	-	1	-	-	1	-	-	-	-	3	1	-	1	-	9
9. LEARNING DISABILITY		-	1	-	-	-	2	-	3	8	1	4	7	9	8	8	4	3	-	-	58
10. DEAF/BLIND		-	-	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	3
11. MULTIHANDICAPPED		10	2	4	4	9	10	11	16	14	15	8	16	21	21	14	17	11	9	1	213
12. PRESCHOOL NON-CATEGORICAL		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>		<b>16</b>	<b>8</b>	<b>20</b>	<b>22</b>	<b>31</b>	<b>38</b>	<b>50</b>	<b>76</b>	<b>68</b>	<b>69</b>	<b>92</b>	<b>111</b>	<b>149</b>	<b>129</b>	<b>127</b>	<b>76</b>	<b>48</b>	<b>29</b>	<b>2</b>	<b>1161</b>

HANDICAP CONDITION	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
1. MENTAL RETARDATION	5	.43	43	3.70	88	7.58	55	4.74	191	16.45
2. HARD OF HEARING	4	.35	5	.43	2	.17	1	.09	12	1.03
3. DEAF	3	.26	20	1.72	18	1.55	6	.52	47	4.05
4. SPEECH & LANGUAGE IMPAIRMENT	8	.69	19	1.64	5	.43	-	-	32	2.76
5. VISUAL IMPAIRMENT	-	-	1	.09	3	.26	-	-	4	.35
6. BEHAVIORAL IMPAIRMENT	3	.26	107	9.22	421	36.26	45	3.88	576	49.61
7. ORTHOPEDIC IMPAIRMENT	2	.17	9	.78	4	.35	1	.09	16	1.38
8. OTHER HEALTH IMPAIRMENT	2	.17	1	.09	4	.35	2	.17	9	.78
9. LEARNING DISABILITY	1	.09	13	1.12	37	3.19	7	.60	58	5.00
10. DEAF/BLIND	-	-	3	.26	-	-	-	-	3	.26
11. MULTIHANDICAPPED	16	1.38	64	5.51	95	8.18	38	3.27	213	18.35
12. PRESCHOOL NON-CATEGORICAL	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	<b>44</b>	<b>3.79</b>	<b>285</b>	<b>24.55</b>	<b>677</b>	<b>58.31</b>	<b>155</b>	<b>13.35</b>	<b>1161</b>	<b>100.00</b>

Age Groupings by Exceptionality

MR, SP, BI AND LD STUDENTS BY AGE

1989-90 P.L. 94-142 and P.L. 89-313



Approximately 93.8% of students with speech/language impairments are between the ages of 3-12 (27.2% in the age 3-5 category; 66.6% in the age 6-12 category). The number of students with speech/language impairments climbs rapidly from age 3 to age 7, drops quickly to age 12, then gradually tapers off. Sixty-three percent (63.0%) of students ages 3-5 are identified with speech/language impairments.

Students identified as learning disabled begin to increase at age 6, peaking at age 11. The number of students with learning disabilities at ages 9-14 remains fairly constant at approximately 1,000+ at each age level, accounting for 61.5% of learning disabled students. There is a gradual decline from age 14 to age 17.

Approximately 77.7% of students with behavioral impairments are between the ages of 9-17. The number of students with behavioral impairments steadily increases and peaks at age 15, and quickly declines after age 17.

There is a fairly level plateau in the number of students identified as mentally retarded from age 9 through 18.

## EDUCATIONAL PLACEMENT DATA

The majority (81.2%) of exceptional students in Maine are receiving special education and related services in the regular classroom, resource room or resource room/composite environments. Approximately 11.8% received services in a self-contained and/or self-contained/composite setting.

	P.L. 94-142	P.L. 89-313	Totals	% of Total Sp.Ed. (28,223)
Regular Class	14120 (52.2%)	169 (14.6%)	14,289	50.6%
Resource Rm.	6823 (25.2%)	84 (7.2%)	6,907	24.5%
Res.Rm/Composite	1684 (6.2%)	38 (3.3%)	1,722	6.1%
Self-Contained	2125 (7.9%)	272 (23.4%)	2,397	8.5%
Self-Cont/Comp.	884 (3.3%)	37 (3.2%)	921	3.3%

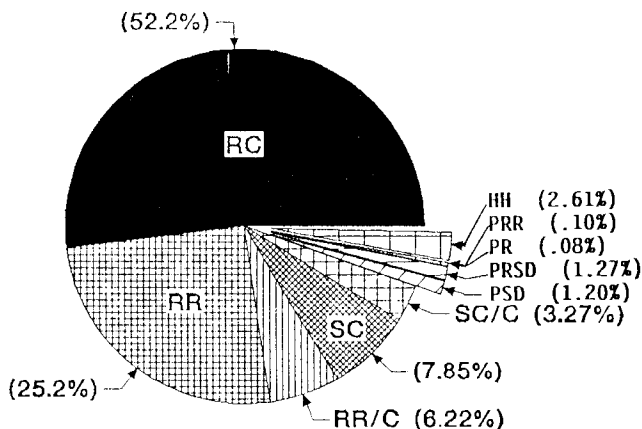
Differences do exist in educational placements between the two programs. Eighty-four percent of the students reported under P.L. 94-142 are in regular class, resource room or resource room/composite settings, while only 25% of the students reported under P.L. 89-313 are in these settings. The three major placements identified under P.L. 89-313 are self-contained (23.4%), private separate day (21.3%) and private residential (16.6%) for a total of 61%, indicating the severity of the exceptionalities.

The top three placements for the four major exceptionalities were:

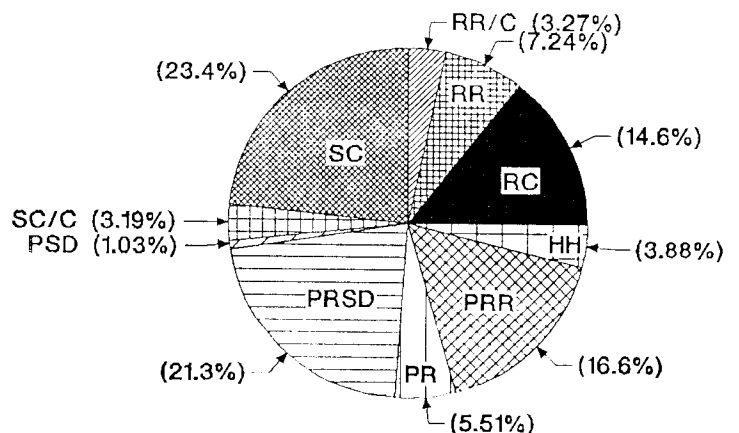
<u>Mental Retardation</u>	<u>Speech/Language Impairment</u>	<u>Behavioral Impairment</u>	<u>Learning Disability</u>
self-contained	regular class	regular class	regular class
resource room	resource room	resource room	resource room
res.rm/composite	homebound/hospital*	self-contained	res.rm/composite

\* 99% of these were preschool exceptional students reported by the preschool coordination sites.

P.L. 94-142 1989-90



P.L. 89-313 1989-90





**EDUCATIONAL PLACEMENT DATA (P.L. 94-142)  
AS REPORTED ON THE EF-S-05**

**STATE TOTALS**

EDUCATIONAL PLACEMENT	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
21. REGULAR CLASS:		544	897	787	1044	1277	1455	1442	1247	1099	959	751	690	608	599	509	328	81	3	-	14120
22. RESOURCE ROOM:			5	55	127	500	459	644	679	693	669	647	598	581	566	442	282	75	3	-	6823
23. RESOURCE ROOM/COMPOSITE:		1	1	9	47	88	127	152	183	192	170	151	171	138	104	84	42	22	2	-	1684
24. SELF-CONTAINED:		9	21	95	119	120	151	157	176	203	184	178	171	157	142	101	86	45	10	-	2125
25. SELF-CONTAINED/COMPOSITE:		21	22	20	29	38	58	72	85	99	101	85	87	67	49	21	23	7	-	-	884
26. PUBLIC SEPARATE DAY SCH:		21	31	13	7	4	8	10	9	20	17	29	30	36	30	32	22	5	2	-	326
27. PRIVATE SEPARATE DAY SCH:		137	144	32	2	6	3	-	1	1	2	3	3	1	1	2	2	3	-	-	343
28. PUBLIC RESIDENTIAL:		1	7	1	2	-	-	-	1	-	1	2	1	3	-	2	-	1	1	-	23
29. PRIVATE RESIDENTIAL:		1	7	2	-	-	-	-	2	2	3	3	3	2	-	3	-	-	-	-	28
30. HOMEBOUND/HOSPITAL:		321	265	41	1	4	3	6	6	2	6	5	12	8	5	10	6	4	1	-	706
<b>TOTALS</b>		<b>856</b>	<b>1400</b>	<b>1053</b>	<b>1378</b>	<b>1837</b>	<b>2264</b>	<b>2483</b>	<b>2389</b>	<b>2311</b>	<b>2112</b>	<b>1854</b>	<b>1766</b>	<b>1601</b>	<b>1496</b>	<b>1206</b>	<b>791</b>	<b>243</b>	<b>22</b>	<b>-</b>	<b>27062</b>

EDUCATIONAL PLACEMENT	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
21. REGULAR CLASS:	2020	7.49	7564	27.95	4116	15.21	412	1.52	14120	52.18
22. RESOURCE ROOM:	58	.21	2902	10.72	3503	12.94	360	1.33	6823	25.21
23. RESOURCE ROOM/COMPOSITE:	11	.04	789	2.92	818	3.02	66	.24	1684	6.22
24. SELF-CONTAINED:	125	.46	926	3.42	933	3.45	141	.52	2125	7.85
25. SELF-CONTAINED/COMPOSITE:	63	.23	381	1.41	410	1.52	30	.11	884	3.27
26. PUBLIC SEPARATE DAY SCH:	65	.24	58	.21	174	.64	29	.11	326	1.21
27. PRIVATE SEPARATE DAY SCH:	313	1.16	13	.05	12	.04	5	.02	343	1.27
28. PUBLIC RESIDENTIAL:	9	.03	3	.01	9	.03	2	.01	23	.09
29. PRIVATE RESIDENTIAL:	10	.04	4	.02	14	.05	-	-	28	.10
30. HOMEBOUND/HOSPITAL:	627	2.32	22	.08	46	.17	11	.04	706	2.61
<b>TOTALS</b>	<b>3309</b>	<b>12.23</b>	<b>12662</b>	<b>46.79</b>	<b>10035</b>	<b>37.08</b>	<b>1056</b>	<b>3.90</b>	<b>27062</b>	<b>100.00</b>

**EDUCATIONAL PLACEMENT DATA (P.L. 89-313)  
AS REPORTED ON THE EF-S-204/A**

**STATE TOTALS**

EDUCATIONAL PLACEMENT	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
21. REGULAR CLASS:		-	-	7	6	9	2	4	2	10	6	15	16	18	31	31	9	3	-	-	169
22. RESOURCE ROOM:		-	-	2	-	2	3	-	2	1	2	2	6	16	15	20	10	3	-	-	84
23. RESOURCE ROOM/COMPOSITE:		-	-	-	-	-	-	2	1	1	3	1	5	7	9	3	5	-	1	-	38
24. SELF-CONTAINED:		-	-	1	8	6	12	16	18	18	17	18	24	31	24	31	20	16	11	-	272
25. SELF-CONTAINED/COMPOSITE:		-	-	1	1	3	1	1	3	2	2	3	2	2	9	3	1	2	2	-	37
26. PUBLIC SEPARATE DAY SCH:		-	-	1	1	1	1	-	-	-	-	1	-	3	-	2	2	-	-	-	12
27. PRIVATE SEPARATE DAY SCH:		11	4	6	1	6	10	14	23	10	20	29	18	30	19	15	14	12	5	-	247
28. PUBLIC RESIDENTIAL:		5	3	2	5	2	5	4	3	3	2	3	6	2	3	3	6	6	-	1	64
29. PRIVATE RESIDENTIAL:		-	-	-	1	2	7	18	19	15	18	29	36	16	18	6	4	4	4	-	193
30. HOMEBOUND/HOSPITAL:		-	-	1	-	1	2	2	6	4	2	2	5	4	3	1	3	2	6	1	45
50.		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>		<b>16</b>	<b>8</b>	<b>20</b>	<b>22</b>	<b>31</b>	<b>38</b>	<b>50</b>	<b>76</b>	<b>60</b>	<b>69</b>	<b>92</b>	<b>111</b>	<b>149</b>	<b>129</b>	<b>127</b>	<b>76</b>	<b>48</b>	<b>29</b>	<b>2</b>	<b>1161</b>

EDUCATIONAL PLACEMENT	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
21. REGULAR CLASS:	7	.60	33	2.84	117	10.08	12	1.03	169	14.56
22. RESOURCE ROOM:	2	.17	8	.69	61	5.25	13	1.12	84	7.24
23. RESOURCE ROOM/COMPOSITE:	-	-	4	.35	28	2.41	6	.52	38	3.27
24. SELF-CONTAINED:	2	.17	78	6.72	145	12.49	47	4.05	272	23.43
25. SELF-CONTAINED/COMPOSITE:	-	-	11	.95	21	1.81	5	.43	37	3.19
26. PUBLIC SEPARATE DAY SCH:	1	.09	3	.26	6	.52	2	.17	12	1.03
27. PRIVATE SEPARATE DAY SCH:	21	1.81	64	5.51	131	11.28	31	2.67	247	21.28
28. PUBLIC RESIDENTIAL:	10	.86	22	1.90	19	1.64	13	1.12	64	5.51
29. PRIVATE RESIDENTIAL:	-	-	47	4.05	132	11.37	14	1.21	193	16.62
30. HOMEBOUND/HOSPITAL:	1	.09	15	1.29	17	1.46	12	1.03	45	3.88
50.	-	-	-	-	-	-	-	-	-	-
<b>TOTALS</b>	<b>44</b>	<b>3.79</b>	<b>285</b>	<b>24.55</b>	<b>677</b>	<b>58.31</b>	<b>155</b>	<b>13.35</b>	<b>1161</b>	<b>100.00</b>

## RELATED SERVICES DATA

The related service most frequently identified as being provided to exceptional students in Maine was speech/language (27.1%). This data still does not accurately reflect speech and language as a related service. The instructions for filling out the form specifically asked school administrative units not to report speech and language as a related service to those students identified as having speech and language as their primary exceptionality. Of the 5,129 students receiving speech/language as a related service, 528 were identified as having speech and language as the primary exceptionality. Therefore, a more accurate reflection of speech and language as a related service would be 4,601 (25.0%), still the most frequently identified related service. Other Related Services were the second most frequently identified related service, 3,091 (16.4%).

As Other Related Services are not defined, it cannot be determined what services may be grouped in this category, or why it contains such a high percentage of responses.

The four most frequently identified related services in the P.L. 89-313 program were (in order) Speech/Language, School Social Work, Psychological Services, and Occupational Therapy.

### Five Most Frequently Identified Related Services:

(revised to reflect the reduction of 528 erroneously reported  
speech/language related services)

	P.L. 94-142	P.L. 89-313	Totals	% of Total (18,372)
Speech/Language	4087 (26.8%)	514 (16.5%)	4601	25.0%
Other Related Svcs	2852 (18.7%)	239 (7.7%)	3091	16.8%
Occupational Therapy	1733 (11.4%)	370 (11.9%)	2103	11.5%
School Social Work	1463 (9.6%)	403 (12.9%)	1866	10.2%
Counseling	1537 (10.1%)	257 (8.2%)	1794	9.8%

When looking at the four major exceptionalities, the related services most frequently identified vary:

<u>Mental Retardation</u>	<u>Speech/Language Impairment</u>	<u>Behavioral Impairment</u>	<u>Learning Disability</u>
speech/language	other related svcs	counseling	speech/language
occupational therapy	speech/language*	school social work	counseling
transportation	occupational therapy	psychological svcs	occupational therapy

\*incorrectly identified - see first paragraph above

**RELATED SERVICES DATA (P.L. 94-142)  
AS REPORTED ON THE EF-S-05**

**STATE TOTALS**

RELATED SERVICES	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL	
31. PSYCHOLOGICAL SERVICES:																						
		20	45	35	30	32	62	76	88	83	95	69	81	73	74	56	36	9	-	-	972	
32. SCH. SOCIAL WORK SERVICES:																						
		26	59	36	26	51	91	123	121	155	168	118	140	121	102	76	34	15	1	-	1463	
33. OCCUPATIONAL THERAPY:																						
		66	106	120	150	204	270	236	176	140	79	64	36	26	25	10	13	8	4	-	1733	
34. SPEECH AND LANGUAGE SERVICES:																						
		136	202	171	255	354	501	569	486	490	395	306	246	173	124	94	72	36	5	-	4615	
35. AUDIOLOGICAL SERVICES:																						
		68	117	30	8	10	9	11	12	12	4	6	4	4	6	2	-	-	-	-	303	
36. RECREATIONAL SERVICES:																						
		3	3	3	5	11	12	11	12	18	12	12	12	6	3	6	7	3	-	-	139	
37. PHYSICAL THERAPY:																						
		81	89	57	63	68	77	71	53	49	34	42	37	19	20	13	15	11	5	-	804	
38. TRANSPORT SERVICES: (SPECIAL)																						
		29	56	65	72	76	77	82	97	105	76	80	68	67	51	62	47	19	5	-	1134	
39. SCHOOL HEALTH SERVICES:																						
		30	88	21	2	13	3	5	9	13	4	12	10	4	7	3	3	2	-	-	229	
40. COUNSELING SERVICES:																						
		77	107	37	18	48	85	107	132	153	164	159	131	122	84	66	35	11	1	-	1537	
41. OTHER RELATED SERVICES:																						
		693	1064	254	41	52	81	71	73	84	72	71	66	53	45	59	39	27	7	-	2852	
TOTALS:		1229	1936	829	678	919	1268	1362	1259	1302	1103	939	831	668	541	447	301	141	28	-	15781	

RELATED SERVICES	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
31. PSYCHOLOGICAL SERVICES:	100	.63	379	2.40	448	2.84	45	.29	972	6.16
32. SCH. SOCIAL WORK SERVICES:	121	.77	567	3.59	725	4.59	50	.32	1463	9.27
33. OCCUPATIONAL THERAPY:	292	1.85	1176	7.45	240	1.52	25	.16	1733	10.98
34. SPEECH AND LANGUAGE SERVICES:	509	3.23	2655	16.82	1338	8.48	113	.72	4615	29.24
35. AUDIOLOGICAL SERVICES:	215	1.36	62	.39	26	.17	-	-	303	1.92
36. RECREATIONAL SERVICES:	9	.06	69	.44	51	.32	10	.06	139	.88
37. PHYSICAL THERAPY:	227	1.44	381	2.41	165	1.05	31	.20	804	5.10
38. TRANSPORT SERVICES: (SPECIAL)	150	.95	509	3.23	404	2.56	71	.45	1134	7.19
39. SCHOOL HEALTH SERVICES:	139	.88	45	.29	40	.25	5	.03	229	1.45
40. COUNSELING SERVICES:	221	1.40	543	3.44	726	4.60	47	.30	1537	9.74
41. OTHER RELATED SERVICES:	2011	12.74	402	2.55	366	2.32	73	.46	2852	18.07
TOTALS:	3994	25.31	6788	43.01	4529	28.70	470	2.98	15781	100.00

**RELATED SERVICES DATA (P.L. 89-313)  
AS REPORTED ON THE EF-S-204/A**

**STATE TOTALS**

RELATED SERVICES	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL	
31. PSYCHOLOGICAL SERVICES:																						
		1	-	2	1	9	11	22	43	31	30	44	46	59	32	31	16	18	6	-	402	
32. SCH. SOCIAL WORK SERVICES:																						
		8	1	4	2	7	10	21	42	30	35	44	46	71	31	34	9	5	3	-	403	
33. OCCUPATIONAL THERAPY:																						
		11	5	9	11	10	23	31	44	29	24	22	24	36	29	15	14	18	14	1	370	
34. SPEECH AND LANGUAGE SERVICES:																						
		14	7	11	14	14	25	34	46	35	29	42	44	55	39	39	29	24	13	-	514	
35. AUDIOLOGICAL SERVICES:																						
		4	2	1	5	3	6	5	3	3	3	5	7	4	3	4	6	5	-	1	70	
36. RECREATIONAL SERVICES:																						
		1	-	1	-	2	3	6	15	7	10	20	18	17	11	13	11	18	4	1	158	
37. PHYSICAL THERAPY:																						
		11	3	8	7	10	11	20	21	15	16	10	16	16	20	15	9	17	11	-	236	
38. TRANSPORT SERVICES: (SPECIAL)																						
		-	-	5	5	8	11	17	29	21	14	18	17	23	22	24	22	21	9	-	266	
39. SCHOOL HEALTH SERVICES:																						
		4	3	3	5	2	7	8	12	13	22	20	31	30	20	14	8	1	-	-	204	
40. COUNSELING SERVICES:																						
		2	1	7	10	11	23	24	24	24	27	33	37	23	22	8	3	2	-	-	257	
41. OTHER RELATED SERVICES:																						
		9	2	3	2	5	2	9	13	16	22	22	24	35	24	20	13	9	9	-	239	
TOTALS:		64	23	49	53	77	119	184	291	224	229	274	306	383	254	231	145	139	71	3	3119	

RELATED SERVICES	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
31. PSYCHOLOGICAL SERVICES:	3	.10	117	3.75	242	7.76	40	1.28	402	12.89
32. SCH. SOCIAL WORK SERVICES:	13	.42	112	3.59	261	8.37	17	.55	403	12.92
33. OCCUPATIONAL THERAPY:	25	.80	148	4.75	150	4.81	47	1.51	370	11.86
34. SPEECH AND LANGUAGE SERVICES:	32	1.03	168	5.39	248	7.95	66	2.12	514	16.48
35. AUDIOLOGICAL SERVICES:	7	.22	25	.80	26	.83	12	.39	70	2.24
36. RECREATIONAL SERVICES:	2	.06	33	1.06	89	2.85	34	1.09	158	5.07
37. PHYSICAL THERAPY:	22	.71	84	2.69	93	2.98	37	1.19	236	7.57
38. TRANSPORT SERVICES: (SPECIAL)	5	.16	91	2.92	118	3.78	52	1.67	266	8.53
39. SCHOOL HEALTH SERVICES:	11	.35	47	1.51	137	4.39	9	.29	204	6.54
40. COUNSELING SERVICES:	2	.06	76	2.44	166	5.32	13	.42	257	8.24
41. OTHER RELATED SERVICES:	14	.45	47	1.51	147	4.71	31	.99	239	7.66
TOTALS:	136	4.36	948	30.39	1677	53.77	358	11.48	3119	100.00

## EXIT DATA

Exit data was collected on 8,742 exceptional students ages 14 through 21 (as of June 30, 1989), representing 31.0% of all exceptional students. Of these students, 26.1% exited from special education services in some manner:

	P.L. 94-142	P.L. 89-313	Totals	% of Total (8,742)*	% of Students Exiting (2,282)**
Grad.w/Diploma	706	28	734	8.4%	32.2%
Grad.w/Certif.	40	27	67	.8%	2.9%
Reached Max.Age	5	3	8	.1%	.4%
Dropped Out	305	52	357	4.1%	15.6%
Status Unknown	103	30	133	1.5%	5.8%
Exited to Reg.Ed.	545	21	566	6.5%	24.8%
Moved Out-of-Dist.	308	102	410	4.7%	18.0%
Deceased	5	2	7	.1%	.3%

\* these % are based on the total number of exceptional students in Maine ages 14-21

\*\* these % are based on the total number of exceptional students in Maine ages 14-21 who exited from special education services in 1989-90

The remaining 73.9% are still receiving special education services.

Thirteen year olds on the chart on the facing page actually turned 14 before June 30th, and are reflected in the exiting data.

Exiting data reported by handicapping condition reveals the following:

	Graduation (Diploma/Certificate)	Dropped Out	Exited to Regular Ed.
Mental Retardation	18% (145)	13% (45)	3% (17)
Speech/Language	3% (26)	2% (7)	10% (59)
Behavioral Impairment	14% (114)	50% (177)	25% (142)
Learning Disability	56% (445)	33% (117)	58% (329)
Totals-All Exceptionalities	801	357	566

Of the exceptional students (357) who dropped out in the 1989-90 school year, 50% (177) were Behavior Impaired, and 33% (117) were Learning Disabled. Sixteen year olds (107) and seventeen year olds (88) comprised the majority (55%) of students who dropped out.

Over one-half of those graduating (801) and those exiting to regular education (566) were identified as learning disabled. A slightly higher percentage of students identified as mentally retarded graduated than did students identified as behaviorally impaired.

**EXIT DATA (P.L. 94-142)  
AS REPORTED ON THE EF-S-05**

**STATE TOTALS**

PART III EXITING DATA		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
AGE:		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
1.	GRADUATION W/DIPLOMA:	-	-	-	-	-	-	-	-	-	-	3	3	3	5	167	374	141	10	-	706
2.	GRADUATION W/CERTIFICATE:	-	-	-	-	-	-	-	-	-	-	-	2	1	4	4	12	11	6	-	40
3.	REACHED MAXIMUM AGE:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	2	-	5
4.	DROPPED OUT:	-	-	-	-	-	-	-	-	-	-	6	11	39	99	80	55	14	1	-	305
5.	STATUS UNKNOWN:	-	-	-	-	-	-	-	-	-	-	12	19	26	27	7	10	2	-	-	103
6.	EXITED TO REGULAR ED:	-	-	-	-	-	-	-	-	-	-	78	118	110	139	79	15	6	-	-	545
7.	MOVED OUT-OF-DISTRICT:	-	-	-	-	-	-	-	-	-	-	34	82	64	66	34	21	7	-	-	308
8.	STILL RECEIVE SP.ED.SERVICES:	-	-	1	-	-	-	-	-	-	-	785	1524	1350	1150	831	300	59	3	-	6003
9.	DECEASED:	-	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	-	-	-	5
TOTALS		-	-	1	-	-	-	-	-	-	-	918	1760	1594	1491	1203	789	242	22	-	8020

PART III EXITING DATA		3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
1.	GRADUATION W/DIPLOMA:	-	-	-	-	181	2.26	525	6.55	706	8.80
2.	GRADUATION W/CERTIFICATE:	-	-	-	-	11	.14	29	.36	40	.50
3.	REACHED MAXIMUM AGE:	-	-	-	-	-	-	5	.06	5	.06
4.	DROPPED OUT:	-	-	-	-	235	2.93	70	.87	305	3.80
5.	STATUS UNKNOWN:	-	-	-	-	91	1.14	12	.15	103	1.28
6.	EXITED TO REGULAR ED:	-	-	-	-	524	6.53	21	.26	545	6.80
7.	MOVED OUT-OF-DISTRICT:	-	-	-	-	280	3.49	28	.35	308	3.84
8.	STILL RECEIVE SP.ED.SERVICES:	1	.01	-	-	5640	70.32	362	4.51	6003	74.85
9.	DECEASED:	-	-	-	-	4	.05	1	.01	5	.06
TOTALS		1	.01	-	-	6966	86.86	1053	13.13	8020	100.00

**EXIT DATA (P.L. 89-313)  
AS REPORTED ON THE EF-S-204/A**

**STATE TOTALS**

PART III EXITING DATA		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
AGE:		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
1.	GRADUATION W/DIPLOMA:	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3	10	6	8	-	28
2.	GRADUATION W/CERTIFICATE:	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	1	7	14	-	27
3.	REACHED MAXIMUM AGE:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	3
4.	DROPPED OUT:	-	-	-	-	-	-	-	-	-	-	7	6	14	8	8	7	2	-	-	52
5.	STATUS UNKNOWN:	-	-	-	-	-	-	-	-	-	-	1	4	5	7	11	1	1	-	-	30
6.	EXITED TO REGULAR ED:	-	-	-	-	-	-	-	-	-	-	1	4	5	5	4	1	1	-	-	21
7.	MOVED OUT-OF-DISTRICT:	-	-	-	-	-	-	-	-	-	-	7	14	22	27	22	7	1	1	1	102
8.	STILL RECEIVE SP.ED.SERVICES:	-	-	-	-	-	-	-	-	-	-	35	82	103	78	76	49	30	4	-	457
9.	DECEASED:	-	-	-	-	-	-	-	-	-	-	-	1	-	1	-	-	-	-	-	2
TOTALS		-	-	-	-	-	-	-	-	-	-	51	111	149	129	127	76	48	29	2	722

PART III EXITING DATA		3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
1.	GRADUATION W/DIPLOMA:	-	-	-	-	4	.55	24	3.32	28	3.88
2.	GRADUATION W/CERTIFICATE:	-	-	-	-	5	.69	22	3.05	27	3.74
3.	REACHED MAXIMUM AGE:	-	-	-	-	-	-	3	.42	3	.42
4.	DROPPED OUT:	-	-	-	-	43	5.96	9	1.25	52	7.20
5.	STATUS UNKNOWN:	-	-	-	-	28	3.88	2	.28	30	4.16
6.	EXITED TO REGULAR ED:	-	-	-	-	19	2.63	2	.28	21	2.91
7.	MOVED OUT-OF-DISTRICT:	-	-	-	-	92	12.74	10	1.39	102	14.13
8.	STILL RECEIVE SP.ED.SERVICES:	-	-	-	-	374	51.80	83	11.50	457	63.30
9.	DECEASED:	-	-	-	-	2	.28	-	-	2	.28
TOTALS		-	-	-	-	567	78.53	155	21.47	722	100.00

## ANTICIPATED SERVICES DATA

Of the community-based services which school administrative units and state operated/state supported schools selected as anticipated needs for exceptional students ages 14-21, vocational training and job placement was identified as the greatest need (18.4%). Case management/counseling (13.7%) and mental health services (9.8%) were also priority needs.

Approximately 21.1% of the 14-21 year old students had no service needs identified.

### Four Most Frequently Identified Anticipated Service Needs for Students Ages 14-21 by the Four Major Exceptionalities

- |                         |   |
|-------------------------|---|
| Mental Retardation -    | <ol style="list-style-type: none"><li>1. Voc Trng/Job Placement</li><li>2. Case Mngmt/Counseling</li><li>3. Employment Related</li><li>4. Independent Living</li></ol>      |
| Speech/Language -       | <ol style="list-style-type: none"><li>1. No Services Needed</li><li>2. Voc Trng/Job Placement</li><li>3. Postsecondary Ed</li><li>4. Case Mngmt/Counseling</li></ol>        |
| Behavioral Impairment - | <ol style="list-style-type: none"><li>1. Mental Health</li><li>2. Case Mngmt/Counseling</li><li>3. Voc Trng/Job Placement</li><li>4. No Services Needed</li></ol>           |
| Learning Disability -   | <ol style="list-style-type: none"><li>1. No Services Needed</li><li>2. Voc Trng/Job Placement</li><li>3. Postsecondary Education</li><li>4. Case Mngmt/Counseling</li></ol> |

**ANTICIPATED SERVICES DATA (P.L. 94-142)  
AS REPORTED ON THE EF-S-05  
STATE TOTALS**

PART III ANTICIPATED SERVICES	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
1. CASE MNGMT/COUNSELING:												181	346	312	327	245	152	70	7		1641
2. TRANSPORTATION:												18	46	37	30	39	38	24	7		239
3. TECHNOLOGICAL AIDS:												13	21	8	7	8	8	5	4		74
4. COMMUNICATION:												15	18	14	16	19	12	3	4		101
5. MENTAL HEALTH:												119	274	269	232	166	82	31	2		1176
6. PHY. RESTORATION SERVICE:												13	29	15	20	18	14	9	4		122
7. FAMILY SERVICES:												60	114	103	90	71	39	19	3		500
8. INDEPENDENT LIVING:												42	84	93	120	98	89	57	6		589
9. RESIDENTIAL LIVING:												16	31	28	23	24	22	21	5		170
10. POSTSECONDARY ED.												122	251	258	280	216	161	38	3		1330
11. VOC. TRNG/JOB PLACEMENT:												250	518	509	529	405	270	89	9		2579
12. EMPLOYMENT RELATED:												75	173	174	176	146	104	36	3		887
13. OTHER SERVICES:												88	172	117	100	58	29	9	3		576
14. NO SERVICES NEEDED:												411	735	640	572	483	313	95	6		3255
TOTALS				4								1423	2812	2577	2522	1996	1333	506	66		13239

PART III ANTICIPATED SERVICES	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
1. CASE MNGMT/COUNSELING:	1	.01	-	-	1411	10.66	229	1.73	1641	12.40
2. TRANSPORTATION:	-	-	-	-	170	1.28	69	.52	239	1.81
3. TECHNOLOGICAL AIDS:	-	-	-	-	57	.43	17	.13	74	.56
4. COMMUNICATION:	-	-	-	-	82	.62	19	.14	101	.76
5. MENTAL HEALTH:	1	.01	-	-	1060	8.01	115	.87	1176	8.88
6. PHY. RESTORATION SERVICE:	-	-	-	-	95	.72	27	.20	122	.92
7. FAMILY SERVICES:	1	.01	-	-	438	3.31	61	.46	500	3.78
8. INDEPENDENT LIVING:	-	-	-	-	437	3.30	152	1.15	589	4.45
9. RESIDENTIAL LIVING:	-	-	-	-	122	.92	48	.36	170	1.28
10. POSTSECONDARY ED.	1	.01	-	-	1127	8.51	202	1.53	1330	10.05
11. VOC. TRNG/JOB PLACEMENT:	-	-	-	-	2211	16.70	368	2.78	2579	19.48
12. EMPLOYMENT RELATED:	-	-	-	-	744	5.62	143	1.08	887	6.70
13. OTHER SERVICES:	-	-	-	-	535	4.04	41	.31	576	4.35
14. NO SERVICES NEEDED:	-	-	-	-	2841	21.46	414	3.13	3255	24.59
TOTALS	4	.03	-	-	11330	85.58	1905	14.39	13239	100.00

**ANTICIPATED SERVICES DATA (P.L. 89-313)  
AS REPORTED ON THE EF-S-204/A  
STATE TOTALS**

PART III ANTICIPATED SERVICES	AGE:	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	TOTAL
1. CASE MNGMT/COUNSELING:												34	77	105	85	84	47	39	25	2	498
2. TRANSPORTATION:												5	20	31	26	24	23	23	12	1	165
3. TECHNOLOGICAL AIDS:												2	8	9	7	7	4	4	2		43
4. COMMUNICATION:												2	14	20	11	8	11	1	3		70
5. MENTAL HEALTH:												34	64	84	54	59	30	17	12	1	355
6. PHY. RESTORATION SERVICE:												1	7	15	12	9	9	7	5		65
7. FAMILY SERVICES:												23	50	61	37	41	19	12	8		251
8. INDEPENDENT LIVING:												4	13	21	19	21	30	18	12		138
9. RESIDENTIAL LIVING:												15	33	42	26	35	15	19	15	1	201
10. POSTSECONDARY ED.												1	6	2	2	8	5		5		29
11. VOC. TRNG/JOB PLACEMENT:												16	35	59	51	59	38	23	16	1	298
12. EMPLOYMENT RELATED:												10	18	23	29	28	21	18	9		156
13. OTHER SERVICES:												5	12	13	11	15	12	13	4	2	87
14. NO SERVICES NEEDED:												4	4	8	17	12	6	1			52
TOTALS												156	361	493	387	410	270	195	128	8	2408

PART III ANTICIPATED SERVICES	3-5	PCT.	6-11	PCT.	12-17	PCT.	18-21	PCT.	TOTAL	PCT.
1. CASE MNGMT/COUNSELING:	-	-	-	-	385	15.99	113	4.69	498	20.68
2. TRANSPORTATION:	-	-	-	-	106	4.40	59	2.45	165	6.85
3. TECHNOLOGICAL AIDS:	-	-	-	-	33	1.37	10	.42	43	1.79
4. COMMUNICATION:	-	-	-	-	55	2.28	15	.62	70	2.91
5. MENTAL HEALTH:	-	-	-	-	295	12.25	60	2.49	355	14.74
6. PHY. RESTORATION SERVICE:	-	-	-	-	44	1.83	21	.87	65	2.70
7. FAMILY SERVICES:	-	-	-	-	212	8.80	39	1.62	251	10.42
8. INDEPENDENT LIVING:	-	-	-	-	78	3.24	60	2.49	138	5.73
9. RESIDENTIAL LIVING:	-	-	-	-	151	6.27	50	2.08	201	8.35
10. POSTSECONDARY ED.	-	-	-	-	19	.79	10	.42	29	1.20
11. VOC. TRNG/JOB PLACEMENT:	-	-	-	-	220	9.14	78	3.24	298	12.38
12. EMPLOYMENT RELATED:	-	-	-	-	108	4.49	48	1.99	156	6.48
13. OTHER SERVICES:	-	-	-	-	56	2.33	31	1.29	87	3.61
14. NO SERVICES NEEDED:	-	-	-	-	45	1.87	7	.29	52	2.16
TOTALS	-	-	-	-	1807	75.04	601	24.96	2408	100.00

## PERSONNEL EMPLOYED

Teachers of the learning disabled and speech/language impaired compose 57.9% of the special education teachers employed in the 1989-90 school year, while serving 69.4% of exceptional students. Teachers of the mentally retarded and behaviorally impaired compose 32.5% of the special education teachers employed, while serving 22.0% of exceptional students. Upon totaling these four exceptionalities, 90.4% of the special education teachers employed are providing services to 91.4% of exceptional students.

SPECIAL EDUCATION TEACHERS	FTE EMPLOYED	% OF TOTAL	# STUDENTS (P.L. 94-142)	% OF TOTAL
MENTAL RETARDATION	264.88	16.1%	2,181	8.1%
HARD OF HEARING	13.17	.8%	224	.8%
DEAF	10.06	.6%	63	.2%
SPEECH & LANGUAGE IMPAIRMENT	288.02	17.5%	7,742	28.6%
VISUAL IMPAIRMENT	7.13	.4%	113	.4%
BEHAVIORAL IMPAIRMENT	268.91	16.4%	3,772	13.9%
ORTHOPEDIC IMPAIRMENT	9.83	.6%	232	.9%
OTHER HEALTH IMPAIRMENT	17.42	1.1%	355	1.3%
LEARNING DISABILITY	663.47	40.4%	11,028	40.8%
DEAF/BLIND	3.36	.2%	10	.04%
MULTIHANDICAPPED	96.97	5.9%	964	3.6%
TOTALS:	1643.22			

The majority (89.3%) of other personnel are employed rather than contracted to provide services to exceptional students. Seventy-six percent of these are teacher aides (Educational Technicians I, II, III). Of the 10.7% who are contracted, psychologists, occupational therapists, teachers aides and physical therapists are the most frequently identified.

OTHER PERSONNEL CONTRACTED OR EMPLOYED	FTE CONTRACTED	% OF TOTAL CONTRACTED	FTE EMPLOYED	% OF TOTAL EMPLOYED	TOTAL	% OF TOTAL
VOCATIONAL EDUCATION TEACHERS	1.00		9.01		10.01	
PHYSICAL EDUCATION TEACHERS	.28		4.45		4.73	
WORK-STUDY COORDINATORS	.00		5.65		5.65	
PSYCHOLOGISTS	54.00	29.4%	19.95		73.95	4.3%
SCHOOL SOCIAL WORKERS	12.69		38.15		50.84	
OCCUPATIONAL THERAPISTS	36.39	19.8%	13.40		49.79	
AUDIOLOGISTS	5.70		3.10		8.80	
TEACHER AIDES	33.25	18.1%	1161.19	75.9%	1194.44	69.7%
RECREATION THERAPISTS	.00		3.00		3.00	
DIAGNOSTIC STAFF	14.51		29.51		44.02	
PHYSICAL THERAPISTS	25.79	14.1%	8.95		34.74	
COUNSELORS	.00		21.62		21.62	
SUPERVISORS/ADMINISTRATORS	.00		119.10	7.8%	119.10	7.0%
OTHER NON-INSTRUCTIONAL STAFF	.00		92.28	6.0%	92.28	5.4%
TOTALS:	183.61		1529.36		1712.97	



## ANTICIPATED PERSONNEL NEEDED

Over half (60.0%) of the anticipated special education personnel needed were teachers of the learning disabled (31.3%) and speech/language impaired (28.7%). Seventy-one percent of the vacancies were for speech/language teachers, while teachers of the learning disabled comprised 36% of the personnel needed to fill positions occupied by unqualified staff category.

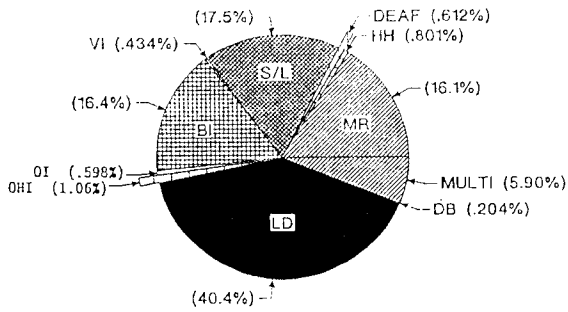
SPECIAL EDUCATION TEACHERS	FTE VACANCIES NEVER FILLED	% OF VACANCIES	FTE NEEDED QUALIFIED	% OF NEEDED QUALIFIED	TOTAL	% OF TOTAL
MENTAL RETARDATION	1.65	7.1%	14.10	12.0%	15.75	11.2%
HARD OF HEARING	.00		.48		.48	
DEAF	.00		1.00		1.00	
SPEECH & LANGUAGE IMPAIRED	16.63	71.3%	23.76	20.3%	40.39	28.7%
VISUAL IMPAIRMENT	.00		.55		.55	
BEHAVIORAL IMPAIRMENT	2.35	10.1%	25.19	21.5%	27.54	19.6%
ORTHOPEDIC IMPAIRMENT	.00		.04		.04	
OTHER HEALTH IMPAIRMENT	.00		2.37		2.37	
LEARNING DISABILITY	1.70	7.3%	42.26	36.0%	43.96	31.3%
DEAF/BLIND	.00		1.00		1.00	
MULTIHANDICAPPED	1.00		6.57		7.57	
TOTALS:	23.33		117.32		140.65	

In the Other Personnel Needed category, the majority of vacancies consist of psychologists, other non-instructional staff and diagnostic staff. Teacher aides (Educational Technicians I, II, III) are identified as the other personnel most frequently unqualified for the position they are holding (65.9%).

OTHER PERSONNEL NEEDED	FTE VACANCIES NEVER FILLED	% OF VACANCIES	FTE NEEDED QUALIFIED	% OF NEEDED QUALIFIED	TOTAL	% OF TOTAL
VOCATIONAL EDUCATION TEACHERS	.00		2.00		2.00	
PHYSICAL EDUCATION TEACHERS	.20		2.22		2.42	
WORK-STUDY COORDINATORS	.00		2.00		2.00	
PSYCHOLOGISTS	2.05	36.7%	7.57	5.9%	9.62	7.2%
SCHOOL SOCIAL WORKERS	.00		3.12		3.12	
OCCUPATIONAL THERAPISTS	.28		5.89		6.17	
AUDIOLOGISTS	.00		.07		.07	
TEACHER AIDES	.00		84.50	65.9%	84.50	63.2%
RECREATION THERAPISTS	.00		.00		.00	
DIAGNOSTIC STAFF	1.14	20.4%	2.45		3.59	
PHYSICAL THERAPISTS	.21		3.91		4.12	
COUNSELORS	.20		1.69		1.89	
SUPERVISORS/ADMINISTRATORS	.00		6.11		6.11	
OTHER NON-INSTRUCTIONAL STAFF	1.50	26.9%	6.61	5.2%	8.11	6.1%
TOTALS:	5.58		128.14		133.72	

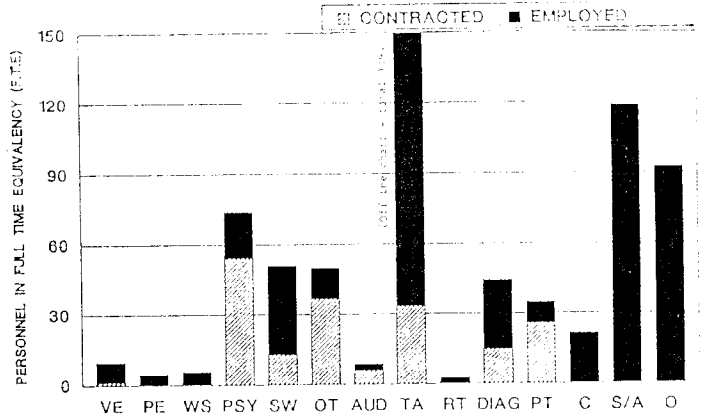
# PERSONNEL EMPLOYED

## SPECIAL EDUCATION TEACHERS EMPLOYED



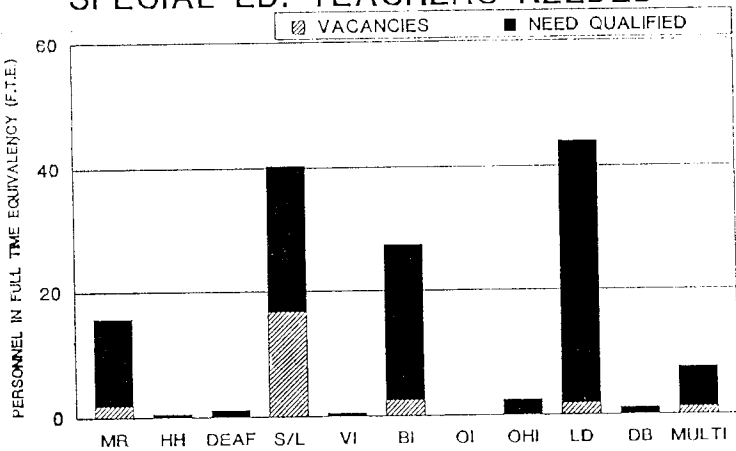
## OTHER PERSONNEL

Contracted or Employed

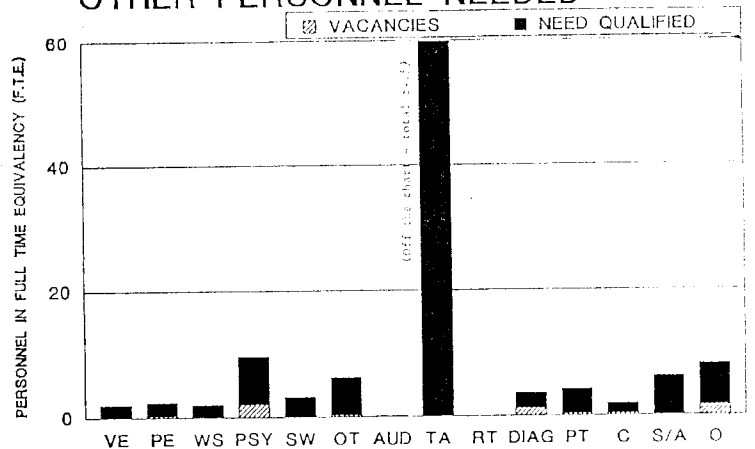


# ANTICIPATED PERSONNEL NEEDED

## SPECIAL ED. TEACHERS NEEDED



## OTHER PERSONNEL NEEDED

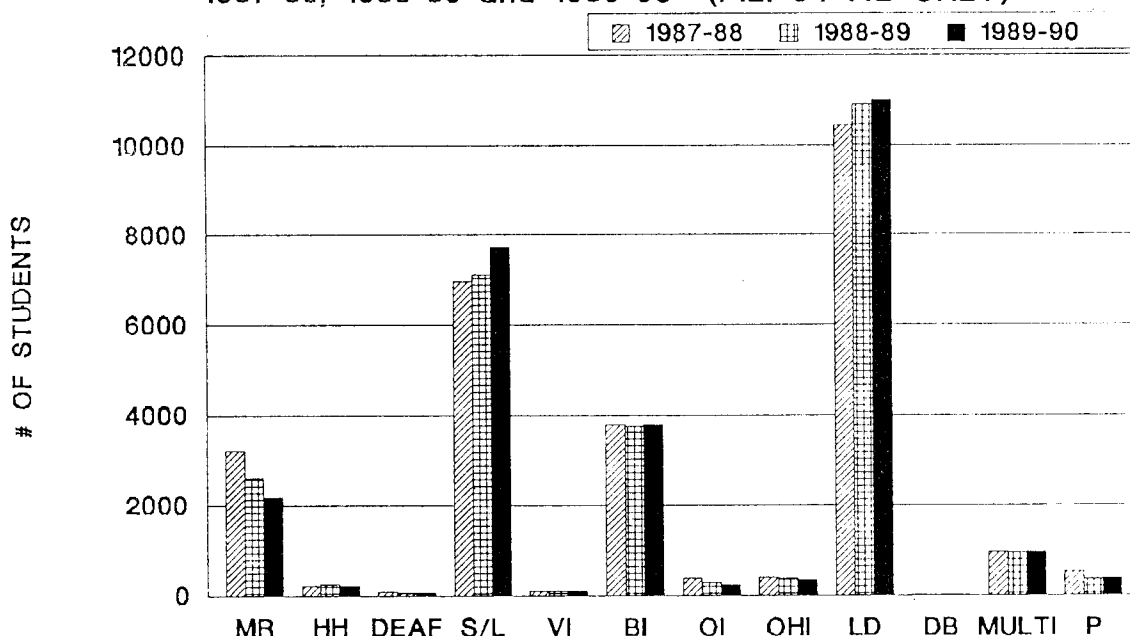


**Comparison of P.L. 94-142 Data  
1987-88, 1988-89 and 1989-90**

The following section contains comparative information of P.L. 94-142 data only for the 1987-88, 1988-89 and 1989-90 school years for exceptionality, educational placement, related services, exit data, anticipated services, personnel employed and anticipated personnel needed.

# EXCEPTIONALITY DATA

1987-88, 1988-89 and 1989-90 (P.L. 94-142 ONLY)



The total number of exceptional students educated under P.L. 94-142 remained fairly constant from 1987-88 to 1989-90 (with a slight decrease of 200+ in 1988-89). An 11% (+785) increase occurred in the number of students with speech/language impairments, and a 5% (+570) increase occurred in the number of students with learning disabilities.

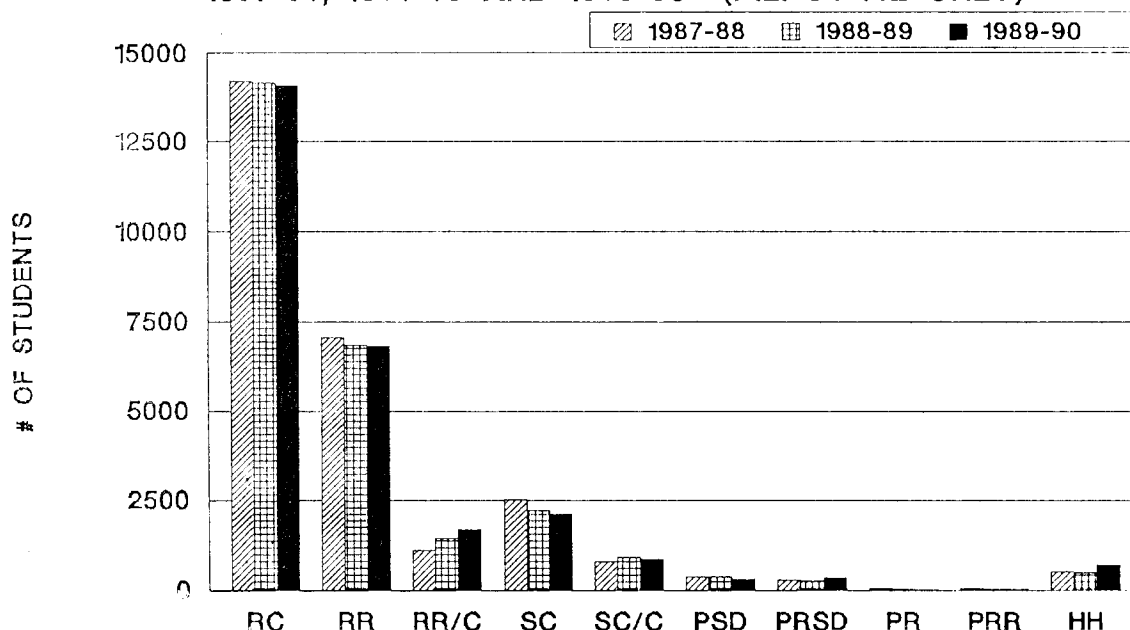
The number of students with behavioral impairments has remained fairly steady for these three years, decreasing less than .5% (-17).

A 32% (-1016) decrease occurred in the number of students identified with mental retardation.

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
MENTAL RETARDATION	3197	2615	2181	-1016	-31.78	MR
HARD OF HEARING	221	250	224	3	1.36	HH
DEAF	84	64	63	-21	-25.00	DEAF
SPEECH & LANGUAGE IMP.	6957	7120	7742	785	11.28	S/L
VISUAL IMPAIRMENT	112	112	113	1	.89	VI
BEHAVIORAL IMPAIRMENT	3789	3760	3772	-17	-.45	BI
ORTHOPEdic IMPAIRMENT	375	272	232	-143	-38.13	OI
OTHER HEALTH IMPAIRMENT	409	365	355	-54	-13.20	OHI
LEARNING DISABILITY	10458	10937	11028	570	5.45	LD
DEAF/BLIND	6	7	10	4	66.67	DB
MULTIHANDICAPPED	942	937	964	22	2.34	MULTI
PRESCHOOL NON-CATEGORICAL	524	361	378	-146	-27.86	P
TOTAL	27074	26800	27062	-12	-.04	

# EDUCATIONAL PLACEMENT DATA

1987-88, 1988-89 AND 1989-90 (P.L. 94-142 ONLY)



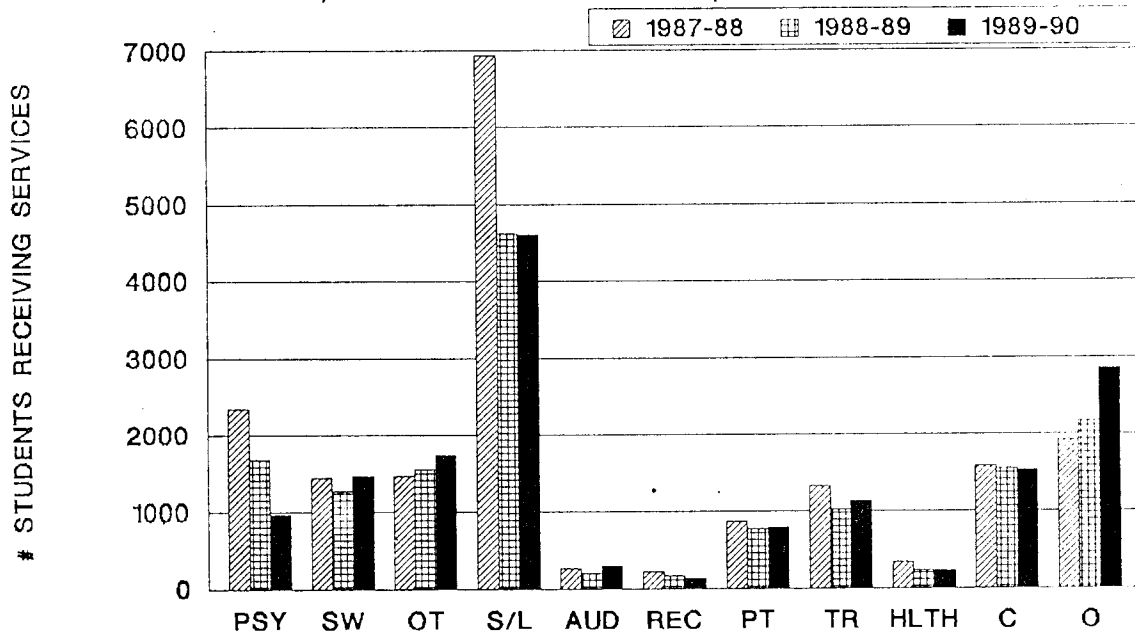
The number of students served in regular class decreased 1% (-120) from 1987-88 to 1989-90. An overall increase of 4% (+350) occurred in the number of students receiving resource room services (resource room and/or composite). There was an overall decrease of 10% (-327) in the number of students served in self-contained and/or self-contained/composite room programs.

NOTES: The majority of the students in private separate day and homebound/hospital placements are not yet school-aged preschoolers (approximately 91% and 89% respectively in 1989-90)

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
REGULAR CLASS	14240	14164	14120	-120	-.84	RC
RESOURCE ROOM	7057	6862	6823	-234	-3.32	RR
RR/COMPOSITE	1100	1426	1684	584	53.09	RR/C
SELF-CONT	2527	2203	2125	-402	-15.91	SC
S-C/COMPOSITE	809	926	884	75	9.27	SC/C
PUBLIC SEP DAY	392	392	326	-66	-16.84	PSD
PRIVATE SEP DAY	291	266	343	52	17.87	PRSD
PUBLIC RESID	68	30	23	-45	-66.18	PR
PRIVATE RESID	65	33	28	-37	-56.92	PRR
HOMEBOUND/HOSP	525	498	706	181	34.48	HH
TOTAL	27074	26800	27062	-12	-.04	

# RELATED SERVICES DATA

1987-88, 1988-89 and 1989-90 (P.L. 94-142 ONLY)

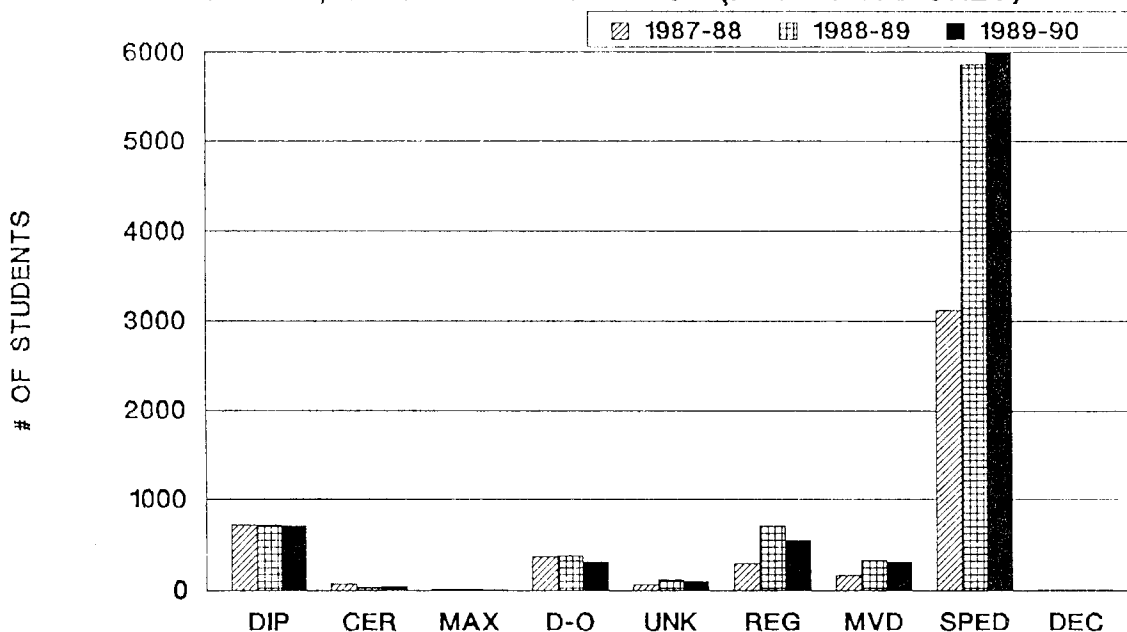


There was a 16% (-2970) decrease in related services provided to exceptional students from 1987-88 to 1989-90. The largest increase continues to occur in the Other Related Services category (48%), along with increases in audiological services (18%) and occupational therapy (18%). Decreases occurred in all other categories.

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
PSYCHOLOGICAL SVCS	2355	1687	972	-1383	-58.73	PSY
SCH. SOCIAL WORK SVCS	1453	1272	1463	10	.69	SW
OCCUPATIONAL THERAPY	1471	1550	1733	262	17.81	OT
SPEECH/LANGUAGE SVCS	6942	4610	4615	-2327	-33.52	S/L
AUDIOLOGICAL SVCS	257	205	303	46	17.90	AUD
RECREATIONAL SVCS	213	172	139	-74	-34.74	REC
PHYSICAL THERAPY	866	772	804	-62	-7.16	PT
SPECIAL TRANSPORT. SVCS	1330	1016	1134	-196	-14.74	TR
SCHOOL HEALTH SVCS	346	233	229	-117	-33.82	HLTH
COUNSELING SVCS	1591	1564	1537	-54	-3.39	C
OTHER RELATED SVCS	1927	2174	2852	925	48.00	O
<b>TOTAL</b>	<b>18751</b>	<b>15255</b>	<b>15781</b>	<b>-2970</b>	<b>-15.84</b>	

# EXIT DATA

1987-88, 1988-89 AND 1989-90 (P.L. 94-142 ONLY)



For the second year (1988-89 and 1989-90), exit data was collected on 14-21 year olds, a change from the 16-21 year old age span for the 1987-88 year. As a result, the three year comparison shows that the number of students for whom data was collected increased by 67% (+3210).

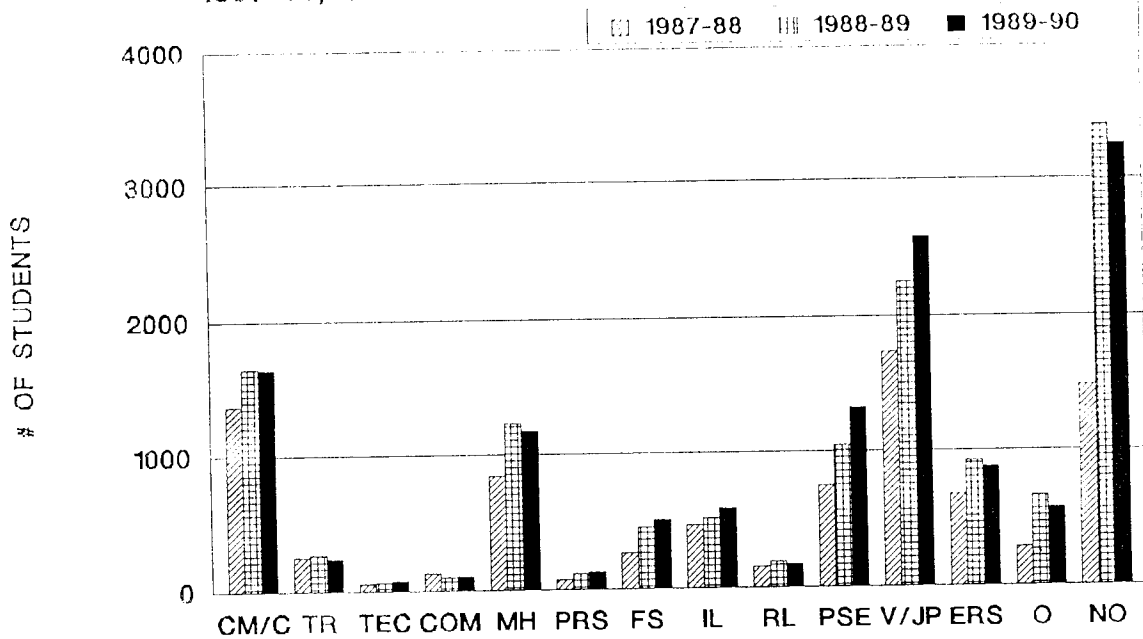
The number of students exiting from special education increased by 19% (+328) from 1987-88 to 1989-90 (this includes students who graduated, reached maximum age, dropped out, exited to regular education, moved out-of-district, died or were status unknown).

The numbers of students graduating from high school either with a diploma or certificate of completion decreased by 5% (-41), while the number of students exiting to regular education increased by 83% (+247) (this increase is due to the addition of 14 and 15 year olds).

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
GRADUATION W/DIPLOMA	711	709	706	-5	-.70	DIP
GRADUATION W/CERTIFICATE	70	35	40	-30	-42.86	CER
REACHED MAXIMUM AGE	12	7	5	-7	-58.33	MAX
DROPPED OUT	368	375	305	-63	-17.12	D-O
STATUS UNKNOWN	63	108	103	40	63.49	UNK
EXITED TO REGULAR ED	298	706	545	247	82.89	REG
MOVED OUT-OF-DISTRICT	166	335	308	142	85.54	MVD
STILL RECEIVE SP.ED. SVCS	3121	5862	6003	2882	92.34	SPED
DECEASED	1	4	5	4	400.00	DEC
<b>TOTAL</b>	<b>4810</b>	<b>8141</b>	<b>8020</b>	<b>3210</b>	<b>66.74</b>	

# ANTICIPATED SERVICES DATA

1987-88, 1988-89 AND 1989-90 (P.L. 94-142 ONLY)

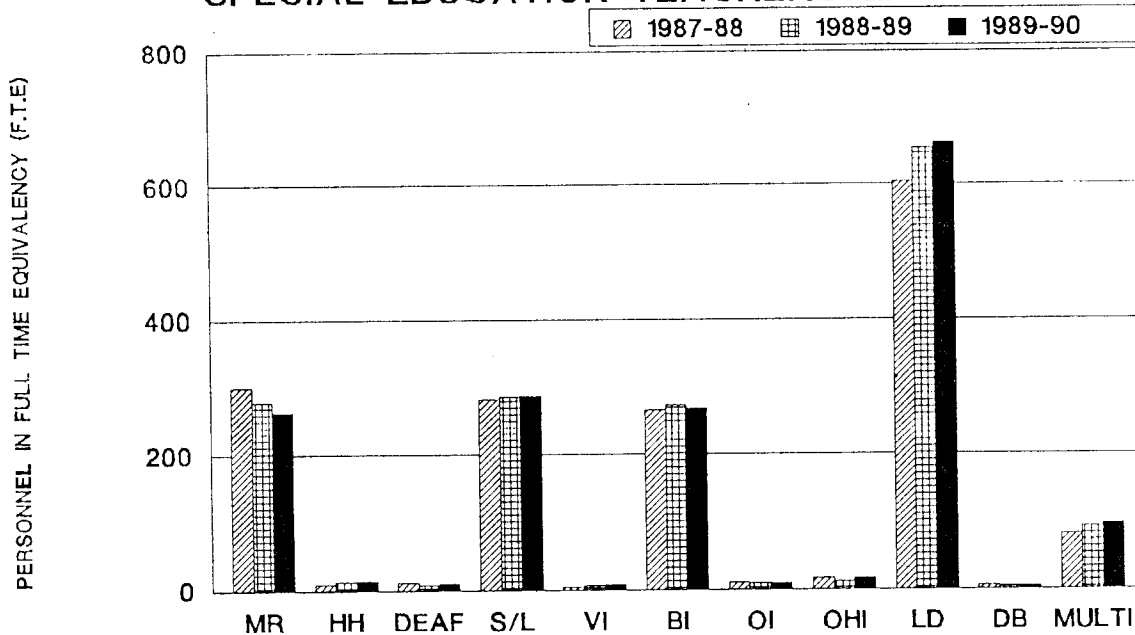


Due to the addition of fourteen and fifteen year olds for which this data was collected, the anticipated services data increased by 55% (+4707) from 1987-88 to 1989-90. Large increases occurred in vocational training and job placement (+842), postsecondary education (+581) and mental health (+330).

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
CASE MNGMT/COUNSELING	1377	1647	1641	264	19.17	CM/C
TRANSPORTATION	251	268	239	-12	-4.78	TR
TECHNOLOGICAL AIDS	56	62	74	18	32.14	TEC
COMMUNICATION	127	98	101	-26	-20.47	COM
MENTAL HEALTH	846	1231	1176	330	39.01	MH
PHYS. RESTORATION SVCS	71	110	122	51	71.83	PRS
FAMILY SVCS	262	450	500	238	90.84	FS
INDEPENDENT LIVING	462	511	589	127	27.49	IL
RESIDENTIAL LIVING	147	189	170	23	15.65	RL
POSTSECONDARY ED.	749	1040	1330	581	77.57	PSE
VOC. TRNG/JOB PLACEMENT	1737	2249	2579	842	48.47	V/JP
EMPLOYMENT RELATED	677	925	887	210	31.02	ERS
OTHER SVCS	284	666	576	292	102.82	O
NO SVCS NEEDED	1486	3402	3255	1769	119.04	NO
<b>TOTAL</b>	<b>8532</b>	<b>12848</b>	<b>13239</b>	<b>4707</b>	<b>55.17</b>	



## SPECIAL EDUCATION TEACHERS EMPLOYED



The number of special education teachers employed in 1989-90 increased by 3% (+48) from 1987-88. There was a 21% (+17) increase in teachers of multihandicapped, a 10% (+59) increase in teachers of the learning disabled, a 2% (+5) increase in teachers of the speech/language impaired, and a 1% (+2) increase in teachers of the behavior impaired. Increases also occurred in teachers of the hard of hearing, visually impaired and other health impaired, while decreases occurred in teachers of the mentally retarded, deaf, orthopedic impaired and deaf/blind.

These increases/decreases parallel most of the increases/decreases in the number of exceptional students over the past three years. Exceptions include multihandicapped, other health impaired, behaviorally impaired and deaf/blind.

### SPECIAL EDUCATION TEACHERS EMPLOYED

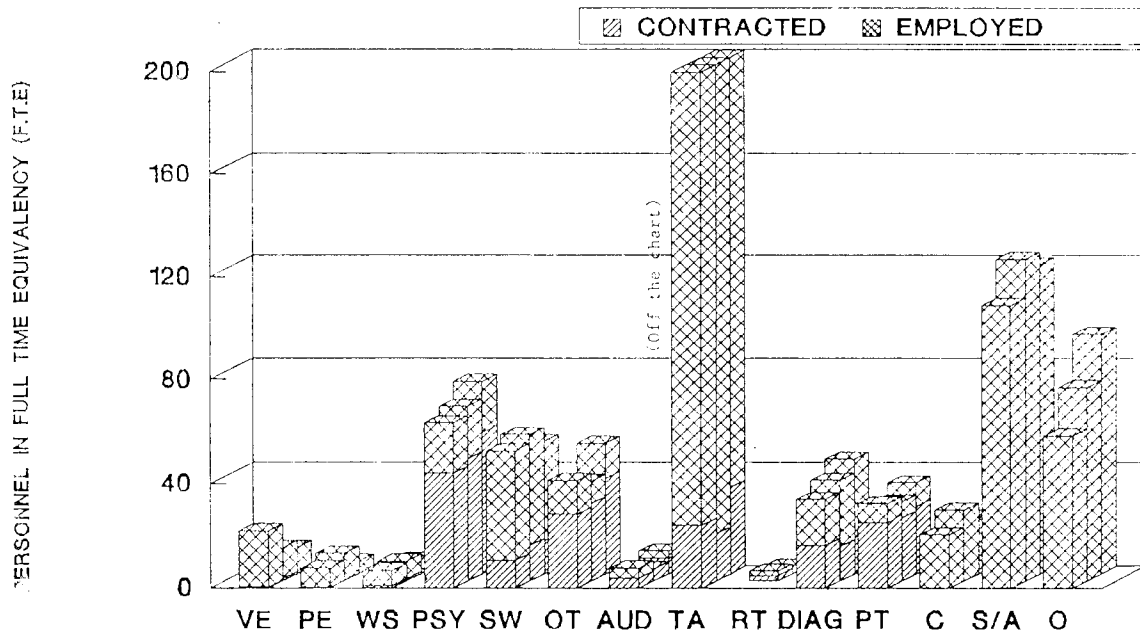
	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
Mental Retardation	301.26	279.72	264.88	-36.38	-12.08	MR
Hard of Hearing	8.95	13.11	13.17	4.22	47.15	HH
Deaf	11.81	8.44	10.06	-1.75	-14.82	DEAF
Speech & Language Imp.	283.30	287.09	288.02	4.72	1.67	S/L
Visual Impairment	4.43	6.50	7.13	2.70	60.95	VI
Behavioral Impairment	267.05	274.92	268.91	1.86	.70	BI
Orthopedic Impairment	10.95	9.72	9.83	-1.12	-10.23	OI
Other Health Impairment	16.25	11.80	17.42	1.17	7.20	OHI
Learning Disability	604.94	655.51	663.47	58.53	9.68	LD
Deaf/Blind	6.08	4.26	3.36	-2.72	-44.74	DB
Multihandicapped	80.32	92.09	96.97	16.65	20.73	MULTI
TOTALS	1595.34	1643.16	1643.22	47.88	3.00	

## OTHER PERSONNEL CONTRACTED OR EMPLOYED

The number of other personnel employed and/or contracted serving exceptional students increased overall by 18% (+265). Contracted personnel increased 20% (+31), and other personnel employed increased by 18% (+234). Overall increases occurred in all areas except vocational education teachers, physical education teachers, work-study coordinators and school social workers.

### OTHER PERSONNEL

Contracted or Employed



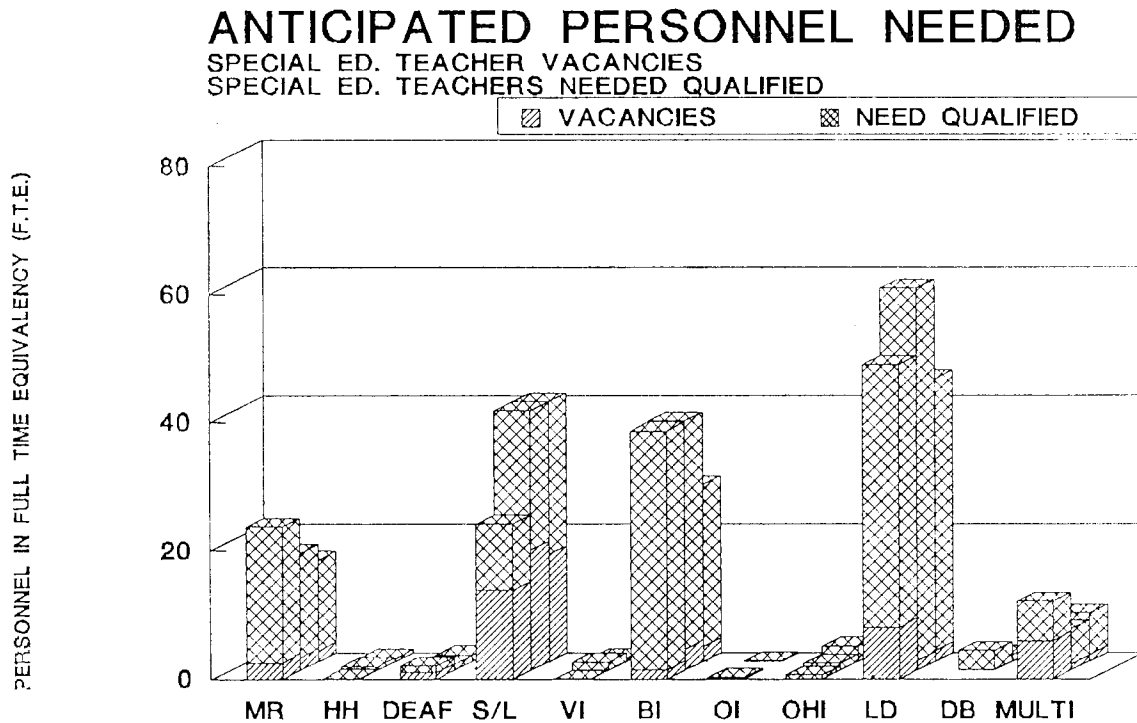
### OTHER PERSONNEL CONTRACTED OR EMPLOYED

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
Vocational Ed Teachers	21.97	12.73	10.01	-11.96	-54.44	VE
Physical Ed Teachers	7.73	10.57	4.73	-3.00	-38.81	PE
Work-Study Coordinators	6.80	7.31	5.65	-1.15	-16.91	WS
Psychologists	63.24	67.15	73.95	10.71	16.94	PSY
School Social Workers	52.67	56.15	50.84	-1.83	-3.47	SW
Occupational Therapists	41.35	38.23	49.79	8.44	20.41	OT
Audiologists	7.74	4.62	8.80	1.06	13.70	AUD
Teacher Aides	992.41	1168.33	1194.44	202.03	20.36	TA
Recreation Therapists	.00	3.62	3.00	3.00		RT
Diagnostic Staff	33.81	38.51	44.02	10.21	30.20	DIAG
Physical Therapists	32.41	30.08	34.74	2.33	7.19	PT
Counselors	20.44	27.23	21.62	1.18	5.77	C
Supervisors/Administrator	108.94	124.23	119.10	10.16	9.33	S/A
Other Non-Instructional	58.41	74.43	92.28	33.87	57.99	O
<b>TOTALS</b>	<b>1447.92</b>	<b>1663.19</b>	<b>1712.97</b>	<b>265.05</b>	<b>18.31</b>	

## ANTICIPATED PERSONNEL NEEDED

### Special Education Teachers Needed

There was a 7% (-10.41) decrease in the number of special education teachers needed between 1987-88 and 1989-90. Of this decrease, -9.76 (94%) were vacancies and -.65 (6%) were teachers needed to fill positions occupied by less than fully qualified staff. For most of the exceptionality areas, the greatest need has been for teachers who are fully qualified. In the area of teachers of speech/language impaired, however, there is a consistent split (almost 50-50) between vacancies and needed qualified. Decreases are now occurring in teachers of the mentally retarded, behaviorally impaired, learning disabled and multihandicapped.



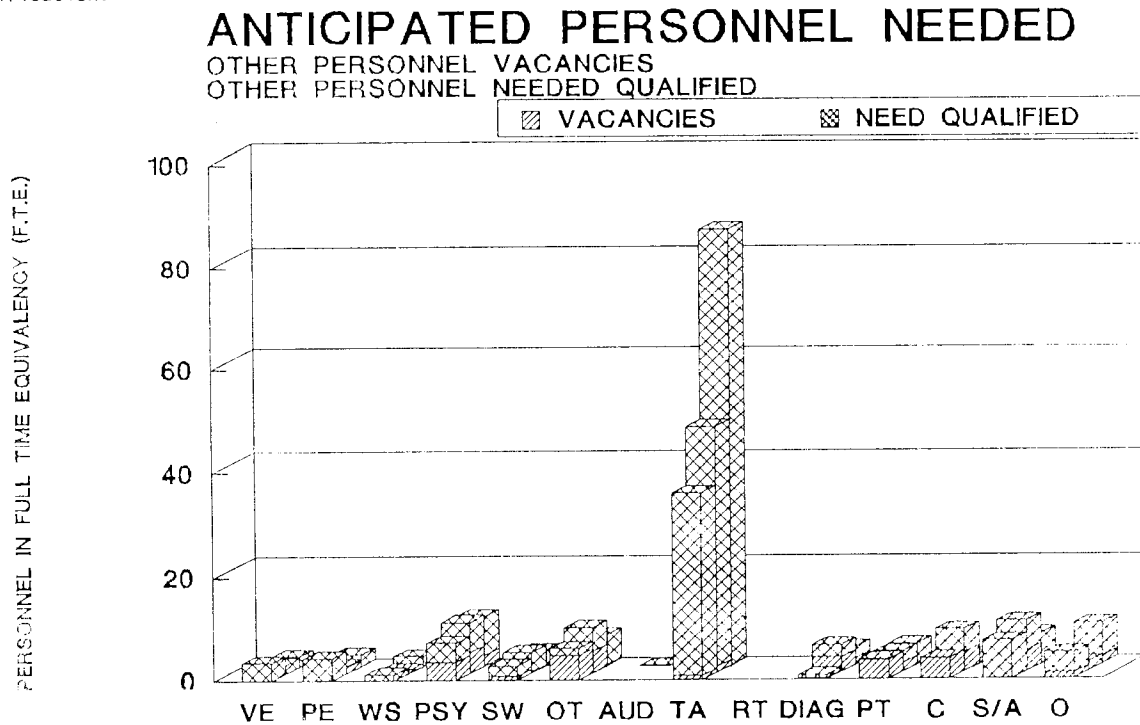
### SPECIAL ED. TEACHERS - VACANCIES/NEEDED QUALIFIED

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
Mental Retardation	23.80	18.26	15.75	-8.05	-33.82	MR
Hard of Hearing	.12	.62	.48	.36	300.00	HH
Deaf	2.14	1.00	1.00	-1.14	-53.27	DEAF
Speech & Language Imp.	24.22	40.46	40.39	16.17	66.76	S/L
Visual Impairment	.04	1.28	.55	.51	1275.00	VI
Behavioral Impairment	38.65	38.79	27.54	-11.11	-28.75	BI
Orthopedic Impairment	.36	.00	.04	-.32	-88.89	OI
Other Health Impairment	.61	1.13	2.37	1.76	288.52	OHI
Learning Disability	49.03	59.62	43.96	-5.07	-10.34	LD
Deaf/Blind	.00	3.00	1.00	1.00		DB
Multihandicapped	12.09	6.47	7.57	-4.52	-37.39	MULTI
<b>TOTALS</b>	<b>151.06</b>	<b>170.63</b>	<b>140.65</b>	<b>-10.41</b>	<b>-6.89</b>	

## Other Personnel Needed

There was a 63% (+52) increase in the number of other personnel needed between 1987-88 and 1989-90. Vacancies decreased by 70% (-13), while other personnel needed to fill positions occupied by less than fully qualified staff increased 102% (+65). Ninety-three percent of the overall increase is due to the teacher aide category (Educational Technicians I, II, III). This category has steadily increased, more than quadrupling the number of aides needed since 1986-87.

NOTE: There appears to be no logical reason why the number of qualified personnel needed is high among the teacher aide category. While there may be educational technicians employed who do not possess the necessary qualifications, it is more likely that people are misinterpreting the form and providing data on teacher aides who they wish were more qualified, but who actually are qualified according to the Division of Certification.



### OTHER PERSONNEL - VACANCIES/NEEDED QUALIFIED

	1987-88	1988-89	1989-90	3 YEAR CHANGE	% CHANGE	LABELS ON GRAPH
Vocational Ed Teachers	3.45	1.68	2.00	-1.45	-42.03	VE
Physical Ed Teachers	4.33	1.50	2.42	-1.91	-44.11	PE
Work-Study Coordinators	1.00	.60	2.00	1.00	100.00	WS
Psychologists	7.23	9.94	9.62	2.39	33.06	PSY
School Social Workers	2.75	4.10	3.12	.37	13.45	SW
Occupational Therapists	6.08	8.89	6.17	.09	1.48	OT
Audiologists	.00	.00	.07	.07		AUD
Teacher Aides	36.09	47.27	84.50	48.41	134.14	TA
Recreation Therapists	.00	.00	.00	.00		RT
Diagnostic Staff	.67	5.40	3.59	2.92	435.82	DIAG
Physical Therapists	3.73	4.00	4.12	.39	10.46	PT
Counselors	3.97	8.36	1.89	-2.08	-52.39	C
Supervisors/Administrator	7.49	9.99	6.11	-1.38	-18.42	S/A
Other Non-Instructional	5.06	1.75	8.11	3.05	60.28	O
TOTALS	81.85	103.48	133.72	51.87	63.37	

# Performance Report Maine Public Schools, 1991



Dist. 8/23 C.2

Maine  
Public Schools  
Performance Report  
1991

JOHN R. McKERNAN, JR.  
GOVERNOR

DEPARTMENT OF EDUCATION  
EVE M. BITHER  
COMMISSIONER

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**DEPARTMENT OF EDUCATION**

Telephone (207) 289-5800

Dear Maine Citizen:

The Department of Education's 1991 Performance Report on Maine's Public Schools contains information about the Department's varied programs and activities as well as statistical information on the performance of Maine students. The Department is pleased to release this report which provides a focus on continuing progress and accomplishment for our schools.

These are unprecedented times in Maine. The downturn in the economy for this region has necessitated some hard decisions at the state and local level with regard to funding for education. There remains a spirit of cooperation throughout the state and a willingness to work together to continue the programs which have been initiated and which have placed Maine in the forefront of educational reform.

Maine has been recognized by the National Education Goals Panel for work already in progress toward meeting the six goals for education established in 1989 by President Bush and the nation's governors. We need to work together as never before for the benefit of our students.

I encourage you to become informed and involved in the education of all of Maine's children. I hope this report will be useful to you and that you will contact the Department if you need further information.

Sincerely,

A handwritten signature in cursive script that reads "Eve M. Bither".

Eve M. Bither  
Commissioner

# A look at Maine public school education

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- *For at least 175 days between August and June in Maine, more than 213,000 children attend public schools.*
- *They are taught by 14,475 full-time teachers who earn an average salary of \$28,531, compared to the national average for 1989-90 of \$31,304.*
- *They attend one of 757 elementary and secondary schools in 184 school systems covering Maine's 492 municipalities.*
- *Over 28,000 of them are provided with special education and related services.*
- *Nearly 26,800 receive the supplementary services of Chapter 1 programs to bring them closer to expected performance levels for their age and grade placement.*
- *Over 4,000 receive Migrant Education services to offset the continued interruptions in their educations caused by the transient nature of their parents' occupations.*
- *Approximately 10,200 were served in gifted and talented programs statewide.*
- *A majority are served by 485 school libraries.*
- *An average of 165,000 ride on school buses.*
- *Many benefit from the more than 14 million meals provided through school nutrition programs.*



The following pages provide a more detailed and informative account of the state of public education in Maine today.

# Table of Contents

## SECTION I:

### EDUCATIONAL ACHIEVEMENT

#### High School Graduation

Graduation Rates.....	1
High School Completion Programs for Adults.....	1
Adult Vocational Education.....	2

#### Achievement of Public School Students

Maine Educational Assessment.....	2
Performance Trends.....	2
Student Performance Issues.....	3
Part Time Work.....	3
Gender Differences.....	3
Performance of Students in Non-College Courses.....	4
Changes in MEA Assessment Strategy.....	4
Conclusion.....	4

#### Achievement of College Bound Students

Performance on SAT.....	5
Maine and National SAT Score Averages 1980-1990.....	5
Performance on Achievement Tests.....	5

## SECTION II

### DEMOGRAPHIC AND EDUCATIONAL PROFILE

#### Profile of Maine

Demographic Information.....	6
Educational Attainment.....	6

#### The Educational System

Public School Enrollment.....	6
Maine's Public Schools.....	6
Maine's Educational Program.....	8
Gifted and Talented.....	9
Alcohol and Drug Education.....	9
Maine School Libraries.....	9

#### Secondary Vocational Education

Vocational Regions, Centers and Satellites.....	10
Competency-based Curriculum Development.....	10
Teacher In-Service Activities.....	10
Youth Leadership Activities.....	10
Maine State Accreditation Process.....	11
Other Related Initiatives.....	11

#### Special Student Membership

National Origin Minority Groups.....	12
Recent Immigrant Children.....	13
Compensatory Education (Chapter 1, Migrant).....	13
Governor Baxter School for the Deaf.....	13
Education of Exceptional Students.....	14
Home Study in Maine.....	14
Homeless Children and Youth.....	15

#### School Personnel Profile

Maine Educators.....	15
Administrator/Supervisory Positions Male/Female.....	15
Teacher Education and Certification.....	15
Public Classroom Teachers By Age.....	16
Average Annual Salaries.....	16
State Board of Education.....	16

## SECTION III:

### FINANCING K-12 PUBLIC EDUCATION IN MAINE

#### Local School Financing

Types of Local Revenues and Expenditures.....	18
Maine Educational Expenditures.....	18
Special Education Expenditures.....	18
Public School Pupil Transportation.....	18
School Nutrition and Food Distribution Programs.....	18

#### State of Maine Education Appropriations

General Purpose Aid.....	19
Per Pupil Costs.....	19
Maine Educational Costs.....	19

#### Federal Appropriations for Education

Federally Funded Programs.....	19
Federal Education Expenditures.....	19

## SECTION IV:

### EDUCATIONAL INITIATIVES

Educational Initiatives.....	20
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# SECTION I: EDUCATIONAL ACHIEVEMENT

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## High School Graduation

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### Graduation Rates

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Thirteen thousand seven hundred seventy-seven (13,777) Maine students graduated from public high schools in the 1989-90 school year, reflecting a class of 1990 graduation rate of 82.4 percent for Maine seniors. Also, in 10 private secondary schools with at least 60 percent publicly-funded students, as determined by the previous school year's October to April average enrollment, there were 975 students who graduated for a 89.5 percent graduation rate. The class graduation rate is the number of high school graduates measured against the ninth grade fall enrollments of four years earlier. Within a state, the class graduation rate is not adjusted for in-to-state and out-of-state student migration. National data published by the U.S. Department of Education is adjusted for student migration.

Maine data on graduation rates do not reflect adult education high school diplomas. These are awarded to young adults between 17 and 20 years of age who have been approved to use the adult diploma route for completing their high school education. The Department is working on new data collection procedures which will more accurately reflect the number of diplomas granted to these young adults who were regular high school students but received their diplomas in an alternate manner. This new procedure will provide a more accurate indicator of success of Maine high schools to increase graduation rates for their students.

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### Adult High School Completion Programs

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For the 28% or so of Maine's adults who do not have a high school diploma, Maine's adult high school completion programs provide an avenue of opportunity. Offered in 159 locations throughout the state, these local programs provide easy, low cost access to adults for the completion of their high school requirements.

Often operating as an extension of the regular high school, these programs provide two routes to the high school credential for adults: the traditional high school diploma with regular course requirements, and the GED (General Educational Development) test.

We were fortunate again this year to have Key Bank of Maine co-sponsor an aggressive media campaign addressing literacy at all levels. Called

"Keys to Your Future" with Tim Sample as honorary chairperson, this project utilized promotional brochures, flyers and posters, along with radio and TV spots to help make 1990 the most active year to date.

For adults who complete their high school requirements through adult classes or through the GED and are considering higher education, there is a pleasant surprise. Another project called "Operation Opportunity" helps provide a start. This project, a partnership among Maine's educational providers (the Maine Technical College System, The University of Maine, the Maine Department of Education, and Maine Educational Services - a private, non-profit corporation) and the business community provide funds for adult education graduates to take two courses at the Technical College System or the University of Maine. The goal for the project is to raise aspirations of adult learners and help them prepare for the job requirements of tomorrow.

#### 1. Regular Adult High School Diploma

Adult high school diploma programs are operated under the auspices of local school systems and in accordance with an Adult High School Diploma Plan approved by the Maine Department of Education. Students may utilize out-of-school and adult experiences toward their diploma requirements. The local system establishes minimum completion requirements both in terms of subjects and credits. Courses are taught by certified teachers and each course is a minimum of 45 hours of instruction.

An option within the adult high school diploma program is the External Credit Option (ECO). This option helps to minimize barriers such as child care, travel, and time constraints and is frequently used in conjunction with regular adult classes.

Slightly more than 1000 adults earned high school diplomas in the 89-90 fiscal year.

#### 2. High School Equivalency Diploma

A high school equivalency diploma may be earned by successfully completing GED (General Educational Development) exams in math, science, social studies, literature, and essay writing. These tests reflect those competencies that high school students should have upon graduation. In the 1989-90 fiscal year, 3,407 students earned their high school credentials in this manner—an all time high for Maine.

Preparation for the GED exam is strongly recommended and may take the form of regular classes or the GED preparation series. Offered in conjunction with most adult high school completion

programs, the GED is also offered through Maine's correction system, through job training programs and in community education settings for targeted populations such as the homeless.

Administered by the Maine Department of Education through the Bureau of Adult and Secondary Vocational Education's Division of Adult and Community Education, the test series were offered in 109 locations during the 1989-90 fiscal year. Each site operates under a one year contract between the Department and the American Council on Education and must meet pre-specified criteria for the operation of the test sites and the administration of exams.

## Adult Vocational Education

Adult Vocational Education is the tie that binds education to business and industry. We fully realize that the future economy of Maine will depend increasingly on the technical skills, the know-how and the adaptability of our work force.

Adult and Community Education programs have become the opportunity centers for adults to gain vocational awareness. Through the vocational education courses and job training and retraining projects, adult learners have had the chance to experience new technical training related to their changing job needs. Adult education programs have a distinct advantage in the delivery of their courses. They can design the course curriculum to be relevant to the specific needs of the student, the business or the industrial setting.

The following is a partial list of Carl D. Perkins Adult Vocational Education Training and Retraining Grants that were developed and delivered by local Adult and Community Education Programs: Certified Nurse's Assistant, Pharmacology, Home Health Aide, Entrepreneurship Training for Small Business, Career Seminars for Disadvantaged Adults, Licensed Practical Nurse, Maine Guide Training, Community Employment Project, Commercial Truck Driving, Heavy Equipment Operator, Advanced Accounting, Chemistry for Medical Providers, Welding, Boiler Repair, Electrical and Plumbing Maintenance, Computer Application for Business and Industry, plus many specialized short term projects. Over 100 Carl D. Perkins Grants have been offered during the past two years and the adult student enrollment is close to 20,000.

## Achievement of Public School Students

### Maine Educational Assessment (MEA)

Now in its sixth year, the Maine Educational Assessment (MEA) continues to engage the approximately 15,000 students in each of grades four,

eight, and eleven in tests covering the areas of reading, writing, mathematics, science, social studies, and humanities. The MEA design enables the public to evaluate the accomplishment of instructional programs in their schools, and helps parents to view the performance of their children in relation to their peers across the state. In addition, the MEA provides teachers and administrators with a comprehensive and consistent source of student achievement information to use in planning for school improvement.

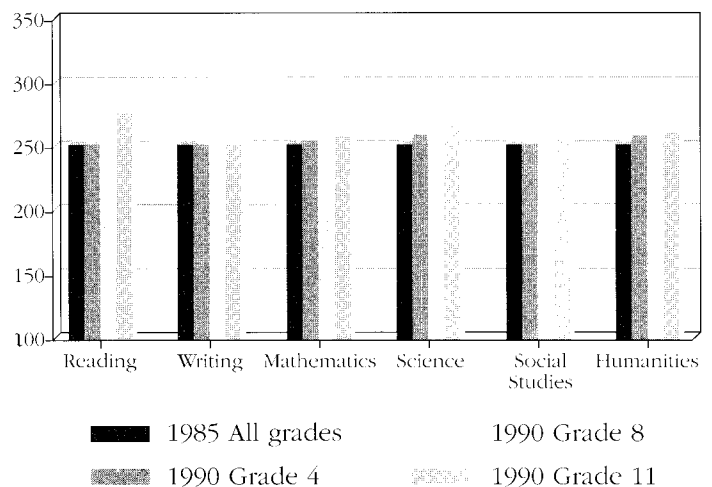
Since the initial educational reform legislation of 1984, MEA results have fueled discussions of the performance of our schools in homes, corner stores, school board meetings, and teacher in-service sessions. In the last year alone staff from the MEA conducted over 500 interpretative workshops for teachers, administrators, school board members, PTA meetings, and organizations such as Rotary Clubs. The state's newspapers routinely publish MEA results school by school, along with numerous articles of regional and individual school district responses to the scores. Is this public attention making a difference in Maine schools? The short answer is yes, and the following will focus on some of the reasons why there has been a positive impact.

## Performance Trends

For the first several years of MEA testing, results were quite stable with the exception of mathematics at grade eight and writing in all grades. However, performance on anchor questions taken from the National Assessment of Educational Progress showed Maine students consistently outperforming their peers nationally. The last two years of assessment results have demonstrated at least modest gains in all subject areas. Chart 1 below compares current performance levels in each subject to the original mean score of 250 points. The MEA scores are reported on a scale of 100 to 400 points.

### MEA Score Trends

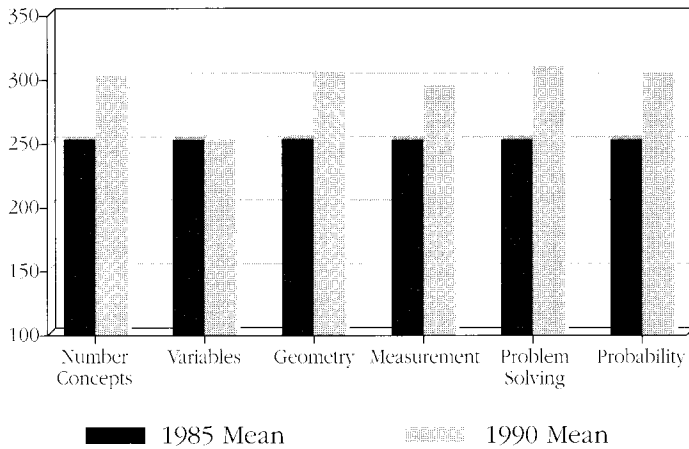
1985 to 1990



Summary reports, for school and district level results, demonstrate the gains in achievement in more detail. The following skill chart traces the changes in grade 8 student mathematics performance since the initial assessment in the fall of 1985.

Most gratifying is the increase in problem solving performance.

### Mathematics Grade 8 Performance



Writing performance improved dramatically in the first three years of the MEA program, and continues to improve. During the first three years, scorers observed a significant change in the quality and quantity of student writing. Now that sufficient writing samples have been analyzed, the state mean score will begin to be adjusted upward to reflect the rate of change in the 1991 scores. The most significant shift in writing scores is found in the reduction in the numbers of students who score a one or two on the six point scale. For example, the 1991 grade 8 results show a 20% reduction in the number of students writing papers that would receive a score of 2 or less.

### Student Performance Issues

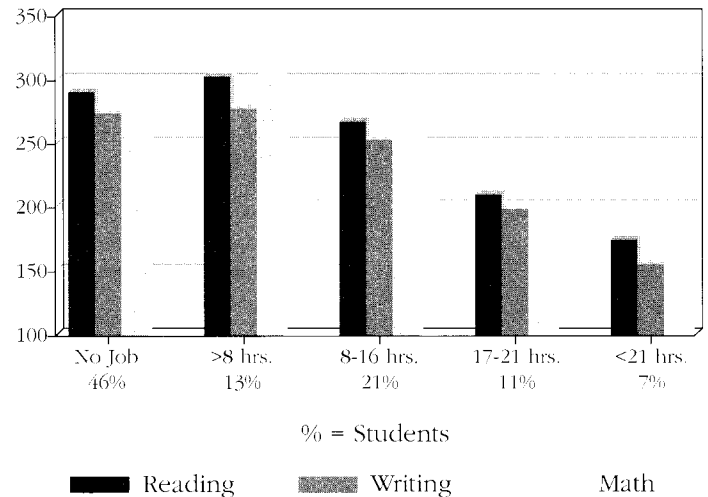
Among the issues brought into focus by MEA results are poor academic performance among students who work 16 or more hours a week, significant performance differences among males and females particularly in mathematics and the sciences, and unacceptable levels of academic performance of non-college program students. Each of these issues is the subject of state and local activity aimed at improving performance.

### Part-time Work

Eighteen percent (18%) of Maine's high school juniors report that they work at part-time jobs more than 17 hours during each school week. The academic performance of these students significantly is lower than those students working 8 hours or less. Further, local school officials report that many of

these students work so many hours that they are unable to participate in any school activities beyond attending classes. Recognition of the extent of this growing problem is beginning to bring school and business officials together to find ways to monitor and support the academic progress of these students. The following chart describes performance levels in relation to hours worked during the week.

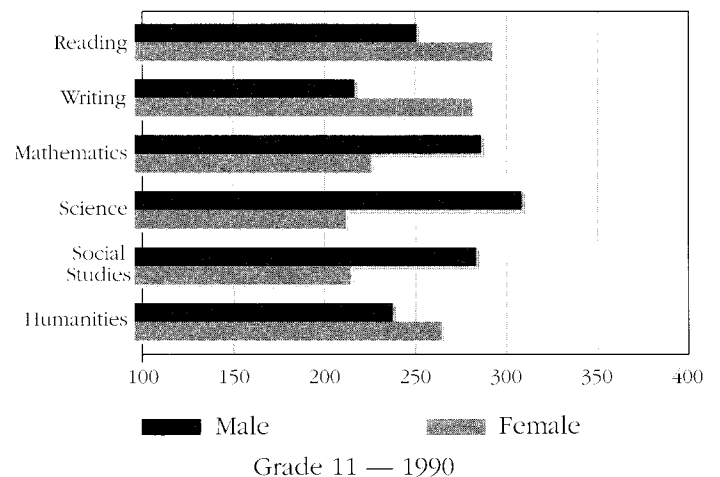
### MEA Analysis of Part-time Jobs Hours Worked During the School Week



### Gender Differences

The gender gap in student performances, recognized for many years, has become well documented through the MEA assessment. The chart below shows the extent of the difference among grade 11 students in 1990. Additional MEA analysis finds performance differences exist about equally among college and vocationally-bound students, even when courses taken are considered. However, there is considerable variability in male/female

### Gender Gap Male/Female Performance Differences

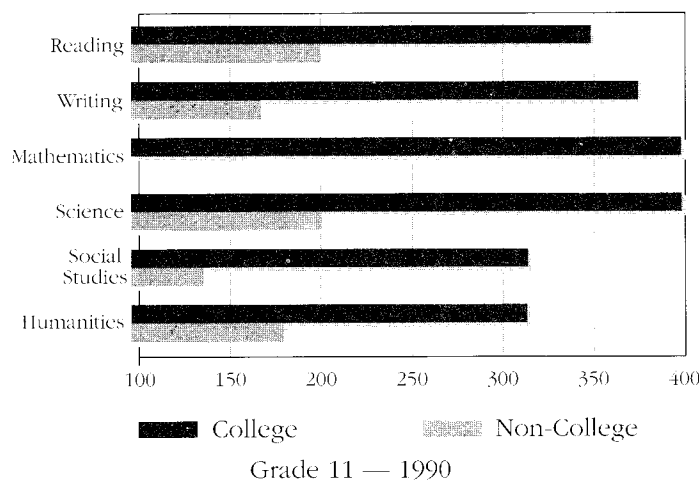


performance differences when viewed across school populations. Many schools are devising strategies to improve female performance in mathematics and the sciences. One Northern Maine high school has initiated an all female algebra program that attempts to raise aspirations for further study in advanced mathematics.

## Performance of Students in Non-College Courses

The MEA has focused significant attention on the academic preparation of students who are enrolled on non-college preparatory courses. The following chart shows the performance differences between college-bound and non-college bound students. Although students in these courses are able to respond to 50 to 60 percent of questions correctly, concern is raised about the adequacy of this performance in today's high technology work place. Since Maine's future economic development is contingent on a highly skilled work force, high school programs must change. The Common Core of Learning, which will affect school programs from the elementary level through high school, is designed to guide this school improvement effort.

**Performance by Program**  
College/Non-college Preparation



## Changes in the MEA Assessment Strategy

In science, Maine's fourth grade students responded to an open response question asking students to classify twenty cutout pictures of animals into two major groups, and then into two smaller groups based on common traits. This type of task exemplifies the MEA movement toward a non-traditional assessment format which measures student performance through active involvement with the test materials.

Student performance on open response questions in reading and mathematics now account for forty

percent of the overall score. Scoring these open response questions is a major undertaking involving professional scorers using a newly-devised holistic process. The scoring process considers the student's strategies for solving the problem, as well as correct answers. Below is a sample of a scoring guide for a mathematics problem used with grade eight students.

<b>Holistic Scoring Rubric</b>	
<b>Mathematics Open-Ended Items 1990-1991</b>	
<b>4 POINTS:</b>	<ul style="list-style-type: none"> <li>a correct solution and an appropriate strategy are shown or explained and the solution is shown with correct label or description if necessary.</li> </ul>
<b>3 POINTS:</b>	<ul style="list-style-type: none"> <li>a complete, appropriate strategy is shown or explained but:</li> <li>An incorrect solution is given due to a simple computational or other error;</li> <li>no solution is given;</li> <li>a correct solution is given with no solution strategy or explanation shown;</li> <li>a correct solution and appropriate strategy is shown or explained, but not labeled correctly when necessary.</li> </ul>
<b>2 POINTS:</b>	<ul style="list-style-type: none"> <li>some parts of an appropriate strategy are shown or explained, but some key elements are missing;</li> <li>some parts of an appropriate strategy are shown or explained, along with some inappropriate parts;</li> <li>appropriate strategy shown or explained, but implemented incorrectly.</li> </ul>
<b>1 POINT:</b>	<ul style="list-style-type: none"> <li>some work or explanation beyond recopying data, but work would not lead to a correct solution;</li> <li>one or more incorrect approaches attempted or explained.</li> </ul>
<b>0 POINTS:</b>	<ul style="list-style-type: none"> <li>no work or solution shown or explained;</li> <li>incorrect solution and no work shown or explained;</li> <li>some data from the problem copied over, but no evidence of any strategy is shown or explained.</li> </ul>

The process used in the scoring of writing has been modified to provide parents and schools with descriptive comments on the quality of student writing. For each of the 15,000 students at a grade level, scorers assign a statistical score based on the overall quality of the writing, and then select commendation and need statements which best describe the writing.

## Conclusion

The MEA, through its tests in reading, writing, mathematics, science, social studies, and humanities has for the past five years traced the performance of the approximately 15,000 students in each of grades four, eight, and eleven. This brief report was intended to highlight some of the important performance trends found among Maine students, and to provide a discussion of the evolving assessment strategy. If you have questions about the MEA program, please contact the Division of Educational Assessment.

# Achievement of College Bound Students

## Performance on SAT

Maine college bound seniors scored better than the national average on the verbal section of the Scholastic Aptitude Test (SAT) given in 1990. On the math portion of the SAT, Maine seniors maintained the same average as last year.

Maine seniors averaged 423 on the verbal section of the test. The national verbal average was 424. The Maine 1990 math average was 463. The national math average was 476.

At the national level, the verbal average dropped by three points and the math average remained constant.

The 1990 SAT results for Maine show:

- Sixty (60) percent of Maine's approximately 15,700 high school seniors took the SAT, up a point from 1989. Nationally, 40 percent took the SAT.
- For the past 11 years, Maine male verbal SAT scores have been higher than those of Maine females (females recorded a higher average in 1979). During the same time period nationally, male verbal SAT scores have been higher by an average of five points. The difference in 1990 was five points.
- In 1990, male verbal scores were down an average of ten points to 427 and female scores were down an average of six points to 420 from the previous year.
- From 1979 to 1986, national male verbal SAT scores were higher than Maine male scores by an average of two points. In 1987, for the first time, the Maine male SAT average exceeded the national male average by three points. The national male average was two points higher in 1990.
- In each of the past 11 years, Maine female verbal SAT scores have been higher than the national female scores in each year — by an overall average of 5 points per year.

- During the past 11 years, male math SAT scores have been higher than those of females by an average of 44 points. The difference in 1990 was 46 points.

- In 1990, the male math average for seniors in Maine was down six points to 484. The female average remained at 444, the same average as in 1983.

## Performance on Achievement Tests

In 1990, 2,111 Maine high school seniors, representing 24 percent of the number who took the SAT, took at least one Achievement Test. Nationally, 20 percent who took the SAT also took one Achievement Test.

Achievement Tests are curriculum-based and are designed to measure educational outcomes or knowledge in specific subject matter areas, such as French, physics, American history, and English composition.

The Achievement Tests results show that:

- In 1990, 14 percent of all Maine graduates took at least one Achievement Test, twice the national average.
- Students who took at least one Achievement Test earned SAT scores well above the state average in both verbal (506 compared to the state average of 423) and math (557 compared to the state average of 463).
- Achievement Test scores for Maine seniors had been rising sharply in recent years before leveling off in 1988. During the same period, the proportion of Maine students taking the SAT and recording scores in at least one Achievement Test has fallen sharply. In 1979, 56 percent of all SAT takers took at least one Achievement Test. In 1990, the percentage was less than half that figure.
- The four most frequently taken Achievement Tests in 1990 were English composition (1,908), Mathematics Level I (1,402), American history (569) and Biology (552).

SAT SCORE AVERAGES 1980-1990

Year	NATIONAL VERBAL			MAINE VERBAL			NATIONAL MATH			MAINE MATH		
	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total
1980	428	420	424	428	427	427	491	443	466	488	447	467
1981	430	418	424	430	423	426	492	443	466	489	444	466
1982	431	421	426	428	426	427	493	443	467	489	440	463
1983	430	420	425	428	426	427	493	445	468	486	444	464
1984	433	420	426	432	427	429	495	449	471	487	440	463
1985	437	425	431	434	430	432	499	452	475	488	446	466
1986	437	426	431	434	433	434	501	451	475	488	445	466
1987	435	425	430	438	429	433	500	453	475	494	440	466
1988	435	422	428	434	427	430	498	455	476	488	446	466
1989	434	421	427	437	426	431	500	454	476	490	444	466
1990	429	419	424	427	420	423	499	455	476	484	444	463



**Education in Unorganized Territories  
(7 Schools)**

Education in unorganized territories (E.U.T.) in Maine is a responsibility of the state. The education of territory children is accomplished by the state operating schools which are in unorganized territories and by the assignment of agent superintendents to assure that each child in an unorganized territory receives education. These agents are assigned by the Commissioner of Education through the Division of School Operations.

**Units under District Superintendents and Agents of the Commissioner  
(25 Systems, 25 Towns)**

Assigned to a district superintendent or an agent of the commissioner, these are generally relatively small units requiring less than full-time administration.

Units under district superintendents procure services of superintendents on their own by negotiating with a nearby superintendent and school board.

Agents are appointed by the commissioner on a temporary basis if the local school unit is unable to locate a superintendent on its own.

**Educational Program**

In Maine, there are 757 public schools located in 283 local educational agencies. Generally, school is in session from late August or early September to mid-June for a minimum of 180 school days, at least 175 of which are instructional days for students in grades K-12. The length of the school week is 25 hours of instructional time except that kindergarten is twelve and one-half hours. Standards and curriculum content vary for elementary schools and secondary schools.

The elementary school (grades K-8) curriculum, includes — but is not limited to — instruction in:

- Language Arts (reading, writing, spelling, grammar, handwriting, listening and speaking skills)
- Mathematics
- Science
- Maine studies
- Social studies
- Fine arts
- Physical education
- Health
- Library skills

The secondary level (grades 9 through 12) enrollment is approximately 28.5 percent of the total public school membership.

A total of at least 16 credits is required for the award of a high school diploma.

Required for high school graduation in the secondary school curriculum are:

- English, four credits
- Social studies, one credit
- American history and government, one credit
- Science, two credits including at least one credit of laboratory
- Fine arts, one credit which may include art, music, forensics or drama
- Health, one-half credit
- Physical education, one credit
- Mathematics, two credits
- Computer proficiency
- Maine studies, one-half credit if not taken between grades 6-8

Other secondary school instructional requirements include a two-year sequence of a foreign language, library skills, and vocational education.

Special education for exceptional students is provided as part of each public elementary and secondary program.

**DISTRIBUTION OF LOCAL EDUCATIONAL AGENCIES IN MAINE**

	No. of Systems	No. of Local Admin. Units	Number of Municipalities
Cities & Towns with Individual Supervision.....	39	39	39
School Administrative Districts .....	73	73	275
Community School Districts .....	13	13	39
Unions of Towns (including Maine Indian Education).....	34	133	115 *
Towns under District Superintendents & Agents of the Commissioners ...	25	25	24 **
<b>T O T A L S</b>	<b>184</b>	<b>283</b>	<b>492</b>

\* 18 municipalities are counted with C.S.D.s

\*\* 1 municipality (Franklin) is counted with C.S.D.s (These are only counted ONCE to avoid double counting.)

In addition, gifted and talented education programs must be in place by 1995-96. Leadership and technical assistance in all curriculum areas are provided by the Division of Curriculum. The Division also provides regulatory functions which include school approval, accreditation, inspections, home-study, and other assigned duties. It also has administrative responsibilities for certain federal and privately funded programs. These priorities have been established by legislative and executive department mandate. The target populations served include Maine students, teachers, school administrators, and members of the general community.

## **Education of the Gifted and Talented**

Maine school units are moving toward the implementation of comprehensive programs for the gifted and talented through a five-year phase-in plan process.

During 1989-1990, 124 school systems supported programs for the gifted and talented. Thirty-seven local school administrative units in seven regions collaborated to provide regional programs for secondary school students.

Approximately 10,200 students were served in gifted and talented programs statewide. This represents approximately 5 percent of the total kindergarten through grade 12 school-age population enrolled in Maine schools.

Students were served in programs offering a wide variety of opportunities in academics and the arts. Fifty percent of the programs provided services in both areas and fifty percent served students in academic areas only.

A strong professional development effort supported program implementation at the local level. The annual Maine Summer Training Institute offered a week-long professional development session for 150 gifted and talented program teachers, administrators, and coordinators. In addition, two conferences were co-sponsored with state-level education organizations, and a series of two seminars, each held in four locations, was offered. Orientation seminars were presented to new and beginning teachers, consultants and coordinators of gifted programs. Advanced seminars on program evaluation were offered to educators experienced in gifted program implementation.

## **Alcohol and Drug Education**

State government's core strategies in alcohol and other drug prevention and education for schools statewide are carried out by the Division of Alcohol and Drug Education Services. Central to this responsibility is the development, training, and maintenance of school and community teams.

The division has trained 117 school and community teams representing 64% of all school administrative units. These teams are moving their local schools and communities toward the implementation of comprehensive alcohol and other drug prevention and education programs.

Throughout the implementation process, division staff conduct training activities for school personnel to help ensure that all Maine school children have a developmentally oriented, age-appropriate, up-to-date, and accurate curriculum for alcohol and other drug education.

The division provides training, consultation and on-site technical assistance to schools on eight elements: education and awareness, policy and procedures, climate, support groups, student awareness, curriculum, staff development, and modeling. Examples of training provided in 1990 for some of the elements are:

- 4940 school personnel, students, and parents, received alcohol and other drug Education and Awareness training.
- 1385 school administrators, faculty, and nurses were trained in the Student Assistance Team (S.A.T.) process, and Policy and Procedures workshops were provided for 13 school districts.
- 110 school administrators, faculty, and counselors learned how to set up Support Groups for the three populations of students: recovering, affected, non-user/non-affected.
- 601 youth and adults received Refusal Skills training and 331 educators received Curriculum training.
- 497 school administrators, students, athletic directors and coaches received specialized training on the problem of alcohol and other drugs in athletics through the Sports Initiative.
- 131 Maine high schools (96%) were involved in Project Graduation 1990 with 11,219 seniors participating. This is the third consecutive year in which no teenager lost his/her life in alcohol related car crashes during the Project Graduation season (May 15-June 20).

The Drug-Free Schools Program, which is administered by the Division of Alcohol and Drug Education Services, has provided federal funds to nearly every school system in Maine to assist them with implementing alcohol and other drug prevention and education programs.

## **Maine School Libraries**

Maine has 485 public school libraries. Most school libraries are one-person operations. Although not formally surveyed, the number of volumes in school libraries is estimated to be approximately 2.5 million.

A cooperative plan for surveying school libraries has been completed by the Maine State Library. The

currency of the collections, staffing, and programming are specific areas being studied. The results of this study will be important in determining the quality of school library programs.

Fifty percent of the nearly 200 Maine libraries now participating in MaineCat, a computer-based optical disc catalog showing the location of many thousands of books in Maine libraries, are school libraries.

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## **Secondary Vocational Education**

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### **Vocational Regions, Centers, and Satellites**

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Maine currently offers secondary vocational education opportunities in twenty-six vocational centers and regions strategically located so that virtually every secondary high school student may access vocational studies.

Over seven thousand students participate in over forty vocational program offerings. These programs offer the student the opportunity to develop the necessary skills and behaviors to enter the workforce or to pursue continued education and training.

As is demonstrated in the following narrative, Maine's occupational education system is in a state of transition as its boundaries are expanded to incorporate such entities as related instruction in the areas of math, science, and communication.

Additionally, flexible programming is being incorporated, which affords more students the opportunity to access technical education for an experimental applied learning opportunity.

### **Competency-based Curriculum Development**

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The Competency-based Curriculum Development Project, initiated approximately two (2) years ago, represents a collaborative effort between the Bureau of Adult and Secondary Vocational Education (BASVE), vocational center and region directors, the University of Southern Maine and vocational instructors.

The process includes an in-depth job-task-analysis (DACUM) of each program area with the assistance of representatives from business and industry. This initial analysis of the duties and tasks associated with each occupational area provides the foundation for the development of a competency-based curriculum and ensures industry validation for each vocational program. This information, in the form of a duty and task chart, is utilized by vocational instructors to develop the competency or outcome-based curriculum.

As of this date, 24 DACUMS have been completed with an additional two or three scheduled to be completed prior to June 30, 1991. In reference to

curriculum development, instructors have initiated work in 13 program areas. These curricula will be completed prior to June 30, 1991 and copies will be available to directors and staff prior to the opening of school in September 1991.

Vocational directors and staff have placed a high priority on curriculum development and are in the process of developing a plan of activities to ensure completion of this project. This plan includes the allocation of human and financial resources in conjunction with administrative and staff support.

### **Teacher In-Service Activities**

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Staff development and training are viewed as an on-going and essential component to the development and delivery of comprehensive programs of instruction. In this regard, the Bureau of Adult and Secondary Vocational Education has worked collaboratively with professional staff at the University of Southern Maine and vocational instructors in the development and delivery of courses, workshops, seminars, and technical assistance activities. During the 1989-90 school year, vocational staff from 13 different program areas participated in curriculum development efforts.

Other activities available to staff included a week long staff development workshop at USM followed by a series of three regional seminars concerning the teaching/learning process, understanding and responding to students, and technological competence. Staff also participated in a variety of day-long technical updates provided in conjunction with the annual Maine Vocational Association meeting in Rockland during the third week of March.

### **Youth Leadership Activities**

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The growth and development of Vocational Youth Leadership Organizations which provide students with opportunities to develop essential academic, career, life, and occupational skills continue to be a high priority. During the 1989-90 school year students enrolled in these organizations participated in a variety of activities including local leadership conferences and local, state and national competitions. Student organizations include: DECA (Distributive Education Clubs of America), HOSA (Health Occupations Student Association), FHA/HERO (Future Homemakers of America/Home Economics Related Occupations), FFA (Future Farmers of America), FBLA (Future Business Leaders of America), TESA (Technology Education Student Association) and VICA (Vocational Industrial Clubs of America).

The second annual Governor's Leadership Conference was held in November 1990, with over 500 chapter and state officers in attendance from the youth organizations listed above. The year 1990 also

marked the introduction of VICA at the post-secondary level, thus providing opportunities for students to continue their activities with this organization.

## **Maine State Accreditation Process**

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The Bureau of Adult & Secondary Vocational Education is currently field testing the new Maine Accreditation process with the assistance of administration and staff at Presque Isle Regional Vocational Center. This process was developed as an alternative to that offered by the New England Association of Secondary Schools & Colleges. The Maine process was developed utilizing effective schools research in an effort to ensure a comprehensive, state-of-the-art approach to accreditation.

## **Other Related Initiatives**

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The Bureau of Adult & Secondary Vocational Education developed and implemented other related initiatives during the 1989-90 school year. Those initiatives included, but are not limited to the following:

- Consumer and Home Economics funds were granted to nine middle and senior high schools located in economically depressed areas to initiate new programs or expand those funded the previous year. A variety of issues were addressed through the grant process: team taught physical management courses, strengthening reading skills through home economics, consumer education, the family life cycle with emphasis on aging, caring for children, and parenting education at the adult level.
- Two facility planning and equipping guides were completed and distributed to teachers and architects: Facilities Planning Guide For Home Economics Programs In Maine and Planning and Equipping Guide For School-Based Child Care and Parenting Center.
- The Vocational Curriculum Resource Center of Maine (VCRCOM) located at Kennebec Valley Technical College continues to expand their information base and services available to staff, students, and administration. Curriculum development continues to be a major priority for the center as evidenced by their high level of involvement and continued support of curriculum development efforts throughout the state. With constant emphasis on program improvement, articulation agreements, integration of academic and vocational skills, and on training the work force, the services required and available through the VCRCOM continue to become more challenging and sophisticated.
- The Maine Agriculture In The Classroom Project

held two five-day curriculum development institutes for 43 teachers (K-12) to increase their awareness of the food and fiber system and to assist them with designing classroom activities that reinforce the development of basic academic skills across the curriculum. Activities developed during the four previous institutes have been published and have been placed in the schools of those teachers who have attended the institutes. Maine Agriculture In The Classroom has been the driving force in the development of a Regional Agriculture Poster and the ancillary curriculum materials associated with the poster. These materials were designed for fifth grade students and are available to teachers of that grade.

- The Technology Education Association of Maine (TEAM) has developed and printed a new Curriculum Guide for Technology Education/Industrial Arts teachers in Maine. This guide has been disseminated through a six-workshop series offered in six regions of the state. Over sixty percent of the Technology Education teachers in the state have participated in the workshop series. The workshop series culminates a three year initiative by the Bureau of Adult and Secondary Vocational Education.
- A variety of services were provided to disadvantaged students in an effort to assist them in completing their vocational program of study. These services included, but were not limited to: remedial, tutorial, one-on-one assistance, career guidance and counseling, job placement, job coaching and monitoring. The services provided, especially the remedial and tutorial, were very effective in helping students complete their course of study and also had a major impact on retention with as many as 90% of disadvantaged students obtaining a high school diploma.
- All handicapped students are afforded equal access to recruitment, enrollment and placement in vocational programs through the P.E.T. process. Based upon appropriate assessment information, handicapped students are placed in separate programs or mainstreamed into regular vocational programs. Services provided these students included, but were not limited to: one-on-one assistance, tutoring, remediation, career guidance and counseling, job coaching, curriculum modification, equipment modification and transition assistance from school to work.
- During the 1989-90 school year a project was initiated to establish nine Sex Equity CADRE. The CADRE personnel are composed of one male and one female employee of each participating center or region. Their mission is to develop a team of sending school and community personnel who will work on issues of sex equity to ensure that there is widespread school and community support for nontraditional students.

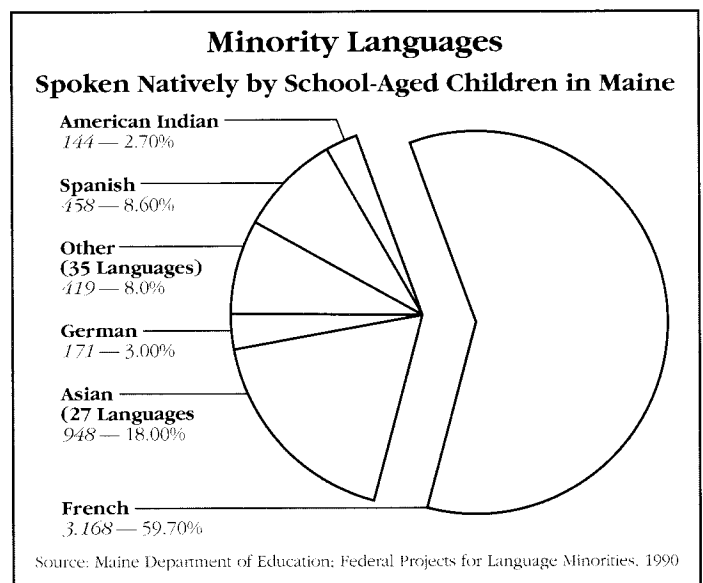
- A comic book entitled "The Adventures of the Vocational Twins" has just been developed to promote sex equity and vocational education. It centers around the following story line: A group of children are playing. One child remarks that his older sister is enrolled at the local vocational center in carpentry. Another child derides this saying vocational education is only for kids who cannot cut it in the regular classroom. Suddenly, the "Vocational Ed" twins appear (one female, the other male). The twins are colorfully costumed super heroes whose sole purpose is to make students aware of the possibilities vocational education offers them. The comic book is being distributed to all 4-6 graders in Maine. Each vocational center and region is responsible for the distribution which is already underway.
- The 1989-90 school year saw increased activity in the area of vocational career guidance. Presently 17 out of 28 of the vocational regions and centers employ vocational career guidance counselors. These counselors work with vocational students in the following areas: life and work goals, career planning, career decision-making, and employability skills. The counselors also have the major role in student recruitment for their schools. These counselors also participated in staff development activities provided through Carl Perkins funding. Grant writing, recruitment, sex equity training, building alliances between men and women, and assistance on writing the comprehensive career guidance plan were the topics during 1989-90.
- The Bureau of Adult and Secondary Vocational Education, in coordination with the State Guidance Supervisor (Bureau of Instruction), and the Maine Occupational Information Coordinating Committee (MOICC), have worked together in developing career education material. The first project, which celebrated its third year of providing students with career awareness information, is the PREP (Preparing to Realize your Education Potential) project. The program makes career awareness and educational planning resources available to every eighth grade student throughout Maine. Presently the program is being implemented in 100 eighth grades throughout Maine. The second project is The Maine Guide — A Developmental Framework for Life Choices, K-Adult. The guide will make available a systematic and comprehensive career guide for the learner on either side of the educational continuum. The guide is scheduled to be printed in the spring of 1991.
- In the area of adult vocational guidance, five local adult education agencies offered career guidance programs which assisted adults in developing new skills in order to move away

from declining occupational fields, in developing mid-career job search skills and in career decision-making as well as employability skills.

## Special Student Memberships

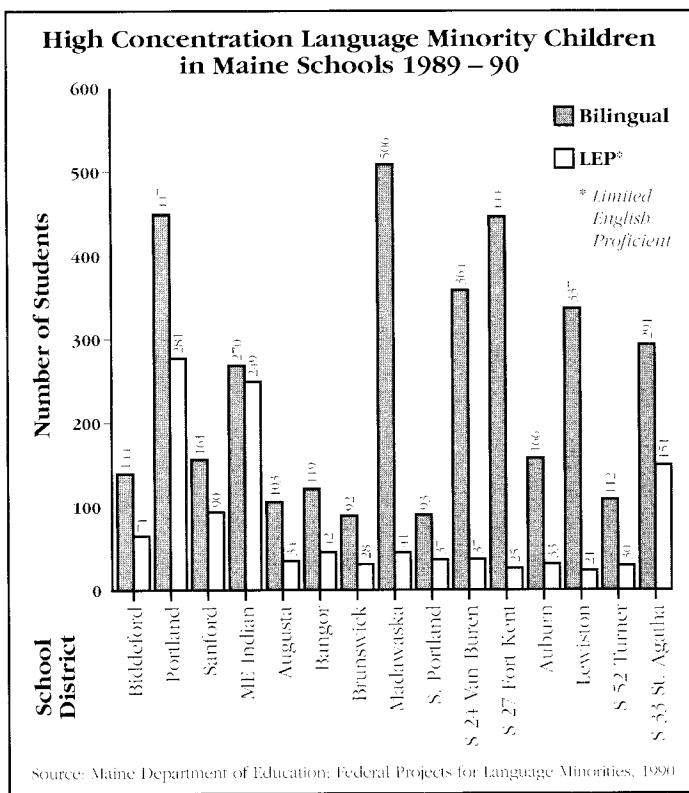
### National Origin Minority Groups in Maine

Most of Maine's 42,000 minority children (1980 U.S. Census) are of French descent (59.7 percent) See Table A. Another 18 percent of the state's minority children are Asians representing twenty-seven language groups. The Hispanic population (8.6 percent) has, like the Asian population, increased in the past few years. More than 6,300 children in Maine are natively bilingual, as reported by their parents.



Communities in Maine who enroll the largest numbers of bilingual children are shown in the graph (Table B). This graph also illustrates the number of bilingual children who lack full proficiency in English. At least 1,820 children statewide are known to be limited English proficient. Current trends in school enrollments of refugee children are shown in Table C.

Limited English proficient children are the primary beneficiaries of services under Title IV of the Civil Rights Act, a federal grant program available to the nation's state education departments. Services include on-site technical assistance for English as a second language (ESL) as well as statewide conferences and institutes on teaching methodology. There are three bilingual education projects in Maine's schools and at the University of Southern Maine supported by federal competitive ESEA Title VII funds. These projects serve about 500 limited English proficient children. Several applicants are under consideration for federal funding in 1991.



private schools across the state. Of these students, 76 percent were in grades one through six, 13 percent were in grades seven through twelve, and 11 percent were in preschool and kindergarten programs. Neglected and/or Delinquent Programs operate in the correctional centers providing needed remedial services to youth at-risk.

In 1989-90, 68 Migrant Education projects provided services to 4,132 students. Of these students 61 percent were in grades one through six, 37 percent were in grades seven through twelve, and 12 percent were in preschool and kindergarten programs. Migrant projects deal with children whose education is continually interrupted by the transient nature of their parents' occupations in agriculture or fisheries.

Specific programs funded under Chapter I in 1990 were:

Local Education Agency Grants	\$18,391,065.
Neglected and Delinquent Grants	188,260.
Migrant Education Project Grants	3,321,670.

## Governor Baxter School for the Deaf

Governor Baxter School for the Deaf originally was established for the purpose of providing an educational and residential program for deaf children in Maine. The purpose and organization of the school is evolving and expanding in response to changing federal and state regulations with regard to special education and, in particular, deaf education.

Governor Baxter School for the Deaf is becoming the core of a developing and far-reaching system to identify and meet the educational and related needs of Maine's hearing impaired infants, children, adults, their families, and the community at large.

Governor Baxter School for the Deaf meets school approval standards developed by the Maine Department of Education. It also is accredited by the Conference of Educational Administrators Serving the Deaf, a national association of schools and programs serving deaf students. The school provides a wide range of services for students, families, professionals and citizens in the state. Comprehensive programming includes the academic program (preschool, elementary, middle school, and high school), adult education, the local and regional athletic program, audiological services, captioned film depository, computer program, coordination of on-site vocational rehabilitation services for students, deaf awareness program, driver education, evaluative services, family learning activities, independent living program, school library, parent/professional library, multi-level sign language program, school newsletter, occupational and physical therapy, Parent Advisory Committee, preschool consultation, preschool program, Project Adventure Program, resource center on deafness, Sound Lab and Communication Lab, special services, speech therapy, and staff development activities.

## Recent Immigrant Children

More than 4,000 of Maine's language minority children were born in the state. About 2,000 children are recent immigrants who have difficulty with the English language. There's no funding in Maine to support the extra educational needs of these children. Support for these children is limited to local funding. The same is true for all other limited English proficient children in Maine.

## Compensatory Education (Chapter I, Migrant)

The 1988 Hawkins/Stafford Elementary and Secondary School Improvement Amendments (P. L. 100-297) reauthorize federal financial assistance to local public school districts to meet the special needs of educationally deprived children. It provides funds to supplement the regular education instruction program of students performing significantly below expectation due to cultural, geographic, or economic deprivation. The supplementary services are concentrated in the areas of remedial reading and mathematics. The Maine Chapter I programs in reading and math have made a significant impact toward bringing students who are behind their classmates closer to expected performance levels for their age and grade placement. On average, gains continue to exceed more than a year of growth per student.

In 1989-90, 175 Part A and two Neglected and Delinquent Projects provided services to approximately 26,800 students enrolled in public and

Annual summer programming includes the preschool program, the Family Learning Vacation, the Portland-Falmouth Teachers Academy, and the Summer Institute which is presented in conjunction with the University of Southern Maine.

In 1990, the Aroostook County Project was expanded to establish a resource center and support services for professionals serving hearing impaired in northern Maine, and a program for Language Delayed children was implemented. A parent/infant program, serving newly diagnosed hearing impaired and deaf infants and toddlers, was begun at the Governor Baxter School in the summer of 1990.

In addition to the functions mentioned, the Governor Baxter School for the Deaf serves as the contact for the Gallaudet University Information Center on Deafness and works closely with Gallaudet University Pre-College Programs in Washington, D. C., and the Gallaudet Regional Center at Northern Essex Community College in Haverhill, Massachusetts.

## **Education of Exceptional Students**

Twenty-eight thousand, two hundred, and twenty-three students (28,223) were provided special education and related services in 1989-90 under P.L. 94-142 and P.L. 89-313. This represents 13.4 percent of the average school-age (5-17) population in Maine in 1989-1990 (211,422.5).

The majority of students (11,086) were identified as learning disabled. This represents 39.3 percent of all exceptional students served, or 5.2 percent of Maine's 5-17 school-age population. Seven thousand, seven hundred, and seventy four (7,774) were identified as speech and language impaired. This represents 3.7 percent of Maine's 5-17 school-age population.

There were 4,348 students served who had behavioral needs and 2,372 students served who had mental development needs.

Of the 28,223 students provided with special education and related services in Maine's schools, 50.63 percent (14,289) were enrolled in special education and related services and regular classroom instruction. Twenty-four percent (6,907) received resource room instruction. Eighteen percent received resource room/composite, self-contained, self-contained/composite instruction. Three percent received instruction in separate day programs (both public and private), while another one percent received instruction in residential placement.

The related service most frequently provided to Maine's exceptional students was speech and language (27.1 percent), followed by other related services (16.3 percent), occupational services (11.1 percent), social work services (9.8 percent), counseling (9.4 percent), and psychological services (7.2 percent).

Of the exceptional students between the ages of 13 and 21, 6,460 or 73.9 percent are still receiving special education. Seven hundred and thirty-four (8.4 percent) graduated with diplomas, while 357 (4.1 percent) dropped out of school. Sixteen year olds (107) and seventeen year olds (88) comprised the majority of students who dropped out. Five hundred and sixty-six (6.7 percent) exited to regular education.

Of the anticipated services needed by exceptional students between the ages of 13 and 21, vocational training and job placement (18.4 percent) is the greatest need. Case management/counseling (13.8 percent) and mental health services (9.7 percent) were also priority needs. Approximately twenty-one percent (21.1 percent) of exceptional students between the ages of 13 and 21 had no service needs.

Special education enrollment increased by 315 (1.1 percent) from 1989 to 1990. The number of learning disabled students increased by 85 students, significantly lower than the year before (543). The number of speech and language impaired students served increased by 618, an increase of 8.6 percent over the previous year, the year before saw a 2.8 decrease. The number of students being educated in regular classrooms decreased by 42 students over the previous school year.

Speech and language services as the primary related service were down 1.5 percent from the previous year. Psychological services were down by 3.8 percent. Over the past 2 years that equals a 6.4 percent decline in psychological services. While occupational therapy, and social work services increased.

The number of 13 to 21 year-old exceptional students still receiving special education increased by 2.7 percent. The number of exceptional students dropping out decreased from 398 students in 1988-89 to 357 in 1990, a decline of 41 students who have dropped out.

The anticipated services needed for 13 to 21 year olds remained consistent for 1989-90. Vocational training and job placement, case management/counseling and mental health services, in that order, were identified as the greatest needs.

## **Home Schooling in Maine**

Home schooling continues to grow in Maine. Eleven hundred sixty-two (1162) programs were approved in 1989-90, 459 more than in 1988-89.

Maine's regulations governing home instruction (Chapter 130, Rules for Equivalent Instruction Through Home Instruction) define the way in which home instruction programs are approved by the Commissioner as equivalent instruction. These regulations allow home schoolers several options for teaching their children while still serving the state's

interest in a full education for a child. Through continued cooperation between local school districts, home schoolers and the Department of Education, home instruction is one way that Maine meets the needs of its students.

## Homeless Children and Youth in Maine

The Department has used funding received under the Stewart B. McKinney Act to develop and implement a State Plan for Assuring Access to Education for homeless children and youth. Significant progress has been made in building a school/community/agency collaboration in the Greater Portland Area. A major public forum was held on May 30, 1990, in Portland. Teams from each of the area schools attended and participated in the all-day session.

Future strategies for assuring education access for these children include establishing two demonstration projects for community/school collaboration, providing technical assistance and training to school staff, promoting positive school policies and promulgation of new rules to place Maine in compliance with the Stewart B. McKinney Act.

The McKinney Act places the responsibility for assuring access to education for homeless children on the state education agency. State education agencies may go beyond the provisions of the Act in their plans to remove all identified access barriers and to assure that needed services comparable to those offered to other students are provided to homeless children regardless of their residence status.

## School Personnel Profile

### Maine Educators - Fall 1990-91

Maine has 14,475 full-time teachers of whom 9,808 (66 percent) are females and 4,667 (34 percent) are males.

Males occupy 60.4 percent of all administrative/supervisory positions.

Thirty-one point two percent (31.2 percent) of all Maine teachers (4,210) have 19 years or more of teaching experience.

Thirty-one point nine percent (31.9 percent) of Maine teachers are between the ages of 30 and 39.

Fifty-two point one percent (52.1 percent) of Maine teachers (7,392) have a Bachelor's Degree as their highest level of educational attainment.

Twenty point seven percent (20.7 percent) of Maine teachers (3,049) have a Master's Degree as their highest level of educational attainment.

### Teacher Education and Certification

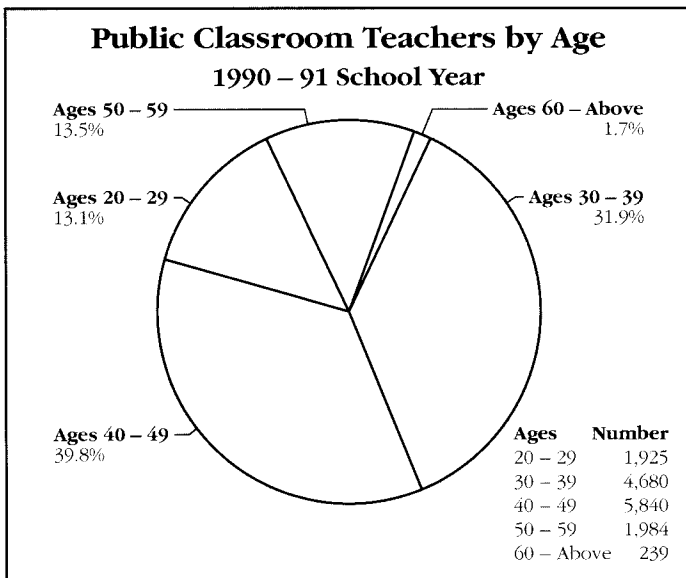
Maine's new certification law, P.L. 845, Chapter 502, went into effect on July 1, 1988. The new law requires applicants for initial certification to document a major in each content area to be taught and to meet qualifying scores on the national teacher exam. The law has also mandated the establishment of local support systems, comprised of a majority of teachers, to promote teacher involvement in local staff development decisions.

**Support Systems.** A major component of Chapter 502 involves self-assessment and peer coaching components integral to the induction process of beginning teachers who possess a two-year provisional certificate or a one-year conditional certificate.

#### MAINE ADMINISTRATOR/SUPERVISORY POSITIONS BY MALE AND FEMALE Fall 1990

Positions	Number of Positions	Number of Males	Percent of Total Males	Number of Females	Percent of Total Females
Superintendent	144	131	96.5%	13	3.5%
Principals:					
Elementary	472	279	59.6%	193	40.4%
Secondary	110	100	91.6%	10	8.4%
Combined	110	81	81.7%	29	18.3%
Director of Services for Exceptional Children	191	69	28.0%	122	72.0%
Guidance Counselor	610	243	40.1%	367	59.9%
Assistant Principal	318	206	69.7%	112	30.3%
Assistant Superintendent	77	65	89.8%	12	10.2%
<b>TOTAL</b>	<b>2032</b>	<b>1174</b>	<b>60.4%</b>	<b>858</b>	<b>39.6%</b>





Experienced teachers are required to continue their professional growth through the development of a professional renewal plan (PRP) which is approved by the local support system. The local support system may approve a broad range of professional activities in the PRP including academic study, innovative classroom practices, action research, teacher exchanges and community service. Renewal requirements are fulfilled by the completion of the PRP.

Experienced teachers who choose to attain master level certification must utilize the local support system to document exemplary skills in one or all of four basic areas: curriculum design, teacher in-service and staff development, clinical supervision of student teachers, and educational leadership.

**Program Review.** There are thirteen institutions of higher education with teacher preparation programs. The Division of Certification conducts a program review visit to each institution on a five-year cycle to assure compliance with state standards. Program review will be conducted using standards which went into effect in February 1990.

A pool of potential visitation team members has been identified and a training program for this group is being planned. Protocols for the entire program approval process are undergoing a revision process.

**Supply and Demand.** As the 1991-92 hiring season approaches, Maine will continue to have a shortage of qualified special educators. Special education continues to be the greatest shortage area, with speech and hearing specialists being a greatest demand. School administrator vacancies for the superintendency and the principalship are increasing throughout Maine. The demand for school administrators will continue as many present administrators approach retirement.

Veteran teachers re-entering the profession as well as entry level teachers are encouraged to begin the job search early and to remain flexible with regard to geographic preference. Due to the current recession

in Maine, New England, and other areas of the nation, teaching vacancies will remain competitive. Overall, it appears most teachers are remaining in their current jobs and job security is a priority for many.

### Average Salary for Full-Time Teachers

Year	Maine	Nation*
1980 – 81	\$13,071	\$17,644
1981 – 82	\$13,994	\$19,274
1982 – 83	\$15,105	\$20,695
1983 – 84	\$16,248	\$21,921
1984 – 85	\$17,328	\$23,593
1985 – 86	\$19,583	\$25,194
1986 – 87	\$21,257	\$25,566
1987 – 88	\$23,425	\$28,023
1988 – 89	\$25,519	\$29,547
1989 – 90	\$26,881	\$31,304
1990 – 91	\$28,531	

\*Source: Digest of Educational Statistics 1990

## State Board of Education

The State Board of Education is a lay board of nine members, appointed by the Governor and confirmed by the Senate for five year staggered terms. Members are interested in education and are geographically representative of the state.

The State Board advocates for education and for improvements in education. During 1990, the State Board initiated a statewide campaign to encourage parents and community involvement in the schools. With the help of UNUM Corporation, Shop N' Save Supermarkets, and the Guthrie Group, the State Board distributed over 200,000 brochures describing more than fifty ways people could become involved in their schools and in education. The bulk of the brochures were distributed in grocery stores during the first week of September. Over 20,000 were distributed by businesses across the state to their employees. Copies were placed in all of Maine's public libraries. School districts were encouraged to reproduce the brochures and many have done that. The State Board is committed to encouraging schools to form partnerships with parents, with business, and with their community.

Beyond its advocacy role, the State Board of Education has several statutory responsibilities to fulfill. The State Board held a number of public hearings throughout the year regarding rule changes in the areas of school construction, school approval, teacher and administrator certification, and geographically isolated schools.

Teacher preparation programs at the College of the Atlantic and at the University of Maine at Farmington were reviewed by the State Board in 1990 prior to granting program approval. All future approvals of teacher preparation programs will be governed by

new standards adopted by the State Board in November of 1989.

The College of the Atlantic requested and received approval, following the recommendation of a visitation team, to grant the degree Master of Philosophy in Human Ecology. After a similar process, the Bangor Theological Seminary received approval to award the degrees Master of Theological Studies and Doctor of Ministry.

As required by the federal Carl Perkins Act, the State Board adopted a two year State Plan for Vocational Education at its June meeting. In the fall of 1990, Congress reauthorized the Carl Perkins Act with significant changes in how the federal funds are to be distributed. A great deal of effort has gone into preparing for the changes necessitated by the Act.

Educational Testing Service (ETS) of Princeton, New Jersey, completed a study of Maine's two year experience with new methods of certifying teachers. Briefly summarized, the benefits of the new certification law, as reported by ETS include: improved teaching, added support for new teachers, increased teacher empowerment, increased professional dialogue and collegiality, enhanced professional development and training. Implementation constraints cited by the ETS study include: start up problems, a drain on fiscal and staff resources (especially in rural elementary schools), the addition of non-teaching responsibilities, decreased instructional and contact time with students, and increased paperwork.

The State Board of Education continues to carefully monitor the new certification law which went into effect in 1988. Two public forums were held this year to discuss key certification issues. The board has twice proposed revisions to the rules and regulations through a public hearing process.

School projects were approved for construction by the State Board of Education in 1990 under its statutory authority.

**Elementary Schools.** Eight new elementary schools were approved with an estimated construction cost of \$29,521,260. Additions to eleven elementary schools were approved with an estimated cost of \$18,811,000. Local school administrative units contributed an additional \$311,500 for the new schools and an additional \$627,000 for the additions.

**Middle Schools.** Three new middle schools were approved with one later rejected in a local referendum. The estimated cost of the two remaining middle schools was \$10,967,440. There were no additions to existing middle schools requested or approved and no additional local funds included in the two approved middle schools.

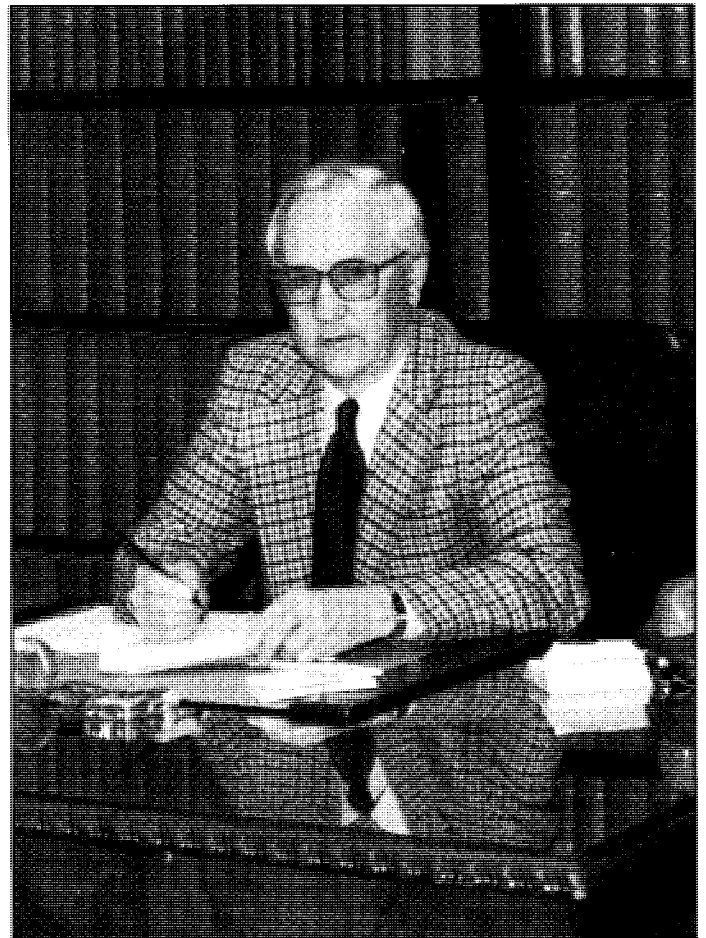
**High Schools.** One addition to a high school was approved with an estimated cost of \$1,319,674. An additional local contribution of \$140,997 was included in that project for a total of \$1,460,671. A vocational education center was approved with an estimated cost of \$4,575,500.

Total state/local funds approved for school construction in 1990 were \$65,194,874. Total local funds approved for school construction in 1990 were \$1,747,174.

In the fall of 1990, the State Board of Education began preparation of a report to the 115th Legislature on the cost of school building construction. That report will be presented to the Joint Standing Committee on Education in the Spring of 1991.

The monthly meetings of the State Board of Education again this year have been held in various locations across the state. Board members often have the opportunity to talk with local officials and interested citizens while meeting in different regions of the state. In an effort to share state goals and learn about local initiatives, members of the State Board of Education are also speaking with service and community groups. Board members serve on many committees and commissions with specific educational objectives. In all these efforts, the State Board of Education is working to assure effective development of lifelong learning for all Maine people.

The State Board of Education mourned the passing this year of one of its members, James MacCampbell, who exemplified the true meaning of a lifelong learner. "Jim" MacCampbell will be missed but long remembered by this state's educational community.



*The late James C. MacCampbell*

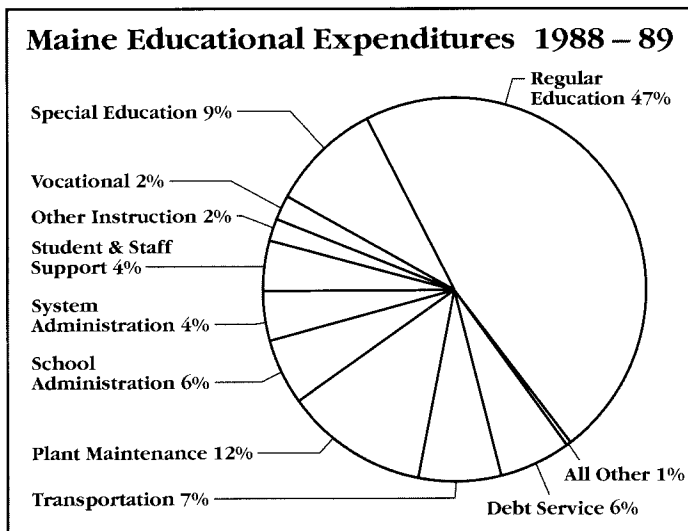
## Section III: FINANCING K-12 PUBLIC EDUCATION IN MAINE

### Local School Financing

#### Types of Local Revenues and Expenditures

In 1988-1989, educational expenditures in Maine from state, local and federal sources totaled approximately \$843,362,177.

A breakdown of the percentages of the total for the various costs are shown in the accompanying graph.



#### Special Education Expenditures

Since the enactment of Federal Public Law 94-142, the Education of All Handicapped Children Act, considerable progress has been made toward assuring that handicapped children and youth of Maine have a genuine opportunity to receive an education commensurate with their needs. Federal, state and local funds have increased significantly since the enactment of P.L. 94-142. However, most of the fiscal effort to provide special education and related services has come from state and local funding.

State funding, including subsidies for special education and related services, preschool programs for exceptional children, and gifted and talented programs has increased from \$43.8 million in 1988-89 to \$65.8 million in 1989-90.

Local funding increased from \$33.8 million in 1988-89 to \$34.4 million in 1989-90.

Federal funding increased from \$11.7 million in 1988-89 to \$13.2 million in 1989-90.

Although costs have increased, the distribution of cost sharing has changed. In 1981-82, the State supported 37 percent of these costs while in 1989-90

the State's share rose to 58.0 percent. In 1981-82, the local share was 43 percent, while in 1989-90 the local share was 30.3 percent. In 1981-82, the Federal share equaled 20 percent of these costs while in 1989-90 the Federal share was 11.6 percent.

The State's share of special education has increased by 21 percent, while the local share had decreased by 12.7 percent in the last eight years. The Federal share of special education in this same period decreased by 8.4 percent even though the amount of federal funds has increased over this period.

#### Public School Transportation

During FY 1989-90, Maine's school buses transported 165,396 children on an average daily basis to public schools.

The average cost per mile for the 2,062 publicly and 804 privately owned buses was \$1.44. Miles traveled during the year totaled 36,334,528 at an average cost of \$316.32 per student.

In 1989-90 expenditures for school transportation totaled \$52,317,397.03, and purchases of school buses totaled \$5,359,665.

#### School Nutrition Programs and Food Distribution Programs

During the 1989-90 school year, Maine school feeding programs prepared and served 17,371,565 student meals in 698 public schools, 20 private schools, 24 residential child care institutions, and five state institutions. Reimbursement to school feeding programs in the 1989-90 school year was \$12,371,710 in federal funds and \$1,119,190 in state matching funds.

To administer the seven nutrition programs, the Division of School Nutrition and Food Distribution Programs will receive \$302,646 in federal funding and \$306,587 in state funding during this school year.

In the 1989-90 school year, there were 1,757,893 school breakfasts served, an 18 percent increase above the 1988-89 school year. Seventy-one (71) percent of breakfast meals were served to students eligible to receive meals at the free or reduced price rate. Thirty-seven (37) percent of the lunch meals were served to those eligible students compared to fifty (50) percent in the 1985-86 school year, a 13 percent decrease in low income meal participation. The Division reviews plans and equipment for construction or renovation to school feeding facilities.

The Division conducted 1,522 staff hours of training, reaching 1,953 school food service employees and other school staff members in 18 different statewide locations.

## Food Distribution Program

This program provides U. S. Department of Agriculture surplus foods to schools, summer feeding programs, charitable institutions, summer camps, child care facilities, soup kitchens, hospitals, jails, and other non-profit public programs.

From July 1, 1989 to June 30, 1990, a total of 6,277,487 pounds of foods with a value of \$3,402,128 was distributed to Maine school programs.

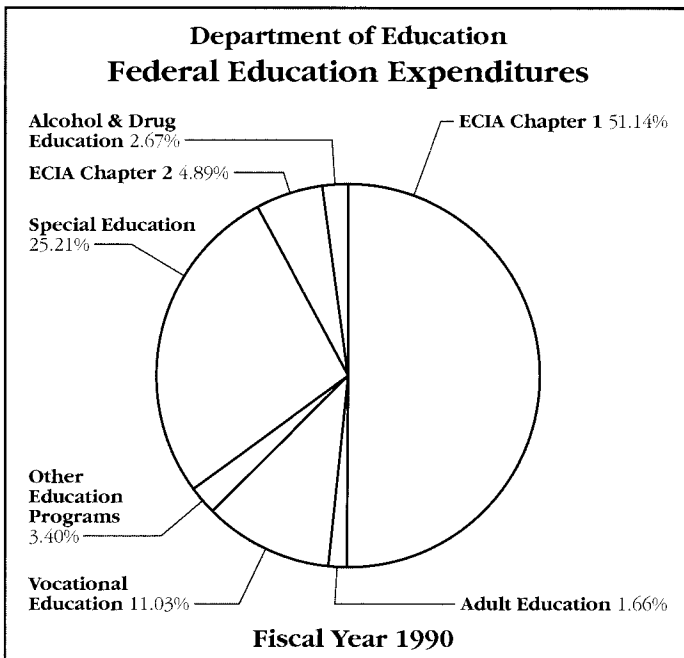
## State of Maine Education Appropriations

### General Purpose Aid

The principle of Maine's school finance law is to equalize the financial effort made by the state's school districts in providing more state aid for poorer school districts and fewer state dollars for richer districts. The principle, and the formulas used to implement it, are designed to assure that the quality of education a pupil receives does not depend upon the wealth of his or her school district.

School district wealth is measured by the per pupil value of real property in each district because real property taxes are almost the only means by which districts raise funds. (All property valuations used in school funding formulas are based on figures compiled by the state and, therefore, are not subject to local variations in assessing practices.)

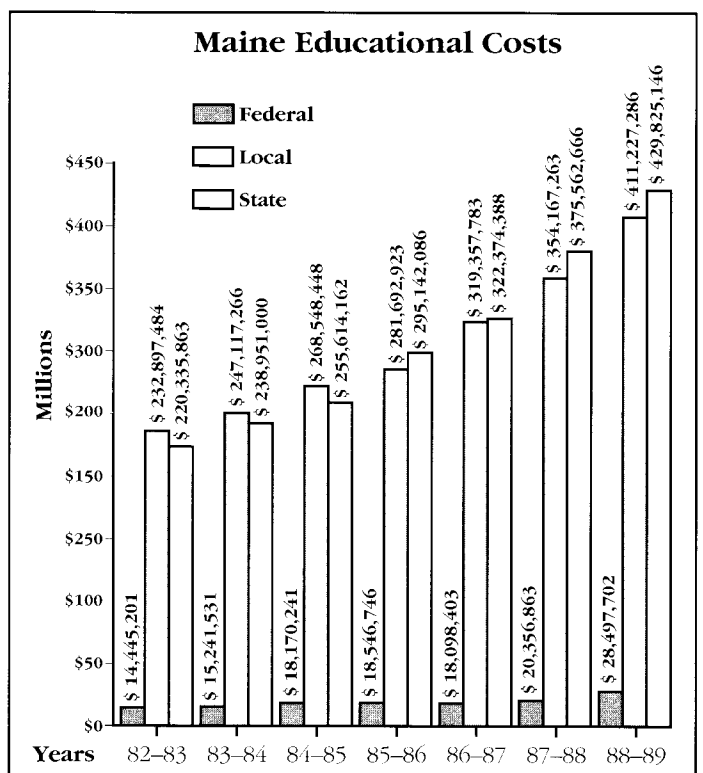
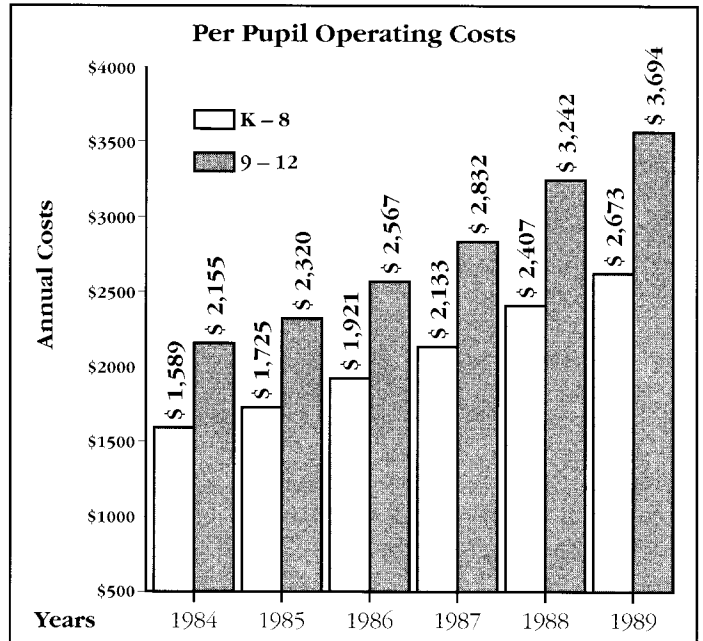
Under the 1985 law, at least 56.76 percent of the total allocation of Maine's public school system is paid by the state beginning in 1990-91, with the balance coming from local districts. Depending on its wealth, a district may receive only the 5 percent minimum state subsidy or it may receive up to 99 percent from the state.



## Federally Funded Programs

Federally-funded programs administered by the Maine Department of Education supplement state and local public education efforts. Each program responds to educational needs which the U.S. Congress has determined to be a national priority.

The Maine Department of Education expended federal funds for elementary, secondary, adult, and pre-school (handicapped) education amounting to \$46,081,767 in fiscal year 1990. This represents an increase of 4.2% or \$1,933,147 from fiscal year 1989 and is reflected, primarily, by increases of \$1,452,591 in Chapter I and \$500,355 in the Other Education Program Categories.



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## SECTION IV: EDUCATIONAL INITIATIVES

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### **Maine's Common Core of Learning**

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Maine's Common Core of Learning—a vision for education in our state—which was published and widely disseminated in September, 1990, invites dialogue about the ways in which Maine communities can examine their schools in light of the challenges of our time. It outlines the knowledge, skills, and attitudes that all Maine youth will need for the 21st century. These outcomes are presented in four non-disciplinary categories: Personal and Global Stewardship, Communication, Reasoning and Problem Solving, and the Human Record. The appendix of the document provides an organization of outcomes by traditional subject areas and offers subject-specific information on teaching practices. The document, which argues that all children can learn a common core, proposes an integrated approach to learning. It charges all educators, parents, policy makers, employers, and community members to work together as partners.

Since September 1990, the Common Core of Learning has been the focus of the Department's work. Department representatives have worked with constituents ranging from teachers and administrators to members of the business community to build an awareness of the Common Core and to explore the implications for change in curriculum, instruction, staff development, the assessment of student learning, and the organization of school.

### **Maine Coalition for Excellence in Education**

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The mission of the Coalition for Excellence in Education is to ensure that, by the year 2000, all children will demonstrate the knowledge, skills and attitudes expressed as outcomes in Maine's Common Core of Learning so that they are able to compete in the global community of the 21st century. The Coalition is a statewide partnership of Maine citizens committed to working together to achieve education excellence in every school and community across the state.

### **School Funding**

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General purpose aid for education in Maine has increased significantly during the past three years by 53.3% from \$347.2 million to \$532.1 million in Fiscal 1988 to Fiscal 1991. In the three years prior to 1987, general purpose aid for education increased by 30.8% from \$240 million to \$313.9 million.

### **Restructuring Schools Project**

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This has been the third year of a project which has placed Maine in the forefront of educational reform. Ten selected schools — three elementary, two middle, and five high schools — are carrying out proposals to break the barrier of the time schedule, involve teachers in collaborative decision-making, enhance team teaching activities, and promote interdisciplinary curriculum development. This state-level effort in Maine, based on the most current research about teaching and learning, was one of the first in the nation to propose profound changes in school governance and the structures of schooling. The state will publish a description of the journey each school has taken as well as the learnings they have identified as a result of their work. The learning from this three-year project will form the foundation for further restructuring efforts in the state.

### **Report Card for Maine Schools**

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The third edition of the Maine Report Card for Public Schools has been released. This Report Card places Maine at the forefront of states which are publishing educational facts concerning assessment results, staff and pupil statistics, and financial data in an easily understood manner for each school administrative unit in the state.

### **The New Student Assistance Team Unit**

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With an overwhelming volume of requests and support from schools, the highest priority recommendation from the Commissioner-appointed Alcohol and Drug Program Review and Comment Committee, and the financial support of two federal grants, the Student Assistance Team (S.A.T.) Unit has been created.

S.A.T. training has been offered by the Department of Education for several years through the combined efforts of the Division of Special Education and the Division of Alcohol and Drug Education Services. This unique cooperative relationship continues as the S.A.T. Unit, which is within the Division of Special Education, links its work closely with the Division of Alcohol and Drug Education Services.

The Student Assistance Team Unit provides leadership and guidance in the development and implementation of student assistance teams in schools. The student assistance team process is a screening mechanism for the identification, intervention, and referral of youth who may be at-risk. It serves as a pre-referral system to the special education process and provides a link between

schools, families, and related community agencies.

This early intervention strategy offers great promise as an option to all Maine youth and especially to those who may be in any way "at-risk" as they move from Kindergarten through grade 12.

### **Innovative Education Grants Program**

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This program awarded \$600,000 in FY 91 to teachers and administrators in Maine's schools in order 1) to enable Maine educators to create and implement new programs in elementary, middle, and secondary schools; 2) to promote fundamental change in ten restructuring schools; and 3) to encourage three school systems to develop plans to increase the learning of all their students as part of the Governor's Challenge 2000 Incentive Program.

### **Early Childhood Demonstration Sites**

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Early Childhood Demonstration Sites in Buckfield, Caribou, and Waterville are providing a high-quality program for approximately 60 four-year-olds and their families. Funded by grants to local collaboratives of the public schools, Head Start, Child Development Services and other child-serving agencies, the Sites serve also as training locations for the internationally-renowned High/Scope Curriculum from Ypsilanti, Michigan. Based on the work of Jean Piaget, this curriculum focuses on active learning and the development of problem-solving skills. The training is being offered in each region by the Department to early childhood educators across agencies.

### **Distance Education**

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A total of 75 sites has been linked to the state's Instructional Television Network, including 48 high schools, the primary and outreach campuses of the University of Maine System, technical colleges, and the Maine Maritime Academy.

Three elementary/middle schools in Maine have been selected to participate with The Massachusetts Corporation for Educational Telecommunications (MCET), in using interactive, hands-on science programming via their own satellite receivers. These schools will receive over \$15,000 of interactive equipment and staff training over the next two years. The participating schools are: Whitefield Elementary School, Fort Kent Elementary School and Rose M. Gaffney School in Machias.

Also, beginning with the 1991-92 school year, ten secondary schools will pilot the offering of courses from University of Southern Maine (USM) and The Satellite Educational Resource Consortium (SERC). The courses offered will be Calculus, Russian, and Japanese. The ten selected schools are: Sumner, Fort Kent, Katahdin, Deer Isle-Stonington,

Vinalhaven, Woodland, Piscataquis, Searsport, Forest Hills, and Hodgdon High Schools.

During the 1990-91 school year, approximately 90 college courses are being offered over the ITV system as well as a multitude of faculty in-service and statewide meetings. Courses for associate, bachelor and advanced degrees are being offered. As airtime allows, future programming will include expanded offerings for secondary school, adult education and advanced placement courses.

### **Advanced Placement Program**

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Maine continues to lead the New England states in the percentage increase in the number of secondary school students taking advanced placement examinations and in the number of schools participating in the advanced placement program. One thousand three hundred thirty (1330) students took 1690 advanced placement exams in 81 high schools. More females (710) than males (620) took the examinations in Maine which is an indicator that females have access to higher level course options. The advanced placement program, sponsored by the College Board, provides college-level courses to high school students, who take an examination upon completion of the course. Nearly all colleges in the nation accept satisfactorily completed courses and examinations in the form of credit and placement.

### **AIDS Prevention Education**

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A survey of the level of HIV/AIDS education implemented at the middle, junior high and senior high school level was completed in the spring of 1990. Ninety percent of Maine's public high schools and 82 percent of middle/junior high schools provided HIV prevention education. HIV prevention education was received by 35 percent of Maine's high school students and by 55 percent of middle and junior high school students.

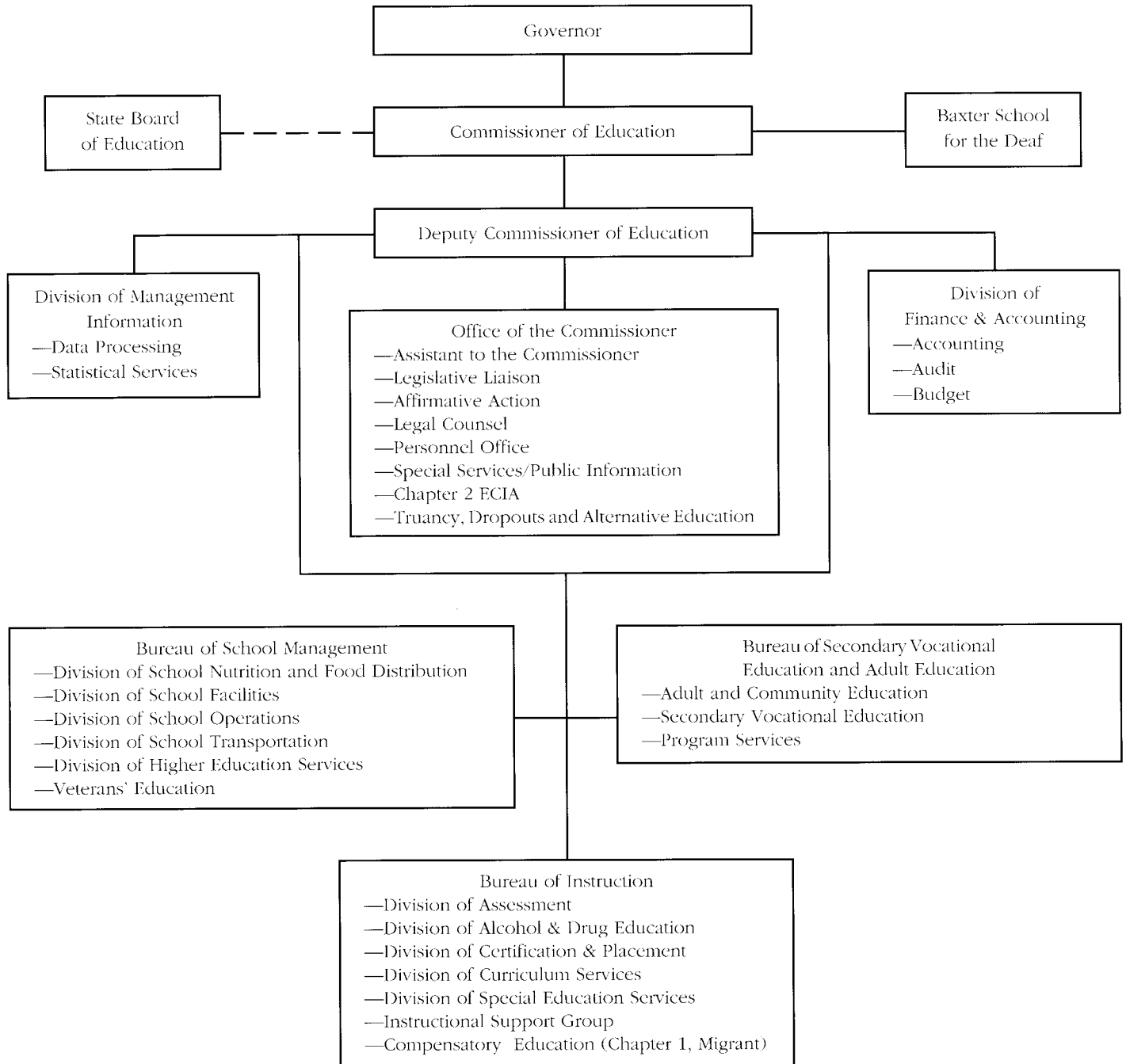
### **Affirmative Action**

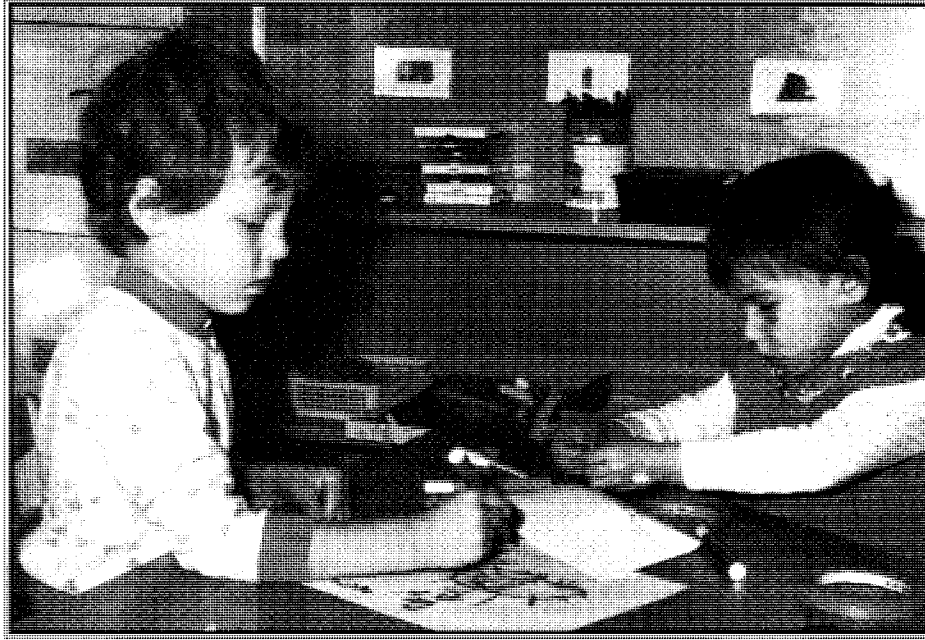
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Through Title IV funding, the Affirmative Action Office has offered training for local district affirmative action officers as well as technical assistance on site or over the telephone on equity issues. Working with organizations such as MaineLEAD and NECEL, training has also been provided for teachers on the inclusion of multi-cultural women's history into the traditional curriculum. Training and support for aspiring and veteran administrators continue to be provided through the annual Women in Leadership Conference. Additionally, many in-service workshops have been held at the request of local districts on topics such as equity in the curriculum, stereotyping, affirmative action, equitable schools and sexual harassment.

State of Maine  
DEPARTMENT OF EDUCATION  
Augusta 04333

ORGANIZATIONAL CHART



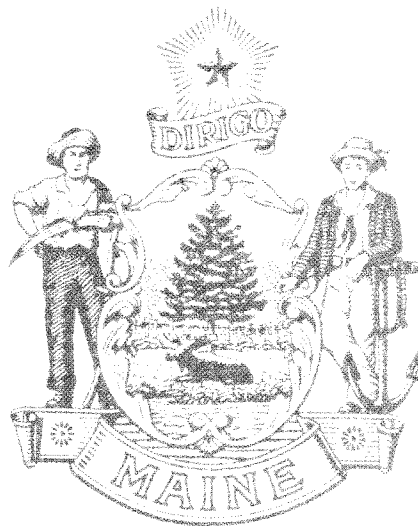


*Front cover and above photo: One of Maine's three Early Childhood Demonstration Sites (see page 21)*

*It is the mission of the Maine Department of Education to lead education towards higher aspirations, higher expectations, and higher performance in order to provide a competitive edge for citizens in the State of Maine into the 21st century.*

The Maine Department of Education insures equal employment, equal education opportunities, and affirmative action regardless of race, sex, color, national origin, religion, marital status, age or handicap.





**MAKING**



**CONNECTIONS**

**The Report of the  
Chancellor's Advisory Committee  
on  
Information Technology**

**February 1991**

**University of Maine System**



*Dist 8/05*

**UNIVERSITY OF MAINE SYSTEM  
CHANCELLOR'S ADVISORY COMMITTEE ON INFORMATION TECHNOLOGY**

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Committee Chair

**Edward A. Barrett**

City Manager  
Bangor

**Henry Bourgeois**

President  
Maine Development Foundation

**George Connick**

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Department of Labor

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Maine AFL-CIO

**Stan Sawyer**

Superintendent  
School Administrative District #52

**Dorothy Schwartz**

Executive Director  
Maine Humanities Council

**Gregory Scott**

Director, State-Local Relations  
Department of Education

**Steven Tremblay**

Executive Director  
Alpha One

**Julia Watkins**

Dean, College of Social & Behavioral Sciences  
The University of Maine

**Donald E. Nicoll**

D & H Nicoll Associates  
Consultant to the Committee

---

\* - resigned, December 1, 1990



# UNIVERSITY OF MAINE SYSTEM

BOARD OF TRUSTEES

107 Maine Avenue Bangor, Maine 04401-1805 207-947-0336

February 28, 1991

Robert L. Woodbury, Chancellor  
University of Maine System  
107 Maine Avenue  
Bangor, Maine 04401-1805

Dear Bob:

The Chancellor's Advisory Committee on Information Technology has completed the tasks you assigned it, and I am pleased to submit our report. I believe it contains some practical suggestions for further development of the University of Maine System's leadership in using information technology to advance learning in non-academic settings.

I have counted it a privilege to continue to work with a number of members from the original Chancellor's Commission on Educational Uses of Information Technology and with the new members who have broadened our appreciation of the potential for expanded and improved educational applications of interactive television, computer assisted learning and electronic information sharing.

The Committee members have maintained and increased their enthusiasm for the opportunities the Community College of Maine ITV system, NovaNET and other technology applications offer. They are also committed to help broaden the number of users and surmount some of the inevitable obstacles to effective use of the systems. Therefore, they have offered to continue as a committee, so long as you find their work useful.

On behalf of the Committee, and especially for myself, I want to express our appreciation for the excellent staff work that was supplied by Don Nicoll. Without his initiative and effort this report would not have been possible.

We hope the University System will be able to act promptly to implement our recommendations to create a users' consortium for educational uses of information technology and to seek grants for expanded and improved programs during a transitional period. And, as we have said before, we hope you will feel free to call on us for further assistance.

Sincerely,

James A. Storer  
Chair

UNIVERSITY OF MAINE

UNIVERSITY OF SOUTHERN MAINE

UNIVERSITY OF MAINE  
AT EARMINGTON

UNIVERSITY OF MAINE  
AT FORT KENT

UNIVERSITY OF MAINE  
AT MACHIAS

UNIVERSITY OF MAINE  
AT PRESQUE ISLE

UNIVERSITY OF MAINE  
AT AUGUSTA

Recycled Paper

## TABLE OF CONTENTS

EXECUTIVE SUMMARY	1
INTRODUCTION	2
FINDINGS	4
Experience	4
Potential for ITV	5
Potential for Other Technologies	8
Concerns and Needs	9
RECOMMENDATIONS	11
A. Collaborative Structure	11
B. Grant Proposal	13
C. Unfinished Business	14
APPENDIX A - Consortium Proposal	15
APPENDIX B - Consortium Membership Issue	18
APPENDIX C - Grant Proposal	23
APPENDIX D - Background Material	25

## EXECUTIVE SUMMARY

The Chancellor's Advisory Committee on Information Technology (CACIT) has examined potential uses of the University of Maine System's interactive television (ITV) system and other systems for more effective uses of ITV and integrated multiple information technology applications for learning outside the traditional classroom, public participation in policy development, public information services and access to information bases. It has focused on ways to organize users and the potential for obtaining financial support in furthering those uses of information technology.

There have been substantial gains in the uses of the Community College of Maine Interactive Television (ITV) system throughout Maine during the past year, including associate, baccalaureate, graduate, technical, and secondary school courses, teleconferences, briefing sessions, public hearings, and special seminars. The successes the system has enjoyed during the start-up period highlight its potential and call attention to the work that needs to be done to expand its capacity, improve its performance, and further the integration of several information technologies.

The Committee is making three recommendations to the Chancellor:

1. That the University of Maine System, in concert with State government, municipal governments and regional agencies, public schools, private educational institutions, not-for-profit organizations, business and labor organizations, form a not-for-profit [IRS 501(c)(3) corporation] consortium to use and contribute to the development of information technology systems for education, training, communication, cultural and public policy purposes. The Committee has recommended that the consortium be established by March 15, 1991.
2. That the University of Maine System take the initiative in seeking a \$300,000 "bridge grant" to fund a two year experimental program, including staff, technical assistance and support program for development and implementation of expanded and additional uses of ITV and other information technologies for education, training, the exchange of information, ideas and policy recommendations, and the dissemination of information. The Committee has recommended that grant proposals be developed and submitted to one or more foundations no later than March 15, 1991.
3. That the Chancellor continue the Committee to help facilitate formation of the consortium, assist in the grant effort, and explore on behalf of non-University System users potential separate and integrated information technology applications, including interactive television, audiotape and videotape, videodiscs, computer assisted instruction, electronic information bases and telecommunications.

## INTRODUCTION

The Chancellor's Advisory Commission on Educational Uses of Information Technology, in its August 1989 "Breaking the Barriers" report, recommended that the Chancellor appoint a policy advisory committee to continue the work of the commission. The commission suggested that

. . . . The University System and the State can benefit from an ongoing interchange between members of the University System community and representatives of other institutions, agencies and groups on planning, development and application of information technology to learning and public service. We believe the sharing of ideas, information and critical assessments can contribute substantially to the quality of the University System's program and to public appreciation and effective use of those technologies.

An advisory committee should include representatives of local as well as statewide interests. We recommend that such a body not only be called on for general advice, but that it be given responsibility for stimulating or providing leadership in the experimentation and evaluation of developmental uses of information technology, recommending criteria for measuring the effectiveness of internal and external uses of the technology and criteria for decisions on the expansion of the IT system and other systems applications. The commission or committee could also advise on selection of IT system uses. . . .

Chancellor Woodbury accepted that recommendation and created the Chancellor's Advisory Committee on Information Technology (CACIT). He gave the Committee the following charge:

The Committee will review and evaluate existing uses of the University of Maine Interactive Telecommunications system for non-academic purposes. The Committee will advise the Chancellor on short-term policies and management issues related to effective support and development of non-academic uses of the University System's Interactive Telecommunications services, including the Community College of Maine television system, the URSUS electronic catalogue, and other data transfer services.

The Committee will advise the Chancellor and assist the University System, as appropriate, in seeking outside financial support for effective use and expansion of the telecommunications system for applications beyond traditional classroom instruction.

The Committee will review educational uses of information technology other than

interactive television, electronic library catalogues and data transfers, and will advise the Chancellor on uses that show promise for non-University System organizations and warrant more aggressive exploration and development.

The Committee will explore options for long term development, governance and management of the telecommunications system on behalf of the University System, government, and public and private organizations. Those options will include, but not be limited to, a consortium of users. The Committee will recommend a course of action to the Chancellor.

The Committee met first on December 18, 1989, and has met seven times since then. The University System and the organizations that have participated in the project through membership on the Committee share a common interest in making effective use of information technologies for a variety of educational purposes. Those range from education and training outside the traditional classroom, to support for enlarged citizen participation in public policy development, to improved access to public policy information, to expanded access to information bases and other University System resources.

This Committee, as did its predecessor Commission, focused primarily on potential uses of the Interactive Television (ITV) system. It has also used the system successfully for its regular meetings. In addition to viewing existing uses of ITV, including the exciting work being done with the Maine Consumer Information and Technology Training Exchange (Maine CITE), the Committee participated in a demonstration of the University System's electronic library catalogue (URSUS) and had a demonstration of the NovaNET computer assisted instruction program, plus a discussion of the School Administrative District #52 (Turner, Leeds and Greene) use of both NovaNET and ITV for its adult education, alternative school and high school programs.

Much of the Committee's time was spent in examination of potential uses of the ITV and other systems and in deliberating on ways of organizing users to make more effective use of the system and obtain financial support for development of improved uses of ITV and integrated use of multi-technology applications for learning, public participation, public information and information access.

The Committee has proceeded on the assumption that the most effective development and application of the technologies will be realized through building on what we have in existing applications and organizations. That philosophy is reflected in our findings and recommendations.



## FINDINGS

### *Experience*

The ITV system now serves the seven campuses of the University of Maine System, 11 University System off-campus centers, six Maine Technical Colleges and the Maine Maritime Academy, and 47 high schools. The seven campuses are linked by fiber optic cable. The other sites are served by instructional television fixed service (ITFS) microwave transmitters. There are three channels on the system. Two serve the full range of ITFS sites and one serves the seven UMS campuses.

The ITV system is now used an average of 170 hours a week for delivery of fully interactive Community College of Maine, baccalaureate and graduate courses. There are an additional 11 hours a week of two-way (video-audio) graduate courses. The Maine Department of Education uses the system 8-10 hours per week for courses delivered to high schools and distance learning centers. Teleconferencing is scheduled on the system an average of 40-50 hours per month. The availability of the two ITFS channels is limited due to the course schedule, but one channel is generally available Fridays from 9:00 a.m. to 2:15 p.m. Use of the third channel is limited by the availability of the 12 electronic classrooms. Expansion of the system has been delayed by budget constraints.

There have been a total of 47 system users in addition to the University of Maine System and the Department of Education courses. Those users include State departments, agencies, commissions and committees, public associations, social service organizations, educational institutes, boards and committees, and businesses. They are using the system for briefing sessions, committee meetings, educational conferences, hearings, lectures, seminars, special events, staff meetings and workshops.

One of the most exciting and innovative uses of the system observed by members of the Committee is the Maine Consumer Information and Technology Training Exchange (Maine CITE). This is the first coordinated effort to increase the availability of assistive technology to Maine people with disabilities. The program is operated by the Maine Department of Education in collaboration with the University of Maine System and Alpha One, a Center for Independent Living for people with disabilities. It is funded by a federal grant under the Technology-Related Assistance Act of 1988 (P.L. 100-407). The ITV component of the program includes: "Kid to Kid," a look at augmentative communication and assistive devices directed to special education teachers, parents and therapists; "Rehabilitation Engineering for the Disabled," an introduction for engineers to assistive technology and the needs of people who use it; and "Opening the Door," a forum for consumers, architects and municipal code enforcement officers, highlighting elimination of architectural barriers and expanding the availability of adaptive technology. The programs include videotaped material, presentations and interactive discussions.

Appendix D contains information about the uses of the system, including a map of the system, the Spring 1991 Community College of Maine course list, a sample (12/13/90) Channel 3 schedule for ITV originating classrooms, the price schedule for use of the system, and a list of ITV System Users.

The University of Maine at Augusta has launched a major program to support and enhance the quality of instruction through the ITV system and the Community College of Maine. That program is being funded with a three-year, \$300,000 grant from the Annenberg/Corporation for Public Broadcasting Project. The program will review and revise the current curriculum, expand and strengthen support services, and provide faculty/staff training so that an Associate of Arts Degree in Liberal Arts can be offered. The grant funds will also enable the University to integrate computer conferencing, electronic mail, and other technologies to support interactive styles of teaching and learning. The program will also be used to extend additional resources and student support services to off-campus sites.

A new Center for Distance Education at the University of Maine at Augusta will implement the program. The Center's staff will include a director, instructional technology specialist and an administrative assistant. The Center will also use advisors and consultants in its professional development program.

### *Potential for ITV*

It is clear from the activity of CACIT and its predecessor Commission that there exists throughout Maine a great interest and desire among a wide range of organizations and institutions to make use of the opportunities presented by the development and implementation of the University System's statewide network of interactive television. Public and private organizations want to provide a variety of educational programs to their different constituencies throughout the State.

The ITV system offers great opportunities for creative use of the media in enhancing learning for traditional and non-traditional students. It also presents a chance to deliver learning programs to worksites or to communities where worksites are located, saving travel and work time, and increasing the chance to reinforce instruction with follow-up instruction and guidance at the worksite. Maine public and private agencies and businesses can use the system to enhance Maine's competitive economic position and to strengthen citizen participation in public policy development and implementation.

Among the potential applications of the ITV system for public and private purposes going beyond the traditional classroom that have been identified are these:

1. expansion of education and training programs delivered to worksites, homes or selected group sites, using cable television, ITFS receivers, or fiberoptic telephone

lines;

2. worksite or home community training for staff development trainers, especially in subjects where there have been rapid changes in technology or the availability of expertise is limited;
3. educational conferences for public officials, members of non-profit boards and committees, managers and board members from the public sector, and board members, managers and employees in large and small businesses;
4. public hearings and briefing sessions on public policy issues;
5. teleconferences on public policy issues; and
6. general educational or cultural programs delivered to selected group sites.

Preliminary discussions have been held concerning the following specific projects, some of which have been implemented:<sup>1</sup>

1. Education and Training at the Worksite or Community Base

- (a) A code enforcement certification program for local code enforcement officers [Maine Municipal Association, Maine Department of Economic and Community Development, Maine Technical Colleges];

- (b) \* - Education and training in geriatric care for nursing home staffs [Maine Veterans Home, Medical Care Development, USM Human Services Development Institute, Maine Health Care Association, etc.];

- (c) \* - Training workshops for local officials on waste management and recycling [Maine Municipal Association, Maine Office of Waste Management];

- (d) Occupational health and safety training for cosmetologists, focused on materials used by practitioners [Maine Labor Group on Health];

- (e) Occupational health and safety training for municipal employees [Maine Municipal Association and Maine Department of Labor];

---

<sup>1</sup> - Projects discussed by the committee that have been implemented are marked with an asterisk (\*). A complete list of ITV users is contained in Appendix D.

(f) Training for state employees in uses of new technologies such as computers [Maine Department of Administration];

(g) Public administration, organizational development, etc., for state, regional and local government staffs [Bureau of Public Administration, The University of Maine];

(h) Community leadership development training for public and private agency volunteers and elected or appointed officials [Community Leadership Institute, University of Southern Maine];

(i) Education and training for health care agency trustees (hospitals, nursing homes, home health agencies, etc.) in planning, fiscal responsibilities, regulatory programs and public health policy [Maine Hospital Association, Maine Health Care Association, etc.]; and

(j) Job training and retraining for employees in manufacturing and service businesses (Chamber of Commerce and Industry, individual companies, trade associations, Maine Department of Labor).

## 2. Staff Development Training at the Worksite or Home Community

(a) Preparation of health care institutional and agency staff development personnel to perform worksite training of their staffs in handling of hazardous waste, on the job safety, care of AIDS patients, etc. [Maine Hospital Association, Maine Health care Association, Maine Consortium for Health Professions Education, etc.];

(b) \* - Teleconference and training sessions for regional staffs of state departments and agencies [Maine Department of Education, Maine Department of Environmental Protection, etc.]; and

(c) Training for personnel officers, middle and senior managers, and training staffs in manufacturing and service businesses, with special emphasis on staff development [Chamber of Commerce and Industry, individual companies, trade associations, Maine Department of Labor].

## 3. Educational Conferences in the Public and Private Sector

(a) \* - Program on growth management [Office of Comprehensive Planning, Natural Resources Council of Maine, etc.]; and

(b) \* - Programs on United Way and other civic campaigns [participating

companies, labor organizations and community agencies].

#### 4. Public Hearings and Briefings on Public Policy Issues

(a) \* - Legislative hearings on major bills [House and Senate Leadership];

(b) \* - Hearings on advisory commission reports and proposals [Maine Health Policy Advisory Council, and Maine (mental health) Systems Assessment Commission]; and

(c) \* - Post-legislative session briefing for local officials on the results and implications of the second session of the 114th Legislature [Maine Municipal Association].

#### 5. Teleconferences on Public Policy Issues

Meetings of leaders from labor and business to explore public policy issues [Maine AFL-CIO, Maine Chamber of Commerce and Industry, Maine Development Foundation, Maine Labor Relations Board, etc.].

#### 6. Cultural and Humanities Programs

The Maine Humanities Council is involved in and sponsors a wide range of projects (opera, literature, Franco-American culture, etc.) and is most interested in using the ITV system outside standard course offerings for the delivery of cultural and interpretive programs.

### *Potential for Other Technologies*

One of the most impressive applications of different technologies, integrated with other education techniques, can be seen in School Administrative District #52, where the ITV system, NovaNET, classroom instruction and individual tutoring are being used to enhance learning. Adult learners use NovaNET course modules, adapted by the adult education instructor, in programs designed to meet their needs. Alternative School students benefit from individual tutoring and guidance from faculty, coupled with the use of NovaNET modules and ITV courses from the University of Maine System. High school students take foreign language courses, using the ITV system, and "general math" students are studying algebra, using an integrated classroom instruction and NovaNET module program. The University of Maine has used NovaNET in its Upward Bound program for three years, both for instructional modules and for communications with an Upward Bound group in Hawaii.

Several of the State's Technical Colleges and other high schools are using NovaNET, but to date there are no organized uses of NovaNET in the public or private sector, nor has there been development of combined interactive television-computer assisted instruction learning programs.

Opportunities for access to and use of several information bases are closely linked with development and funding of combined data base and telecommunications systems.

Bates, Bowdoin and Colby Colleges have all elected to install the same electronic catalogue program used for the University of Maine System's URSUS (University Resources Serving Users State-wide). Those library electronic catalogues will be linked with URSUS. In addition, the University has obtained a grant that will enable the Maine State Library and the State Law and Legislative Reference Library to become part of the URSUS system. That presents the prospect of easy access to library information throughout the state. Expanded access to URSUS by non-University System users is limited, however, by system capacity and by the absence of arrangements to pay for use of the system.

The Public Service Council of the University of Maine System is developing an electronic information base that will maintain information about University System faculty and staff available for public service work. That information base could be extremely valuable for public and private agencies, if arrangements can be made for appropriate access by users outside the University System.

There is evidence, as noted above, that the ITV system is nearing capacity use in several critical areas. Added demands from outside the University System cannot be accommodated unless ways and means are found for obtaining funds for expansion and use of the system, and mechanisms are devised for assuring equitable access to the system. Similar issues are presented in exploring the potential for integrated use of different information technologies and in expanding access to needed information bases.

### *Concerns and Needs*

Despite all this evident interest and potential there are serious needs that must be addressed and obstacles to be overcome if there is to be effective use of the ITV system and other information technologies on a much broader scale.

First, there are a number of policy issues of direct interest to users that will need organized attention as the number of uses and users increases and competition for available sites and times intensifies. Those issues include: equity in access to the ITV system, sources of funding for expansion of the system, development and provision of training in use of the system, development of techniques for expanded merger and

integration of ITV and multiple technologies, and equity in allocation of funding responsibilities for program services.

Second, there is a need for ongoing exchange of information and ideas among users and mutual support in the development, implementation and evaluation of approaches to using information technologies for educational purposes that go beyond traditional classroom settings.

Third, there is the need for staff and technical assistance to translate the potential into a reality. Effective use of the interactive television medium requires more than using a classroom instructor to deliver traditional lectures. Curriculum must be adapted to the medium. The audiovisual potential offered through television and associated technologies must be used to be effective in capturing the imagination of the students and enhancing the learning experience. The University of Maine at Augusta's Center for Distance Education will be using a substantial portion of the Annenberg/CPB Project grant to address the issue of more effective use of the medium.

Developing skilled interactive television instructors, adapting curricula, and applying the available technologies for non-University System education and training programs will take people, time and money, going beyond the capacity of the UMA Center for Distance Education. This an added burden the University System cannot be expected to assume, given all that it has already done to extend its outreach via ITV throughout the length and breadth of Maine, and given the dire budget situation that the University System faces.

The Committee has concluded that, in addition to providing assistance in the formation of a users' consortium, the University System should take two "bridging" steps in developing expanded partnerships for effective educational and related uses of information technologies: (1) take the initiative in seeking a grant that would fund for a two year experimental period the staff and technical assistance and other related expenses required to bring the concept and the demand for expanded learning services into fruition; that grant would be designed to support effective start-up of an organized and expanded use of the ITV system beyond the traditional classroom, foster integration of interactive television, portable audio-visual media (audiotapes, videotapes and videodisks) and computer assisted instruction, and assist the consortium in its organization phase; and (2) continue the work of the Advisory Committee on Information Technology, to make a thorough exploration of information technology applications beyond the ITV system and to assist the University System on the consortium development and grant projects.

## RECOMMENDATIONS

### A. *Proposed Collaborative Structure for Effective Educational Uses of Expanded Television and Information Technology Systems*

**The Committee recommends that the University of Maine System, in concert with State government, municipal governments and regional agencies, public schools, private educational institutions, not-for-profit organizations, business and labor organizations, form a not-for-profit [501(c)(3) corporation] consortium to use and contribute to the development of information technology systems for education, training, communication, cultural and public policy purposes. The Committee recommends that the consortium be established by March 15, 1991.**

The Commission on Educational Uses of Information Technology suggested a collaborative effort by all of the interested parties to exploit the potential of the technologies and overcome such problems as equitable access, obtaining expertise in practical applications, obtaining funding, achieving efficient management of resources, and avoiding rigid control mechanisms. The Commission leaned toward a consortium model that would set policies, obtain or facilitate acquisition of funding, and manage a joint system.

The Committee reviewed those recommendations and examined three alternative models:

(1) a public agency to own and manage the interactive television system, with user interests being represented through an advisory body; the public agency could be the University of Maine System or an existing or new state government agency; the University of Maine System already has a mechanism for developing and running an interactive television system that covers much of the state; a new mechanism would have to be created if state government were to assume responsibility for the kind of program suggested by the Commission and the Committee;

(2) a new corporation that would own and manage the system, with user interests being represented through incorporators, the governing board, and/or and advisory body; and

(3) a consortium of users that would facilitate applications of information technologies, including interactive television, contracting with the University of Maine System and/or other entities for program development, technical assistance, time on the UMS-ITV or other systems, and for a variety of other services; user interests would be represented through incorporators and the governing board of the consortium.



The Committee concluded that the consortium model was best suited to represent user interests and to achieve cost effective use of the information technologies, without creating a new corporate structure with substantial staff. That model would also give users flexibility in the use of existing resources and taking advantage of collaborative opportunities.

Participation in the consortium would be open to Maine government agencies, public and private non-profit organizations, and business organizations that support the purposes of the consortium.

The Committee examined carefully the issue of whether consortium membership for non-profit and for-profit corporations, as well as public agencies, would jeopardize tax exempt classification for the consortium. We have been advised that such membership is not a barrier to IRS 501(c)(3) status. The test will be applied to the consortium's purposes and activities: (1) it must be established to carry out recognized "non-profit" activities; (2) it may not engage in political activity or lobby legislative bodies; (3) members may not benefit from the consortium by receiving distribution of "profits", free services, etc.; and (4) relationships between members and the consortium must be clean and arm's length. Appendix B of this report contains examples of different approaches taken in Maine to the "mixed membership" issue.

The Committee recommends that the consortium employ a small staff to support its governing board and its facilitative and coordinative activities; and that the consortium contract as appropriate for individual or shared member services within the purposes of the consortium. Financial support for consortium governance, facilitative and coordinative activities would be derived from membership assessment or dues, linked to the size of member operating budgets and limited by a "floor and ceiling" formula. The "floor and ceiling" formula, adjusted over time, would prevent excessive financial burdens on very small and very large members. Service fees, based on the direct and indirect costs of services, plus gifts and grants would be used to fund member programs and shared services.

The Committee recommends that governance of the consortium be based on one member/one vote.

There is a more detailed description of the consortium proposal in Appendix A of this report.

**B. *Grant Proposal for Development, Implementation and Evaluation of Educational Uses of Interactive Television and Other Information Technologies Beyond Traditional Classrooms***

**The Committee recommends, in further evidence of the University of Maine System's commitment to making the fullest possible use and integration of the ITV system with other information technologies, that the University System take the initiative in seeking a "bridge" grant that would fund for a two-year experimental period the staff and technical assistance and other related expenses required to bring this initiative for a users' consortium and responses to educational uses demands to fruition. The Committee recommends that grant proposals be developed and submitted to one or more foundations starting no later than May 1, 1991.**

In effect, if there is to be any effective and cohesive movement in this direction, there is no alternative to the University System's role. It is also the most efficient, since the University System already has in place the extensive ITV system itself, the administrative and technical staff associated with the Community College Program, the Maine Public Broadcasting Network, and faculty and staff with expertise in applications of a variety of information technologies for education, training, the exchange of information, ideas and policy recommendations, and the dissemination of information. It is assumed that any such grant would be administered under the supervision of the Chancellor's Office.

It should be emphasized that such a grant would be a "one time" affair. It is expected that the provision of technical assistance to the consortium, and planning, pilot project development, implementation, assessment and recommendations for revisions in educational and information application programs would result in an effective, organized and self-supporting system of information technology applications to education and training, information access, and public policy deliberation needs. Under the consortium concept the users of the system would be expected to pay dues in addition to their own direct programming costs so that the system would be self-supporting.

While the University System will want to develop the grant proposal within the framework of its own sense of need, it is suggested that an appropriate amount might be \$300,000.

Further details about this proposal are included in Appendix D of this Report.

### C. *Unfinished Business*

**The Committee recommends that the Chancellor continue and expand the Chancellor's Advisory Committee on Information Technology to assist him and his staff in further exploration of the potential for additional applications of ITV and other information technologies for educational purposes, facilitating formation of the proposed consortium and seeking foundation grants, with the Committee serving at the Chancellor's pleasure and reporting at least annually, so long as the Committee is continued.**

The Committee recognizes that there are several tasks to be performed, if its recommendations are to be implemented. There is the work of forming a consortium. There is the solicitation of foundations for grant funds. And there is the further exploration of the potential for applications of other information technologies for educational purposes.

As noted earlier in this report, there are several information technology applications that show considerable promise for education and training, information exchange and public policy exploration and development. Those include expansion and enhancement of the interactive television system, audiotape and videotape, videodiscs, computer assisted instruction, electronic information bases and telecommunications. The Committee believes it could continue to assist the Chancellor and the University of Maine System in responding to the interests of non-University System users by exploring potential separate and integrated technology applications, facilitating examination of options for using technologies, and identifying user issues that need to be resolved. The Committee's function would not be to conduct research or to engage in program development, nor would it be a body charged with responsibility for resolving public policy issues. The Committee would work with University System staff and committees and with other organizations that have responsibilities related to information technologies and applications of interest to the Committee.

## APPENDIX A

### PROPOSED COLLABORATIVE STRUCTURE FOR EFFECTIVE USE OF EXPANDED INTERACTIVE TELEVISION AND INFORMATION TECHNOLOGY SYSTEMS IN MAINE

#### Proposal:

**1. That the University of Maine System, in concert with State government, municipal governments and regional agencies, public schools, private educational institutions, not-for-profit organizations, business and labor organizations, form a not-for-profit [501(c)(3) corporation] consortium to use and contribute to the development of information technology systems for education, training, communication, cultural and public policy purposes.**

The consortium would be a user's group, employing existing University of Maine System Interactive Television system and other information technology facilities, systems and services, and helping develop additional systems, as appropriate. It would not operate systems. Consortium members would be able to take advantage of economies of scale in existing systems and avoid duplication of services. The Consortium would also be able to insure equitable access to information technology services for its members.

Members' education and training programs could be developed and delivered by members, associations, educational institutions and agencies, or combinations of those sources. Programs could be delivered by interactive television, recorded materials, computer assisted instruction programs, or a combination of sources and media. Conferences, public hearings, and information sessions could employ interactive television. Access to information bases and dissemination of public interest information could be managed through a combination of electronic library systems and telecommunications.

The consortium would design mechanisms for setting policies, funding and contracting for interactive television and information technology systems or other arrangements to support the State's education and training, public policy development, inter-regional communication and cultural needs, and fostering and facilitating collaborative efforts to make more effective use of information technologies for educational, communication, cultural and public policy purposes. The consortium would enable members to gain skills in using existing services, anticipate growth and variety in available services, take advantage of those changes, and handle problems associated with growth and variety.

**2. That membership in the consortium be open to Maine government agencies, public and private non-profit organizations, educational institutions, and business organizations that support the purposes of the consortium.**

The Committee recommends full participation in the consortium by government, non-profit agencies, associations, and for-profit businesses. The general purpose of the consortium is to achieve expanded access to education and training programs, enhance the flow of information on cultural and public policy matters, encourage broader participation in the development of public policy and strengthen ties between different parts of the State. See Appendix B of this report for examples of how the "mixed membership" issue has been approached in Maine.

**3. That the consortium employ a small staff to support its governing board and its facilitative and coordinative activities; and that the consortium contract as appropriate for individual or shared member services within the purposes of the consortium.**

It is important that the cost of consortium operations be limited and that the bulk of member expenditures related to information technology be applied to services. Therefore, the consortium would not develop operating programs and the staff size could be quite small.

**4. That membership assessments or dues, linked to the size of member operating budgets and limited by a "floor and ceiling" formula, be used to support consortium governance, facilitative and coordinative activities; and that service fees, based on the direct and indirect costs of services, plus gifts and grants be used to fund member programs and shared services.**

The Committee recommends that consortium operating costs be met by member assessments linked to their "ability to pay", as measured by annual operating budgets. The use of annual operating budgets as the base for assessments would avoid penalizing granting agencies that may handle large sums of grant funds, but have small staffs and limited funds from which to pay their own operating expenses. Setting a floor and ceiling on assessments would insure contributions by all members at reasonable levels. The "floor and ceiling" formula should be tested regularly and revised, if necessary, to avoid excessive financial burdens on very small or very large users.

Members would pay the direct and indirect costs of services they elected to obtain.

The consortium would seek grants and gifts to support experimentation and development of programs and services and to meet broader societal goals espoused by the consortium and its membership.

**5. That governance of the consortium be based on one member/one vote.**

The one member/one vote principle is incorporated in the proposal because active participation by all members of the consortium, no matter what their size or level of influence, is essential in building confidence and insuring appropriate recognition of member interests. Practical considerations may dictate limiting the size of the consortium's board or operating committee. The Committee recommends approaching the governance issue with an initial arrangement, as follows:

(1) an all member board that meets at least four times a year and sets broad policy; and

(2), an executive committee (based on constituency representation) that oversees implementation of board policy; the executive committee could have nine members, with representation from the University of Maine System, State Government, municipal government, elementary and secondary education, private colleges, the Maine Technical Colleges, non-profit agencies, labor, and business.

## APPENDIX B

### CONSORTIUM MEMBERSHIP ISSUE: "MIXED MEMBERSHIP" EXAMPLES IN MAINE

The Committee has identified three examples of how non-profit corporations in Maine have dealt with the "mixed participation or membership" issue. One is the Maine Research and Productivity Center in Presque Isle. Another is Synernet and its Synernet Healthcare Foundation in Portland. The third is the Maine Development Foundation.

#### Maine Research and Productivity Center

The Maine Research and Productivity Center was organized by the University of Maine at Presque Isle for the following purposes:

- A. Development and strengthening of joint research and development efforts, including advanced technological activities, equipment, personnel and similar activities, which will lead to new technologies and create and preserve jobs;
- B. Technical assistance and technology transfer activities on an area-wide, statewide basis, or international basis, to transfer research and development activities into the marketplace;
- C. Technical assistance in identifying and applying new technology to Maine firms.
- D. Cooperation with the Research and Productivity Council of New Brunswick, Canada.

There are no members of the corporation. The Center assures business community participation in policy making by including representatives of the business community on the board of directors. Businesses can take advantage of services offered by the Center [e.g., use of computer assisted design (CAD) equipment and technical staff] by becoming dues paying subscribers.

The pertinent provisions of the articles of incorporation dealing with not-for-profit status are as follows:

Notwithstanding any other provisions of these articles, the corporation is organized exclusively for one or more of the purposes as specified in §501(c)(3) of the Internal Revenue Code of 1954, and shall not carry on any activities not permitted to be carried on by a corporation exempt from Federal income tax under

IRC §501(c)(3) or corresponding provisions of any subsequent Federal tax laws.

No part of the net earnings of the corporation shall inure to the benefit of any member, trustee, director, officer of the corporation, or any private individual (except that reasonable compensation may be paid for services rendered to or for the corporation), and no member, trustee, officer of the corporation or any private individual shall be entitled to share in the distribution of any of the corporate assets on dissolution of the corporation.

No substantial part of the activities of the corporation shall be carrying on propaganda, or otherwise attempting to influence legislation [except as otherwise provided by IRC §501(h)] or participating in, or intervening in (including the publication or distribution of statements) any political campaign on behalf of any candidates for public office.

In the event of dissolution, all of the remaining assets and property of the corporation shall, after necessary expenses thereof, be distributed to another organization exempt under IRC §501(c)(3), or corresponding provisions of any subsequent Federal tax laws, or to the Federal government, or state or local government for a public purpose, and more particularly to the University of Maine at Presque Isle for uses consistent with the purposes of this corporation, provided the University of Maine at Presque Isle meets the within qualifications, subject to the approval of a Justice of the Superior Court of the State of Maine.

### Synernet

Synernet is a shared services corporation formed to assist smaller hospitals achieve economies of scale in purchases and shared services. It grew out of the Southern Maine Association of Cooperating Hospitals, a group of non-profit hospitals in Cumberland and York Counties. Synernet is a Subchapter T Cooperative under federal IRS laws and regulations. Its membership is wholly non-profit. It does make services available to for-profit affiliates through a wholly owned subsidiary. Synernet also owns a 501(c)(3) non-profit subsidiary, Synernet Healthcare Foundation, that undertakes research and education projects.

### Maine Development Foundation

The Legislature created the Maine Development Foundation in 1977 (10 MRSA c. 107) "to foster, support and assist economic growth and revitalization in Maine. The foundation" is to "carry out its purposes in complement to and in coordination with the economic development activities of the private sector, community and regional agencies



and State Government." Under its legislative mandate, the Foundation is a "not-for-profit corporation with a public purpose" and its powers are considered "an essential governmental function."

The purpose of the Foundation, as described in the statute (§ 917, as amended), is as follows:

The Maine Development Foundation is authorized and directed to provide services to the State and to quasi-public, public and private entities, and to foster, assist and participate in efforts for economic growth and revitalization, including, but not limited to, providing for or stimulating the provision of:

1. Management and technical assistance. Management and technical assistance to businesses and to communities for economic growth and revitalization, with a particular concern for assistance to the state's existing small and medium size businesses;
2. Debt and equity capital. Debt and equity capital, with a particular concern for assistance to the state's small and medium size businesses;
3. New product development and marketing. New product development and marketing, with a particular concern for the most productive use of the state's human and natural resources;
4. Industrial land and buildings. The development of industrial land and buildings;
5. Economic opportunities. Identification and development of specific opportunities in the State;
6. Climate for economic development. Promotion of an improved climate for economic development in the State through judicious use of the public and private nature of the foundation to provide objective analysis and develop broad consensus on issues of significance to the economic health of the State; provided that the promotion does not require the foundation to register as a lobbyist employer pursuant to Title 3, chapter 15; and further provided that the foundation does not advocate to the general public a position on a question as defined in Title 21, section 1, subsection 30.
7. Coordination of development efforts. Coordination of development efforts for more successful project development through serving as a broad liaison with diverse groups and parties in all sectors and bringing together needed resources for particular projects; and

8. Employment opportunities. Coordination with the Maine Aid to Families with Dependent Children Coordinating Committee for the purpose of identifying and developing employment opportunities for recipients of Aid to Families with Dependent Children consistent with the policy and intent of Title 22, chapter 1054.

Membership in the corporation was provided through "individuals and organizations classified as private sector corporators, public sector corporators and ex officio corporators." Private sector corporators are "those individuals, partnerships, firms, corporations and other organizations providing support of at least \$250 annually to the foundation." Public sector corporators are "those agencies of government and other organizations providing support of at least \$50 annually to the foundation. For the purposes of this chapter, public sector corporators shall include: Municipal and county government; councils of government; local and area development corporations; regional planning commissions; development districts; state agencies; higher education facilities, including the components of the state University System, the Maine Maritime Academy, private colleges and post-secondary schools, and vocational-technical institutes; and such other public or quasi-public entities as may be approved by the directors of the foundation." Ex officio corporators are "the heads of the major state departments and agencies and the Chancellor of the University of Maine [System]."

Foundation corporators elect from among their number 12 of the 15 members of the board of directors, 7 from the private sector and 5 from the public sector. The Governor appoints 2 board members from the ex officio corporators. The directors appoint the president of the foundation, who serves as a member of the board and is chief executive officer of the corporation.

The Foundation's by-laws, consistent with the statute, place standard limits on corporate activities and on members and directors:

#### ARTICLE I - Name and Purposes

Section 6. Nonpartisan. The Foundation in its activities shall be nonpartisan, nonsectional and nonsectarian.

Section 7. Not-for-Profit; Essential Government Function. The Foundation shall exist as a not-for-profit corporation with a public purpose, and the exercise by the Foundation of its powers shall be deemed and held to be an essential governmental function (10 MRSA §916). To that end the corporation shall not be conducted for gain or profit but shall be supported and maintained by such corporator fees and assessments as the Board of Directors shall determine to be necessary for the proper functioning of the Foundation, by income from operations, and from contributions, benefactions, endowments, grants, loans or any

other funds of which the Foundation may be beneficiary.

#### ARTICLE X - General Provisions

Section 2. Prohibited Interests. No officer, director or employee of the Foundation or their spouses or dependent children shall receive any direct personal benefit from the activities of the Foundation in assisting any private entity. This provision shall not prohibit corporations or other entities with which an officer or director is associated by reason of ownership or employment from participating in economic development activities with the Foundation, provided that such ownership or employment is made known to the board, and the officer or director abstains from voting on matters relating to such participation. This prohibition does not extend to corporators who are not officers or directors of the Foundation.

Section 3. Net Earnings. No part of the net earnings of the Foundation shall inure to the benefit of any corporator, officer, director, or employee except that the Foundation shall be authorized and empowered to pay reasonable compensation for services rendered, and otherwise hold, manage and dispose of its property in furtherance of the purposes of the Foundation.

Section 4. Dissolution. Upon dissolution of the Foundation, the corporators shall, after paying or making provision for the payment of all liabilities of the Foundation, cause all of the remaining assets of the Foundation to be transferred to the State.

## APPENDIX C

### GRANT PROPOSAL FOR DEVELOPMENT, IMPLEMENTATION AND EVALUATION OF EDUCATIONAL USES OF INTERACTIVE TELEVISION AND OTHER INFORMATION TECHNOLOGIES BEYOND TRADITIONAL CLASSROOMS

Within the body of this report is the recommendation to the Chancellor that the University of Maine System solicit a grant from one or more foundations to provide the necessary staff and technical support to the consortium for expanded and integrated use of the ITV system and related information technologies that would enable non-University System groups to meet a number of their education, training, policy development and information needs. The basic rationale for such a grant is contained within the report. In making the following comments the Committee in no way wants to intrude upon the University System's prerogatives in developing a proposal should such an action be deemed appropriate. They are offered in the hope that they will be helpful.

1. The proposal should naturally build upon the tremendous accomplishments that the University of Maine System has made in bringing into being the extensive ITV system that is now operating throughout the State. Appropriate use should be made of the successes achieved in enrollment in these first two years and the impact it has had in breaking down the geographic isolation that exists in Maine.

2. The nature and extent of the demand for educational programming as brought out by the investigations of the Committee and its predecessor Commission should be fully cited. Equally important is the evidence that development of the potential for using and combining interactive television, audio tapes, videotapes, videodisks, computer assisted instruction, and access to information bases requires staff, equipment and technical assistance that the University cannot supply within its budget.

3. The timing at the present for such a grant is most propitious; there is a bottleneck that needs to be broken, the Committee has done as much as it can in this matter, the implementation of the Annenberg Grant surely has relevance and compatibility for the activity proposed herein. Furthermore, it is important that the development of the programming potential be realized at the same time that the overall institutional framework for the system (i.e., the consortium) is being considered.

4. The report has suggested that the sum of \$300,000 might be requested for a two-year period. An important component of this would be spent for a full-

time director of this effort. Such a person should have had experience in educational applications of information technology and grant writing skills. Secretarial, travel and other support costs would also have to be met. There would be substantial need for technical support, but estimates of these costs can only be usefully made by the staff of the present ITV system under the direction of the University of Maine at Augusta. It is also evident that development of the potential will require studio space in Portland. These may well be fully developed under the funding sources, but if not, some capital from the proposed grant may have to be devoted to this purpose.

5. In consideration of the above points, especially those in Item 4, it is assumed that the proposal would be developed under the supervision of the Chancellor's Office and through close cooperation with the Community College of Maine ITV unit.

6. The University of Maine System will make the decision as to the most appropriate foundation(s) to solicit in terms of the particular interests of specific foundations, the size of their granting capabilities and the existing proposals already made by the University System to specific foundation. A preliminary review of foundations has seemed to indicate that no Maine foundation is large enough to warrant consideration. Of national foundations, both the Carnegie and Mellon Foundations are heavily involved in education, and increasingly so in public and community outreach aspects of the field. Other foundations worthy of attention may be Aetna Life, the MacArthur Fund, and United Technologies.

7. The Committee stands ready to assist the University System in the development of the proposal in any way that is deemed appropriate.

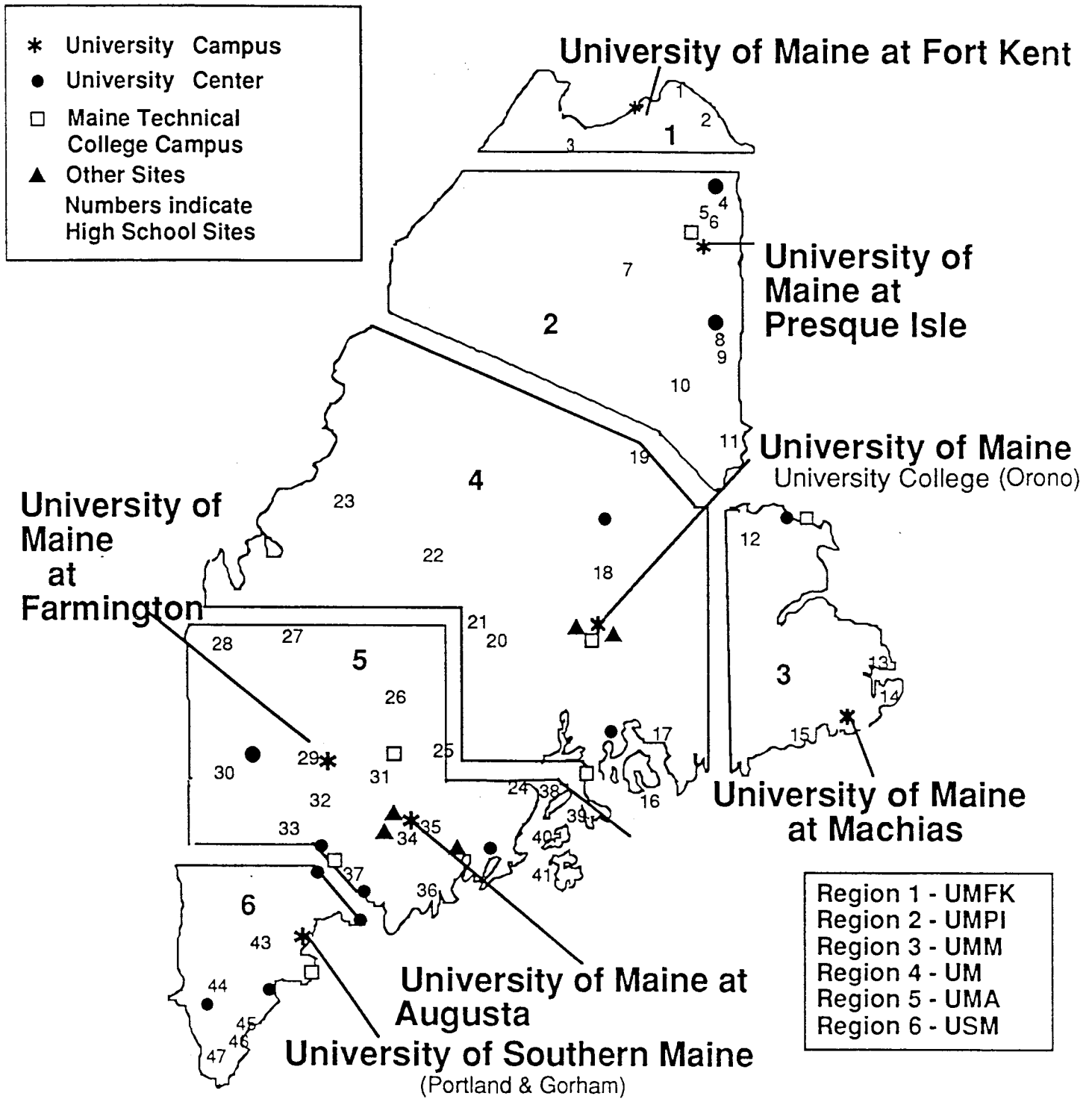
## APPENDIX D

### BACKGROUND MATERIALS

This appendix contains the following materials:

<u>ITEM</u>	<u>PAGE</u>
Map of ITV System	26
1991 Spring ITV Course List	27
Sample (12/13/90) Channel 3 Schedule	29
ITV System Rates	30
List of ITV Users	34
Maine CITE Fact Sheets	38
URSUS Description	42
NovaNET and Its Applications	43
NovaNET Utilization by MSAD #52	45
MSAD #52 NovaNET Report, 1989-90	47

# The Community College of Maine Interactive Television Network



University of Maine at Augusta  
Community College of Maine  
Office of Enrollment Services

S P R I N G - 1 9 9 1 - I N D E X

COURSE	INSTRUCTOR	PAGE #
ANTK 208	Introduction to US Ethnology.....Daigle.....	1
ARTA 106	Art Appreciation & History II.....Stoddard.....	1
BIOA 100	Human Biology.....Griffiths.....	14
BUAA 102	Principles of Accounting II.....Farber.....	2
BUAA 140	Introduction to Real Estate.....Thomas'.....	2
BUAA 223	Principles of Management.....Klivans.....	2
BUAA 282	Marketing for Small Business.....Klivans.....	3
BUAA 381	Managing Beyond Start-Up: Growth and Productivity.....Klivans.....	3
CIEO 498	Topics in Civil Engineering.....	CANCELLED
CIEO 598	Hazardous & Solid Waste Eng.....Wardwell.....	14
CIEO 660	Advanced Soil Mechanics.....Humphrey.....	14
COSK 331	Advanced Pascal.....Albert.....	15
CRJA 102	Foundations of Justice II.....Slate.....	3
EADO 652	Models of Change in Ed. Orgs.....Quaglia.....	4
ECEF 125	Intro to Early Childhood Ed. ....White.....	4
ECOA 102	Principles of Economics II.....Norton.....	4
ECYO 150A	Human Ecology in the Future.....Klose.....	5
EDRF 203	Sharing Books with Young Children...Gamble.....	5
ELEO 580	Communications Engineering III.....Sheppard.....	15
EM 82	Cont. Ed. Seminars for Emergency Medical Service Personnel.....Plumer.....	17
ENGA 102	Introduction to Literature.....LaPointe.....	5
ENGA 209	Modern Literature.....Jackson.....	6
EPDP 529	Princ. of Multicultural Ed.....Berube.....	6
EXEP 615	Classroom and Behavior Management for Exceptional Learners.....Lyons.....	6
FRSA 100	Intro. to the College Experience...Dexter.....	7
GEYI 113	Historical Geology Lecture.....McCartney.....	7
HTYM 102M	Western Heritage II.....Sloan.....	15
HTYA 104	United States History II.....Wigderson.....	16
HTYI 162	United States History II.....Morrison.....	7
HTYM 207	History of Modern Middle East & North Africa.....Sowerwine.....	8
HUMO 201A	Lit. & Exploration of Hum. Values.....	CANCELLED
HUMO 298A	Topics: Story of English Language...Batty.....	8
HUSO 289A	Addictive Personality.....Scott.....	9
LETO 222A	Domestic Relations.....Kurr.....	16
MATM 009	Basic Arithmetic.....Paul.....	9
MATA 111	Algebra II.....Hannula.....	9
MUSA 123	Understanding Music.....Demsey.....	10
NURA 102	Nursing Care of Adult Client I.....Colby.....	16
NUT 111	Normal Nutrition.....Morissette.....	17
OHS 002	OSHA: Guide to Vol. Compliance.....Tara.....	18
POSM 305	Environmental Politics.....Reisman.....	10
PSYA 100	Introduction to Psychology.....Hood.....	10



PSYO 101A	Introduction to Psychology.....	Karris.....	11
PSYF 104	Parenting the Young Child.....	King.....	11
PSYA 308	Human Development.....	Leonard.....	11
SEDF 451	Teaching Reading and Spelling to Learning Disabled Pupils.....	Fischer.....	12
SOCA 101	Introduction to Sociology.....	Schlenker.....	12
SOCO 155A	Sociology of Death.....	Gustafson.....	12
SOSA 212	Case Management.....	Blazek.....	13
SPCO 267	Publ. Relations: Oral Comm. Strat...	Burns.....	13
SPCO 688	Sem: Adult Lang. Disorders.....	Pettit.....	13

spring.index  
11/26/90

ITV ORIGINATING CLASSROOMS

(INTERACTIVE CH. 3)

MONDAY

	UMFK	UMPI	UMF	UMM	UM			UMA			USM	
	Anx	Pul	C-23	Tor	Shi	Brs	Bgr	Lrc	JH	Lrc11	PS	Bai
7:00								X				
7:15								X				
7:30								X				
7:45								X				
8:00	X							X			X	X
8:15	X							X			X	X
8:30	X										X	X
8:50	X										X	X
9:00	X										X	X
9:15	X										X	X
9:30	X										X	X
9:45	X										X	X
10:00	X		X					0	X		X	X
10:20	X		X					0	X		X	X
10:30	X		X					0	X			
10:45	X		X					0	X	X		
11:00	X		X					0	X	X		
11:15								0	X	X		
11:30		X						0	X	X		
11:45		X						0	X	X		
12:00		X						0	X	X		
12:15		X							X	X		
12:30		X							X	X		
12:45		X							X	X		
1:00				X								X
1:30				X								X
2:00			X	X								X
2:15			X	X								X
2:30			X	X				X			X	X
3:00			X					X			X	X
3:45	X							X				X
4:00	X					X		X	X	X		X
4:30	X					X		X	X	X		X
5:00		X				X		X	X	X		X
5:15		X				X		X	X	X		
5:30		X		X				X				
6:00		X		X				X				
6:45		X		X				X				
7:00		X		X		X		X	X	X	X	X
7:30		X				X		X	X	X	X	X
8:00		X				X		X	X	X	X	X
8:30		X				X		X	X	X	X	X
9:00		X				X		X	X	X	X	X
9:30						X		X	X	X	X	X
9:45						X		X	X	X	X	X

O= NON-ITV USE  
 X= times the classroom is being used

University of Maine System  
Interactive Television System Rates

Teleconferencing:

Number of Video Origination Sites	University Cost/hr	State Cost/hr	Non Profit Cost/hr	Business Cost/hr
One Origination Site	\$30.00	\$50.00	\$75.00	\$100.00
Two Interactive Sites	\$40.00	\$100.00	\$150.00	\$200.00
Three Interactive Sites	\$50.00	\$150.00	\$225.00	\$300.00
Four Interactive Sites	\$60.00	\$200.00	\$300.00	\$400.00
Five Interactive Sites	\$70.00	\$250.00	\$375.00	\$500.00
Six Interactive Sites	\$80.00	\$300.00	\$450.00	\$600.00
Seven Interactive Sites	\$90.00	\$350.00	\$525.00	\$700.00
Eight Interactive Sites	\$100.00	\$400.00	\$600.00	\$800.00

Teleconferencing rates apply to meetings for which no special services are needed. The rooms are available 10 minutes prior to the scheduled teleconference time. Up to 30 minutes of electronic graphics compose time is included at no additional charge. Up to 30 minutes of staff time to brief or consult with you is provided without additional charge. The standard teleconference set-up, whether in a classroom or teleconference room, includes: a camera on the presenter(s), a camera on the audience or participants at each location, a graphics camera for prepared or live overhead type graphics, the standard microphone set-up for the facility (this varies by location), and one technician at each location to assist you and your participants. All uses of the ITV System that require additional services are considered "special events" and will be charged the teleconferencing hourly rates for the time used on the ITV system, plus all hourly costs for personnel and all direct costs at each location requested. Typical "special event" needs that will be charged at an additional cost include: additional microphones or special microphones, special "sets" or rearranging classroom or teleconference room furniture, extra cameras or cameras on tripod for different angles, use of UMA's auditorium and other requests that require extra staff time. Videotape stock, catering and other special needs will be charged back to the user. Estimates will be provided on request, but final billing will reflect the actual time and materials utilized.

Cancellation Charges:

Cancellation-6 working days or more	\$25.00/ea. occurrence
Time changes	\$25.00/ea. occurrence
Cancellation-within 5 working days or less	25% total estimate
Cancellation-within 24 hours or less	100% total estimate

In addition, all charges for personnel and materials for work completed at the time of the cancellation will be charged.

ITFS Receive Sites:

ITFS receive site availability varies by location. When available, the ITFS receive sites are charged back at the following rates:

Number of Receive Sites	University Cost/hr	State Cost/hr	Non Profit Cost/hr	Business Cost/hr
1-5 Sites	0	\$15.00	\$25.00	\$30.00
6-10 Sites	0	\$13.00	\$20.00	\$25.00
11-20 Sites	0	\$11.00	\$18.00	\$23.00
21-50 Sites	0	\$9.00	\$15.00	\$20.00
51-100 Sites	0	\$8.00	\$13.00	\$18.00

The ITFS site coordinators will greet your participants, distribute materials and be available in the building for technical support.

Materials Distribution:

We will distribute teleconference and special event printed materials to each of the sites (video origination and ITFS) for \$5.00 per site. Please provide the correct number of copies for each site no later than seven working days prior to the event.

Additional Services:

	University, State and Non Profit Cost/hr	Business Cost/hr
Electronic Graphics (Chyron) Compose (in excess of 30 minutes)	\$15.00	\$20.00
Set-up for Special Events (charged per person needed)	\$30.00	\$30.00
Director, Producer, Scripting, Editing	\$30.00	\$35.00
Technical Staff	\$20.00	\$25.00
Facilities Coordination	\$15.00	\$20.00
Remote Single Camera Recording* (camera, recorder, multiple microphones, light kit)	\$25.00	\$50.00
Multi-Camera Remote Recording* (2 cameras, switcher, audio light kit)	\$50.00	\$100.00
Additional Cameras for Above* (up to a total of 4)	\$25.00	\$50.00
Edit Suite*	\$25.00	\$50.00
Satellite Downlink (C or Ku)	\$25.00	\$50.00

\*Each of the above requires staff and materials (videotape, etc.), which is charged in addition to the listed charges.

Additional Services:(continued)

	University, State and Non Profit Cost/hr	Business Cost/hr
Tape Duplication (does not include tape costs)	\$15.00	\$20.00
1/2" VHS T-120	\$5.00	\$5.00
3/4" U-Matic 20 minute	\$16.00	\$16.00
3/4" U-Matic 30 Minute	\$18.00	\$18.00
3/4" U-Matic 60 Minute	\$23.00	\$23.00
1/2" S-VHS	\$12.00	\$12.00

Rates are subject to change without notice.

itvrates.5  
January 14, 1991

University of Maine System Interactive Television Cost Grid

N u m b e r	Category of Your Org.	Number of ITFS Receive Sites Needed (Cost in \$/hour)											
		0	1	5	10	15	20	25	30	35	40	50	60
One	State	50	65	125	192	215	270	275	320	365	410	500	530
	Non Profit	75	100	200	300	345	435	450	525	600	675	825	855
	Business	100	130	250	375	445	560	600	700	800	900	1000	1180
Two	State	100	115	175	240	265	320	325	370	415	460	550	580
	Non Profit	150	175	275	375	420	510	525	600	675	750	900	930
	Business	200	230	350	475	545	660	700	800	900	1000	1100	1280
Three	State	150	165	235	300	315	370	375	420	465	510	600	630
	Non Profit	225	250	350	450	495	585	600	675	750	825	975	1005
	Business	300	330	450	575	645	760	800	900	1000	1100	1200	1380
Four	State	200	215	275	340	365	420	425	470	515	560	650	680
	Non Profit	300	325	425	545	570	660	675	750	825	900	1050	1080
	Business	400	430	550	675	745	860	900	1000	1100	1200	1300	1480
Five	State	250	265	335	400	415	470	475	520	565	610	700	730
	Non Profit	375	400	500	600	645	735	750	825	900	975	1125	1155
	Business	500	530	650	775	845	960	1000	1100	1200	1300	1400	1580
Six	State	300	315	375	440	465	520	525	570	615	660	750	780
	Non Profit	450	475	575	675	720	810	825	900	975	1050	1200	1230
	Business	600	630	750	875	945	1060	1100	1200	1300	1400	1500	1680
Seven	State	350	365	435	500	515	570	575	620	665	710	800	830
	Non Profit	525	550	650	750	795	885	900	975	1050	1125	1275	1305
	Business	700	730	850	875	1045	1160	1200	1300	1400	1500	1600	1780
Eight	State	400	415	475	540	565	620	625	670	715	760	850	880
	Non Profit	600	625	725	845	870	960	975	1000	1125	1200	1350	1380
	Business	800	830	950	1075	1145	1260	1300	1400	1500	1600	1700	1880

These costs reflect time for teleconferencing use of the ITV System. Additional charges will be assessed for special events. Please refer to the rate sheet for detailed information on additional charges.

**COMMUNITY COLLEGE OF MAINE  
ITV SYSTEM USERS  
1989-1990**

**AIDS Support Group:** A workshop for training volunteers was held on the system. A follow-up is planned.

**Alpha One:** Staff meetings have been conducted between Bangor, Presque Isle, Portland and Augusta.

**Center for Engineering Studies (UTEC Members Meeting):** Engineers from USM and UM have held interactive meetings on the system to discuss committee business.

**Child and Family Institute:** Head Start Training has been presented by Dr. Jud Smith in a series of interactive programs aimed towards child care providers.

**Classified Employees Assembly:** Assembly business is conducted between Augusta and its off-campus centers.

**Cooperative Extension:** A number of cooperative extension seminars have been held on the system ranging from Pesticide Application to Child Care Training. Cooperative Extension also participated in a satellite teleconference that was transmitted to various sites in the system.

**Department of Economic & Community Development:** (Loan Application) Monthly interactive meetings between Augusta and Portland eliminates the necessity for participants from southern Maine to travel to Augusta. They have also held a public hearing on new housing regulations, and a workshop on filling out Affordable Housing Applications.

**Department of Education and Cultural Services:** Various division of DECS have used the ITV system. The Special Education Division has used the system extensively for informing their employees about new regulations and policies. It has been used to conduct Consumer Forums for the Handicapped. DECS has also held Teacher In-service Programs, Adult Education Updates, Financial Aid Seminars, School Health Workshops, Informational Meetings for School Food Services, PSAT information programs, Fitness and Health information programs, and a P.R.E.P. Program update. DECS has also sponsored afternoon workshops for high school teachers on subjects such as "Wellness" which is a series of four programs dealing with issues of stress, nutrition and exercise. "Healthy ME/Healthy Maine Project has used the system to demonstrate Grant Applications and Information. There have also been satellite teleconferences that have been both transmitted live over the system and recorded for later use. The DOE Advisory Committee holds its meetings over the system.

**Forum-A:** William Yellowtail, Montana state senator who represents the Crow and northern Cheyenne Indian Reservations, spoke from the UMA auditorium to high school students at connected high schools.

**Governor's Distinguished Lecture Series:** The Governor's office has offered a Distinguished Lecture Series on a quarterly basis. These lectures originate from the UMA auditorium and are interactive with several sites allowing members of the audience at the remote sites to speak directly with either the Governor or the lecturer at the conclusion of the speech. Speakers have ranged from Captain Kangaroo to William Bennett.

**Health Policy Advisory Council:** The Council held a statewide forum on Health Policy called, "Access to What? Defining a Basic Level of Health Care" which involved both statewide comment as well as local brainstorming sessions.

**Human Development Institute:** A three hour program on Nursing Care and Quality Assurance was held on the system.

**Human Services Development Institute:** Two programs on Early Intervention have been held on the system with a third planned for May. Two out-of-state content experts were brought in for each program. Along with Maine specialists, they made first a five-hour and later a four hour presentation.

**ITV Advisory Council:** Council business is conducted over the system between Augusta and Bangor.

**Joint Planning Board on Telecommunications:** The Board meeting was held between Augusta and Bangor.

**Lotto America:** Two one-hour presentations introducing lottery agents to Lotto America. Forty-two ITFS sites were involved.

**Maine Bar Association:** A general meeting was held connecting members in Portland and Augusta.

**Maine CITE:** Maine CITE is running a series of ten interactive programs over the course of twenty-four months on the use and availability of technology for the disabled.

**Maine Consortium for Health Professions Education:** The Board meeting for this organization was held over the system.

**Maine Council on Vocation Education:** Dr. Willard Daggett, Director of New York's Division of Occupational Education spoke statewide and answered questions on "Education for a New Age."

**Maine Educational Services:** An ITV and ITFS event was held to present an update on "Operation Opportunity."

**Maine Emergency Management Agency:** MEMA presented a program on



flood awareness over the ITFS system.

**Maine Federation of Womens' Clubs:** MFWC observed the Centennial Celebration of womens' clubs by participating in a satellite teleconference that was downlinked to the UMA auditorium.

**Maine Independent Living Center:** This nonprofit organization held a staff meeting between two video-interactive sites and an ITFS site.

**Maine Law Review Class Reunion:** The class reunion was transmitted between UMA, USM, UM, and UMF.

**Maine Legislature:** The Education Committee held a public hearing during which citizens were able to interact with the Committee in the UMA auditorium from six remote sites. The Commission to Assess the Impact of Increased State Spending on the University of Maine System held a public hearing in November and connected all seven campuses and the UMA region ITFS sites.

**Maine Municipal Association:** MMA held a 4-way video interactive program explaining changes in laws affecting municipalities in 1990.

**Maine Re--Learning Steering Committee:** Committee business is conducted over the system between Presque Isle and Augusta.

**Maine Studies Center:** High school students at selected high schools had opportunities to interact with a variety of professionals in preparation for a tour of Eastern Europe last summer.

**Maine Telecommunications Users Group:** 2-way interactive meeting.

**Maine Veterans Home:** A two part pilot program in the field of drug therapy for the elderly was broadcast to twelve sites around the state. A third program in June on the topic of Geriatric Diabetes involved seventeen ITFS sites throughout the state.

**Maine Waste Management Agency:** The agency used video-interactive sites to hold hearings and ask for public testimony on new waste management laws.

**Maineworks:** During the last academic year the Governor used the system for "Maineworks," a talk show aimed towards exposing high school students to career options. "Maineworks" was a three guest interview program during which each guest discussed his or her work, and was the subject of a pre-produced "slice of life" video. High school students in the auditorium and at all connected high schools around the state were able to ask questions.

**Medical Care Development:** MCD assisted in the preparation of the Maine Veterans Home programs and a Scoliosis Screening Program

for DHS. An ITFS program on "Networking for Mental Health" connected mental health consumers at 19 sites so they could receive information updates and join in wide ranging discussions of services and support.

**New England Telephone Company:** NET kicked off its United Way campaign with skits and testimonials from NET employees in several locations around the state.

**Office of Comprehensive Planning:** OCP used the ITV system to link together six interactive sites and nine ITFS sites to inform planners about Maine's Growth Management Program's new laws and to respond to questions.

**Senior Spectrum:** Senior Spectrum participated in a satellite teleconference which was downlinked in Augusta and transmitted to audiences in Augusta and Portland.

**Small Business Development Center:** This group downlinked a satellite teleconference and transmitted the program over the ITV system.

**UMA Admissions:** A "Becoming a Student" Workshop was held over the ITFS system for Augusta region sites and centers.

**UM Commission on Educational Uses of Information Technology:** The Commission has conducted its business over the ITV system between UMA and MPBN for the past year.

**UM International Programs:** A meeting was conducted between students at USM and UM who were going to participate in foreign study programs.

**UMS Chancellor's Office Advisory Committee:** Committee business is conducted between different campuses.

**UMS Energy Reduction Meeting:** A system-wide meeting was held to exchange ideas about ways to reduce energy consumption on each campus.

**UMS ITV Technical Staff Meetings:** Seven-way interactive meetings are held to discuss a variety of issues and concerns.

**University/State Government Partnership Program:** A discussion was held between three participating locations.

**UMPI Public Relations:** A seminar on "How to Reach People" was held between UMPI and UMFK for local organizations interested in public relations and newsletter production.

**USM School of Law:** Law Related Education has held two video-interactive workshops on the subject of relating law to elementary school teaching and learning.

A  
Few  
Facts  
About



# Maine CITE

Consumer Information and  
Technology Training Exchange

Maine CITE provides essential information and peer support to enable people with disabilities to obtain and maintain technology devices and services.

## Maine CITE consists of three main components:

- ◆ The Technology Information Hub
- ◆ Training Network
- ◆ IMPACT (Investigators of Maine's Payment Allowance for Changing Technology)

## The goals of Maine CITE are to:

- ◆ Provide timely information about assistive technology so people with disabilities may make informed and knowledgeable decisions about devices and services.
- ◆ Foster the exchange of information, cooperation and planning among people with disabilities and their families, employers, service providers, health professionals and manufacturers.
- ◆ Provide peer support to Maine people with disabilities in their efforts to obtain assistive technology.
- ◆ Increase the awareness and proficiency of service providers, educators, and other professionals about assistive technology devices and services.
- ◆ Investigate and expand public policies, practices and procedures relating to assistive technology devices and services, particularly funding mechanisms, so Maine people with disabilities can obtain the technology they need.

 **To call Maine CITE dial:**

1-800-640-7200 (Voice or TDD)  
or 207-767-0643

 **Write or visit us at:**

Maine CITE  
85 E Street  
South Portland, ME 04106

## **Maine CITE**

### **Consumer Information and Technology Training Exchange**

**PURPOSE:** Maine CITE seeks to increase the availability and use of assistive technology, affect systems change in the area of assistive technology, and to make the system in Maine more "user friendly."

**PHILOSOPHY:** Maine CITE seeks to give people with disabilities the opportunity to live in dignity and to fully participate in American society.

**GOALS:** Give Maine people with disabilities active involvement; accurate, timely information; and peer support. Ensure that service providers have technology training, that people work cooperatively and share information, and that Maine's public policy is responsive.

**FEDERAL LEGISLATION:** The Technology Related Assistance Act for Individuals with Disabilities (P.L. 100-407) supports consumer-responsive, technology-related assistance. It is the first federal legislation that focuses on making technology available to people with disabilities.

Maine was one of the first nine states to be funded and received a unanimous decision of the grant reviewers. It is hoped that all 50 states and territories will be funded by 1995.

**HISTORY OF GRANT PROPOSAL:** Maine's planning committee included representatives from the state's largest consumer organizations and others:

- Alpha One, Center for Independent Living
- Maine Independent Living Services
- Maine Association of Handicapped Persons
- Maine Parent Federation
- University of Maine System
- Maine Bureau of Rehabilitation
- Bureau of Maine's Elder and Adult Services

The committee organized a state consumer forum (2/89) to identify state technology needs which were information, training and funding.

## DEFINITIONS

**TECHNOLOGY:** A process of applying scientific knowledge to a practical purpose. The outcome of technology is that it should enable or enhance performance.

Although technology represents new ways of perceiving and doing things, it does not have to be sophisticated or expensive.

**ASSISTIVE TECHNOLOGY DEVICE:** Any item, piece of equipment, or product system--whether acquired commercially off the shelf, customized or homemade--that is used to increase, maintain, or improve functional capabilities of individuals with disabilities. For example:

High tech = computer program that responds to voice; motorized wheelchair

Low tech = pencil/pen grip holder; cane

**ASSISTIVE TECHNOLOGY SERVICE:** Any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive device (AD).

Assistive technology services would include: evaluating individual's needs; purchasing, leasing, or making another provision for AD; selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing AD; coordinating with other services to improve use of AD; and training or technical assistance for professionals who are substantially involved in life activities of persons with disabilities.

**INDIVIDUAL WITH DISABILITIES:** Any individual of any age considered to have a disability through any federal or state law or enabled to maintain or improve level of functioning in any major life activity by using assistive devices or services.

## PROJECT DESCRIPTION

Maine CITE is a consumer-responsive project committed to being responsive to self-identified needs of individuals with disabilities and their family members, neighbors, employers and service providers. Through a follow-up process, CITE asks "Did consumer get what was needed? Did it improve function?"

Maine CITE is a partnership of the Maine Department of Education, Alpha One and the University of Maine System which will identify and complement existing Maine resources.

The project involves three major functions: the Information Hub, Training Network and IMPACT.

**INFORMATION HUB:** Operated by Alpha One, Adaptive Living Programs for Handicapped Americans, an independent living center providing services to individuals with disabilities.

The HUB will provide information about technology devices, services and funding resources; link resources and individuals with disabilities; follow up on all requests; establish network of peer and professional support; and share information with other Maine organizations and agencies.

**TRAINING NETWORK:** Coordinated through the University of Maine System and the Maine Department of Education.

The Training Network will assess state training needs, coordinate existing training needs and assist with on-site training. The Training Network uses the Interactive Television (ITV) System as a major training tool.

**INTERACTIVE TELEVISION SYSTEM (ITV):** The ITV System is a one and two-way video and two-way audio network which links University campuses and off-campus sites around the state.

Ten programs are scheduled for the first year and 25 programs for the second and third years.

**IMPACT (Investigators of Maine's Payment Allowance for Changing Technology):** A 15-member task force appointed by the Governor which will identify resources and potential local, state and national funding resources; identify policies that encourage or deter funding; and publish a monograph of legislative recommendations including:

- difference between legislative intent and actual policy interpretation
- needed policy changes
- plan to implement recommendations

**ADVISORY BOARD:** A 15-member advisory board appointed by the Commissioner of Education representing a broad spectrum of Maine citizens who will ensure the consumer direction of Maine CITE.

### OUTCOME

Maine CITE will be able to identify and update technology resources, identify gaps and barriers in technology and evaluate overall project effectiveness asking, "Did Maine CITE increase individuals' access to technology"?

## URSUS (UNIVERSITY RESOURCES SERVING USERS STATE-WIDE)

URSUS is the name of the University of Maine System's on line public access library catalog and circulation control services. URSUS provides faculty, students, and staff with a dramatic increase in access to the library resources of the University of Maine System. At the same time it enhances efficiency and accuracy in locating and using library materials. URSUS contains over 700,000 unique titles and over one million volumes. The database resides on a computer located on the Orono campus and attached to a statewide telecommunications network. URSUS provides access to catalogued resources located in eight campus libraries and four branches, as well as a record of the newest materials. Faculty, students and staff are able to obtain information on library holdings at any of the campuses through campus library computer terminals, or through office and off-campus computers with modems. Community College of Maine students can use a toll-free line to the University of Maine at Augusta library for help in using URSUS, obtaining a library card, borrowing materials through interlibrary loan and getting a list of area libraries that offer assistance to students.

The on line catalogue represents about 75% of the print and non-print holdings for all the libraries, including books, serials, microforms, sound recordings, maps, government documents and audiovisual formats. Not included in URSUS are: complete serial and periodical holdings; access to periodical articles; most audiovisual resources (slides, audio and video recordings); large microform sets; most special, rare and archival materials; miscellaneous print collections; and a number of government documents that have not yet been loaded on the system. The library cautions that a complete search of library resources should include URSUS, the local card catalogue, and local periodical lists.

URSUS is a "user friendly" system that guides the user with on screen prompts. Searches for library materials can be made by author, title, subject, Library of Congress call number, Dewey or other call numbers, document or report numbers, or words in the title being sought. The user can literally browse through the catalogues of all the campuses at the same time, obtaining information on library materials, their location and their status - - all without going to each of the libraries in the system.

The University of Maine System, with leadership from Elaine Albright, Director of University of Maine Fogler Library, worked with Innovative Interfaces, Inc., Berkeley, California, and Digital Equipment Corporation to develop INNOPAC, the software for URSUS. Operating on Digital hardware, INNOPAC is the first Digital-based Innovative Interfaces installation to provide automated services linking eight campus libraries. The University of Maine System Computing and Data Processing Center (CAPS) provides technical support for URSUS.

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# novaNET<sup>SM</sup>

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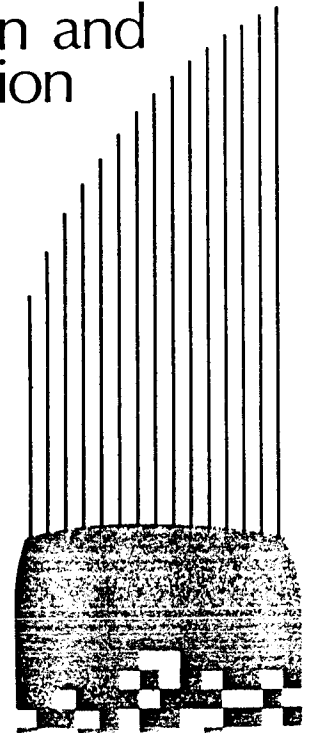
## For More Information

Interested schools or groups may arrange for a demonstration of the NovaNET system. For additional information or to request a sign-on, contact:

Office of University Innovations  
Alumni Hall  
University of Maine  
Orono, Maine 04469  
(207) 581-1582

UMaine Electronic BBS (1200/2400 baud)  
at (207) 581-1595

Education and  
Information  
Services





# novaNET

## What is NovaNET?

NovaNET is a computer-based educational (CBE) delivery system reaching into public schools, colleges, technical colleges, the private sector and the University of Maine system. NovaNET uses satellite downlinks to provide both educational and informational services. With thousands of hours of instruction in over 100 subject areas ranging from elementary school to the college level and beyond, NovaNET offers low-cost, high-quality computer-based education to all users.

## How NovaNET Works

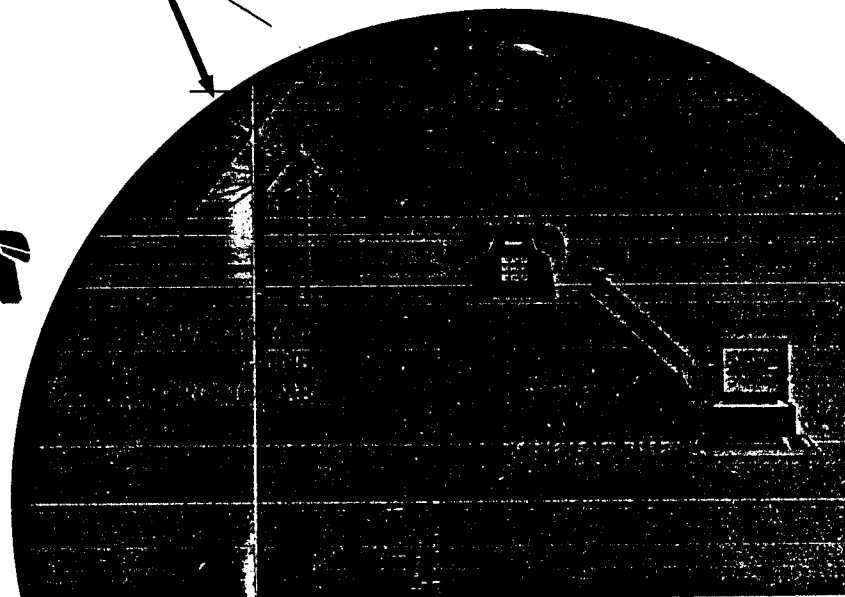
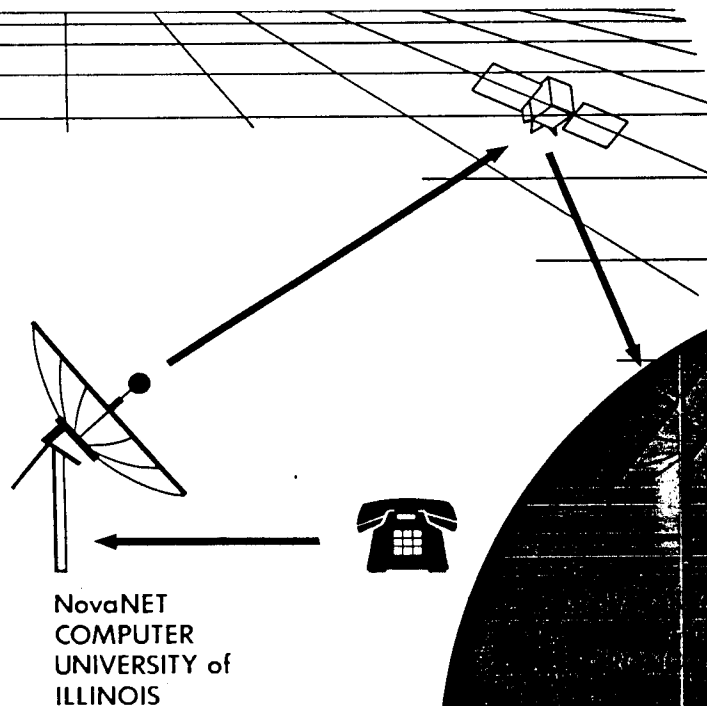
A satellite is used to send data from the host computer cluster in central Illinois to all parts of the U.S. A satellite downlink has been installed in Orono with NovaNET services distributed from the University of Maine. In addition to the satellite link, a standard leased data line is used to carry data back to the host computer in Illinois. It is possible for a school to connect multiple PCs to NovaNET over a single leased telephone line.

## What You Need to Get Started on NovaNET

- \* either a **MacIntosh** or an **MS-DOS** machine such as an IBM, Zenith, Tandy or other 100% IBM compatible machine with at least 512K memory and graphics capabilities.
- \* an **EGA video card** is strongly recommended in order to take advantage of the color and higher screen resolution available on the system.
- \* a **modem** capable of 1200 or 2400 baud communication.
- \* the proper **software** to access the system (at a cost of \$15).
- \* the dial-up access **number** and a NovaNET **sign-on**.

## NovaNET Offers . . .

- \* a built-in **curriculum design and management** program which allows instructors to develop their own curricula by reviewing, then selecting lessons from an extensive library of courseware.
- \* **record-keeping** functions which give teachers access to student performance data.
- \* a wide range of **communication utilities** including hundreds of discussion files on a wide range of subjects, private electronic mail and live inter-terminal communication with other system users and consultants.
- \* **educational software** for your children.
- \* lifelong learning opportunities for adults.
- \* national and local **bulletin boards**.
- \* educational **games**.



## NOVANET UTILIZATION BY MSAD #52

October 26, 1990

### OVERVIEW

NovaNET is a computer-based educational delivery system reaching into public schools, colleges, technical colleges, the private sector and the University of Maine system. Using satellite downlinks, Novanet provides both educational and communications services. With over 20,000 hours of instruction in over 100 subject areas ranging from elementary school to college level and beyond, NovaNET offer low-cost, high-quality computer-based education to all users.

### SYSTEM MODEL

10 terminals at Leavitt Area High School (520 students)  
2 terminals at the River Valley School (40 students)  
1 terminal at the Turner Learning Center (65 students)

- \* Learning Center (adult) students also use both the River Valley School and the 10 Leavitt Area High School terminals  
Saturday mornings and after school hours.

### SYSTEM UTILIZATION

Each school utilizes NovaNET in slightly difference ways. Instructors have a choice between packaged curricula or self-designed curricula from NovaNET's extensive library of courseware.

#### Leavitt Area High School

A total of 109 high school students -- 22% of the student population -- are required to participate in NovaNET lab activities as part of their math classes. Those activities range from reading comprehension lessons to exercise linked directly to topics covered in General Math; Algebra 1, Part 1; and General Math II. Students participating in the NovaNET lab as an addition to their math class receive an additional half credit (pass/fail) for successful completion of their assigned curriculum. The student must complete the entire program as the program is designed to reflect credit-by-objective.

In addition, students in several other math classes have or will have the option to utilize NovaNET lessons as support to their regular math studies. Those classes are: Informal Geometry, Geometry, Algebra I and Algebra II.

### River Valley School

Each of the school's 47 high school students is assigned a variety of tasks in various subject areas. Most commonly they are assigned reading comprehension activities, spelling, general math review, history/government (particularly the Constitution), and GED preparation.

While all students are encouraged and even at times cajoled to use the system, the amount of use by individual students varies considerably. This is due to employment schedules, attendance, and personal learning styles.

### Adult Education (Turner Learning Center)

Adult students utilize a wide range of NovaNET activities ranging from basic literacy skills to GED preparation to college-level studies in areas of personal interest.

Although all 65 adult students are logged on to NovaNET, actual usage varies from individual to individual. Some students spend as many as 10 to 15 hours per week on line, while others spend as little as an hour.

For a more complete discussion of adult usage, see "NovaNET: A Preliminary Evaluation," which is included in this packet.

### COSTS (excluding hardware)

1. NYNEX dataline  
\$432.83 per month x 12           \$ 5,194.00
  
2. NovaNET "ports"  
13 x \$75 per month x 12           11,700.00  
\$16,894.00
  
3. Cost per student (current usage): \$76

# MSAD#52 NovaNET Report 1989-90

prepared by  
Cathy Glaude  
Maine Computer  
Consortium,  
Maine Center for  
Educational Services  
July 9, 1990

## Goal

During the 1989-90 school year, MSAD#52 implemented NovaNET, a technology based program. Five educators and three different educational programs - high school mathematics, adult learning center, and alternative education - were affected by this implementation. The original program goal was to improve student self esteem and math performance. A University of Maine resource person was available during the implementation year to offer NovaNET technical support to educators. One week of training was provided for educators in the summer prior to implementation. Throughout the implementation year, the Maine Computer Consortium facilitated the six development meetings. These half day meetings were designed for educators to share their discoveries and concerns as well as solve problems concerning NovaNET use in their classroom. During the first implementation year, educators planned to become better acquainted with NovaNET options and investigate its use in their specific educational program.

## THE EVOLUTION...

*At the conclusion of the implementation year, NovaNET evolved into different uses at each of three programs. The use of NovaNET is still evolving at MSAD#52 as educators realize they have more to learn about the options available to them. At the conclusion of the first evaluation year, the use of NovaNET in the three educational programs was as follows:*

### The High School Program

The general mathematics students were the intended population for NovaNET use at the high school level. Students were scheduled to work on one of the six computer terminals for two 48 minute periods each week during, NovaNET time was taken from students' study hall times. NovaNET lessons were intended to supplement classroom math instruction. A sequence of math lessons was prepared by a university resource person and was given to math instructors in August. During the year computer lab monitors supervised the lab as students completed their NovaNET lessons. The two math teachers only visited the lab on their free periods or after school hours to check student progress, to give student assistance, or to prescribe lessons. At the end of this implementation year, four student populations with approximately 100 students were using NovaNET at the high school: the general math group, a group of geometry students, a revolving group of students completing a critical thinking lesson sequence, and a group of students completing short term lessons of interest such as history or algebra during their free time. Instructors discovered that general math students needed closer supervision and constant assistance from math instructors than was possible given the current NovaNET lab structure. Teachers expressed more satisfaction with students' algebra and geometry use with NovaNET. Only one of the two educators at the high school had used a computer with the classroom prior to this project.

The existing high school structure posed the greatest challenge to developing NovaNET use and "teaming" of teachers was more difficult to accomplish at this school. Yet, even with these obstacles, high school educators reported excitement with involvement in this process. One instructor reported it was "the best thing to happen to his classroom".

## The Alternative Education Program

A "Teacher of the Year" nomination and the addition of a new staff member to this program in November resulted in a slower start to NovaNET development in the alternative education program. Yet, by May the new instructor shared his pleasure with the direction of NovaNET use in his classroom. Since the classroom space was shared with the adult education program, there were often two NovaNET terminals available for student use. At the conclusion of the implementation year, the instructors had designed a "generic curriculum" with over 2,000 lessons ranging from French to auto mechanic. Alternative education students were assigned lessons by their instructors to match objectives that students were in the process of mastering. After students had completed these assigned lessons, they could choose any lessons of interest to complete. There was no formal schedule for student use of NovaNET terminals so student negotiated times on the computer as they needed it. The entire alternative education population of approximately 60 students were using NovaNET and instructors reported student enthusiasm and motivation to complete lessons remained high throughout the year. Math lessons posed the greatest difficulty for these students since math anxiety and reading problems often got in the students' way of successfully completing lessons. Instructors reported that math was best taught with a teacher. NovaNET supported the current structure of the alternative education program and offered another avenue for students as they worked on mastering their learning objectives. NovaNET lessons offered students additional practice in the form of tutorial, remediation or enrichment. Instructors reported NovaNET added another dimension to their teaching, yet it required more commitment on the teacher's part. Instructors had not used a computer for classroom instruction prior to using NovaNET.

NovaNET lessons supported the existing mastery objective structure of the alternative education program.

## The Adult Education Program

The adult learners were not one of the originally targeted populations for NovaNET use, yet the instructor was excited about its use with adult learners during this implementation year. He reported approximately 133 adults as well as about 20 graduate students used NovaNET. Every adult learner completed a sequence of critical thinking lessons specially designed by this instructor. The instructor also spent time matching alternative education learning objectives to NovaNET lessons since his diploma students were required to master these objectives. This instructor worked with alternative educators to share these results. The instructor reported that adults successfully used NovaNET lessons to prepare themselves for their test taking. The instructor was currently matching NovaNET lessons with specific items on the GED math test. Since space was shared with the alternative education program, adults used any available terminals during the day. Free terminals were also used in the afternoon and in the evenings at the high school lab. Adults work independently on the system and record lesson notes in notebook. Adults then referred to their notes during conferences with the instructors. The adult educator had a technical background prior to using NovaNET. He was able to solve many software and hardware problems as well as create his own lessons sequences. Writing is one area not used with NovaNET since the instructor feels adults need to work together to share and discuss their writing.

The adult educator reported a change in his role - from tutor of adult learning to facilitator. He feels NovaNET allowed him to shift as NovaNET has become the adult learners' tutor.

## Benefits:

- Shy or less motivated students perform well on NovaNET. They can work at their own pace in privacy without being concerned with making mistakes.
- Teachers like the management feature of NovaNET. They could easily see how students were doing on specific lessons, where they needed help, and how much time students spent on lessons.
- Student excitement and motivation to complete lessons remained fairly constant all year.
- High school teachers report that the grades of algebra students using NovaNET were higher after completing NovaNET lessons that corresponded to classwork.
- The critical thinking lesson sequence designed by the adult educator was valuable to all students in the three educational programs.
- The six teacher meetings during the implementation year were most productive and viewed by educators as a critical part of the development this project. These meetings provided educators with the opportunity to work together to solve problems and share information regarding NovaNET use.
- As the year progressed, teachers viewed themselves as a team. Collaboration, especially after the four month of implementation, was a development of this project. This was the first time educators from all three programs worked together. They referred to one another as "team members" and the high school educators reported that students even referred to them as a "team".
- As the year progressed, educators were concerned with sharing information and progress with others. They shared information at a Board meeting, with a Reading Specialist, with administrators, and made plans to continue and increase their communications with others.
- Educators really took charge of their own staff development. As concerns surfaced during the year, they planned ways to solve these problems. For example, when the high school educators decided they needed more time to learn from the adult educator, a day was scheduled. The group also outlined their goals for a summer staff development program.
- The university technical support was beneficial. Educators would like to see it offered on a regular scheduled (approximately six times a year) basis.

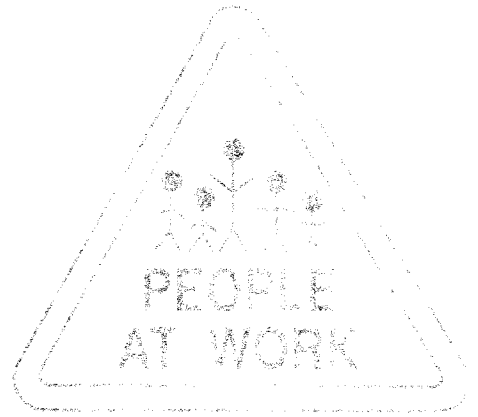
Recommendations on back page

## Concerns:

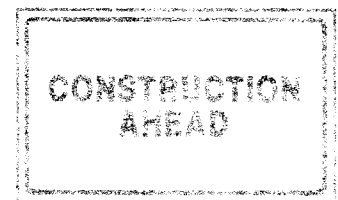
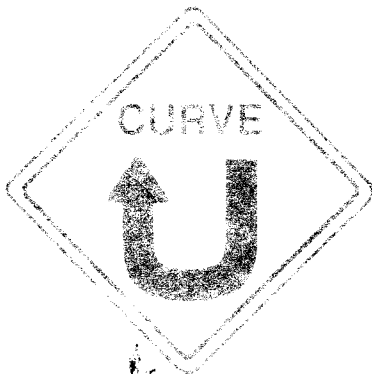
- High School educators are concerned about the lack of "connectedness" they feel with students working in the NovaNET lab. Lab monitors, rather than math teachers, are the ones with the best opportunity to assist students who are working on NovaNET lessons.
- Algebra students at the high school worked well on their own with NovaNET lessons. General math students were more easily frustrated, distracted, and need constant supervisions and assistance while completing NovaNET math lessons.
- Students and adults with lower math abilities experienced the most difficulties in completing NovaNET math lessons. Instructors believe these students have either math anxiety or reading problems that are obstacles to completing lessons.
- Teachers need more time to preview, select, and design NovaNET lesson sequences to match their curriculum. One instructor spent over 40 hours designing one lesson sequence. The bulk of lessons available to educators on NovaNET is overwhelming given the time required to manage the system.
- High school students expressed concern about how they were graded and evaluated on NovaNET lessons. Adults and alternative educators did not express this concern since students in their programs are more concerned with mastery of objectives rather than grades.
- Time continues to be a problem. Time for educators to preview, select, and manage student lessons and time for educators to continue to share discoveries and work as a team. Wading through NovaNET information takes a huge commitment on educators' parts.
- During the year, educators questioned if there were any alternatives to NovaNET. Yet, there was no time for educators to pursue this question. The quality of the software lessons was also questioned during the year but again there was little time for educators to preview other programs for comparison.
- Software problems and incompatibilities in hardware continued to create frustrations for both students and teachers during the year. Educators are keeping a list of these problems to discuss with the university support person.
- Educators are discovering that many of the lessons did not match their curriculum. Some of the "canned" curriculum sequences prepared for teachers by the university support person did not match the actual classroom sequences. Due to the large number of lessons available on NovaNET and the lack of an evaluation process available to teachers, they must spend a large amount of time reviewing and selecting lessons if they desire to customize lesson sequences to match their curriculum.
- Educators realized at the conclusion of the first year that they need to plan for an extensive evaluation of NovaNET's impact on student performance.

## Project RECOMMENDATIONS

- All educators recommend that this project be continued for another year.
- It was recommended that the high school program review the supervisions and support available for students as they are completing their lessons in the computer lab.
- NovaNET will be used primarily at the high school with algebra rather than general math students.
- Educators will spend staff development time this summer on NovaNET - previewing lessons, designing lesson sequences, planning a method for evaluating NovaNET progress in the coming year, and sharing information with others at MSAD#52.
- The university support person should continue to meet regularly with teachers.
- The development meetings where educators share discoveries, concerns, and problem solve need to continue in the second year.
- A method for collecting data on NovaNET's impact on student performance needs to be designed and implemented in the coming year.



# WORK IN PROGRESS: RESTRUCTURING IN TEN MAINE SCHOOLS





# MAINE STATE RESTRUCTURING PROGRAM

Ten schools, a steering committee, and the Maine Department of Education have comprised the Maine State Restructuring Program. The members of the steering committee are listed inside the back cover. Contact information for the schools and the department of education is provided below:

Freeport High School  
Holbrook Street  
Freeport, ME 04032  
207-865-4706  
Contact: Patricia Palmer

Scarborough High School  
Route 114 Gorham Road  
Scarborough, ME 04074  
207-883-4354  
Contact: Dru Sullivan

Gorham High School  
41 Morrill Avenue  
Gorham, ME 04038  
207-839-5004  
Contact: John Newlin

SeDoMoCha Middle School  
Harrison Avenue  
Dover-Foxcroft, ME 04426  
207-564-8376  
Contact: Dyan McCarthy-Clark

Kennebunk High School  
89 Fletcher Street  
Kennebunk, ME 04043  
207-985-1110  
Contact: Ruth Madden

Skowhegan Area Middle School  
Willow Street  
Skowhegan, ME 04976  
207-474-3330  
Contact: Elaine Miller

Messalonskee High School  
62 Oak Street  
Oakland, ME 04963  
207-465-7384  
Contact: Caroline Sturtevant

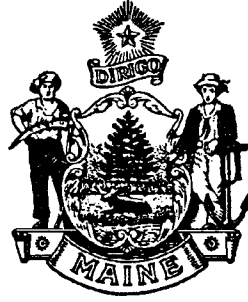
Windham Primary School  
404 Gray Road  
Windham, ME 04062  
207-892-1840  
Contact: Donna Stephen

Narragansett Elementary School  
284 Main Street  
Gorham, ME 04038  
207-839-5017  
Contact: Cynthia O'Shea

York Elementary School  
124 York Street  
York, ME 03909  
207-363-4870  
Contact: Jane Stephenson

Maine State Department of Education  
State House Station #23  
Augusta, ME 04333  
207-289-5112  
Contact: Richard H. Card

WORK IN PROGRESS:  
RESTRUCTURING IN TEN MAINE SCHOOLS



**John R. McKernan Jr.**  
*Governor*

**Eve M. Bither**  
*Commissioner*

**Richard H. Card**  
*Deputy Commissioner*

In 1987, under the direction of Commissioner Eve M. Bither, the State of Maine took a leadership role as one of only five states in the nation to encourage schools to make the fundamental organizational changes necessary to ensure that all children are successful in school. Acting as a catalyst for educational reform, Maine's Department of Education provided funds and networking opportunities through its Innovative Education Grant Program for the ten schools described in this publication. For further information about this program contact: Dr. Richard H. Card, Deputy Commissioner at (207) 289-5112.

The Maine Department of Education ensures equal employment, equal educational opportunities and affirmative action regardless of race, sex, color, national origin, religion, marital status, age or handicap.

Opinions in **Work in Progress: Restructuring in Ten Maine Schools** do not necessarily reflect the official policies of the Maine Department of Education.

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WORK IN PROGRESS:  
RESTRUCTURING IN TEN MAINE SCHOOLS .

Prepared for the Maine Department of Education  
by Pat L. Cox and Jane deFrees  
The Regional Laboratory for Educational Improvement  
of the Northeast and Islands

# TABLE OF CONTENTS

Contact Information for the Maine State Restructuring Program .....	inside front cover
A Short History of the Maine State Restructuring Program .....	after the title page
Introduction .....	1
Restructuring at the Primary School Level .....	3
Windham Primary School .....	4
York Elementary School .....	6
Narragansett Elementary School .....	8
Restructuring at the Middle School Level .....	11
SeDoMoCha Middle School .....	12
Skowhegan Area Middle School .....	14
Restructuring at the High School Level .....	17
Freeport High School .....	18
Gorham High School .....	20
Kennebunk High School .....	22
Messalonskee High School .....	24
Scarborough High School .....	26
What Have We Learned So Far? .....	29
Where Do We Go From Here? .....	37
Maine State Restructuring Program Steering Committee .....	inside back cover
Acknowledgements .....	inside back cover

# A SHORT HISTORY OF THE MAINE STATE RESTRUCTURING PROGRAM

In October 1987, the Maine Department of Education initiated the Restructuring Program by inviting all schools in the state to send teams to a meeting on restructuring. Teams representing 135 districts attended the meeting, where participants discussed critical components of restructuring and were invited to apply for state restructuring grants. Schools interested in exploring restructuring further were asked to send letters by December 1987 indicating the support of the school committee, the superintendent, the principal and 75% of the building faculty. In early 1988 the state department sponsored a meeting for the 35 schools that had submitted letters; at that meeting consultants from Synectics, Inc., provided assistance in vision building. Soon after, the department of education issued a request for proposals that asked applicant schools to:

- develop a shared vision;
- describe the process of planning the proposal;
- detail an implementation plan;
- document their capability to undertake the plan; and
- have their proposal reviewed and approved by 75% of the faculty, the principal, the school committee, and the superintendent.

Nineteen schools submitted proposals in March 1988. The Maine State Restructuring Program Steering Committee — comprised of representatives from the department of education, educator associations, higher education, and assistance organizations — reviewed the grant applications and interviewed teams from 11 schools.

Ten grants were awarded during the Summer of 1988: three schools were awarded \$50,000 each; seven received \$10,000 each. The grants were renewable yearly for three years; each reapplication included full faculty review of progress to date. In addition to financial assistance, the ten schools have received technical support from the department of education, the opportunity to network with other schools, and structured time to reflect on their experiences. While this particular program formally ends in Summer 1991, the school staffs see their work as ongoing. For its part, the department of education is committed to supporting learning-centered restructuring efforts statewide.

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# INTRODUCTION

This booklet reports on “work in progress” at ten Maine schools that are wrestling with fundamental questions about the purpose, content, and organization of schooling, including:

- What does it mean to be a successful learner?
- What must we do to ensure successful learning for ALL students?
- How will we know when students are learning successfully?

The ways of answering these questions are as diverse as the schools and the communities of which they are a part, yet the stories of these ten schools suggest some common themes. The people in these schools have found that they are having similar experiences and insights. Some of these insights are reflected in the margins of this text.

**Successful Learning for ALL Students.** The school staffs and others are working from the premise that current forms of schooling do not meet the needs of our changed society, in which every child must both understand the basics and develop higher order thinking skills, have both breadth and depth of knowledge, and acquire both the skills of self-management and those of working with others. For these ten schools, restructuring means fundamental changes in the way their communities and staffs think about education and how teaching and learning occur in schools.

**What Must We Do?** The visions created by the ten schools include educating all students, not just certain groups; raising and clarifying expectations; personalizing teaching and learning; and applying research on teaching, learning, and child development to actual classroom practice. Realizing these visions means organizing the doing and learning of adults to foster the learning and doing of youngsters.

Organizing around student learning has implications not just for individual classrooms and the schools, but also for the systems in which the schools are situated. Elementary schools, middle schools, and high schools face different challenges, yet each has much to learn from the others. Moreover, changes at the elementary level affect middle schools; middle school changes affect high schools; and the reverse is true as well. Changes at every level affect relationships with parents, communities, and a wider resource network, including institutions of higher education, the state department of education, and others.

**How Will We Know?** As the ten schools and others work to “invent school,” they talk about school as “a community of self-correcting scholars” and “a center of inquiry” for all participants. Rather than just relying on standardized test content, all the schools are developing criteria for student learning outcomes that focus on what

*Making school work for all kids is a new idea. It is often talked about but rarely done.*

*Restructuring involves changing our beliefs about the way school is “supposed to be.”*

*Once upon a time someone decided that a child’s performance could be expressed as A-B-C-D-E or F; now we need more meaningful ways to know how a child is doing.*

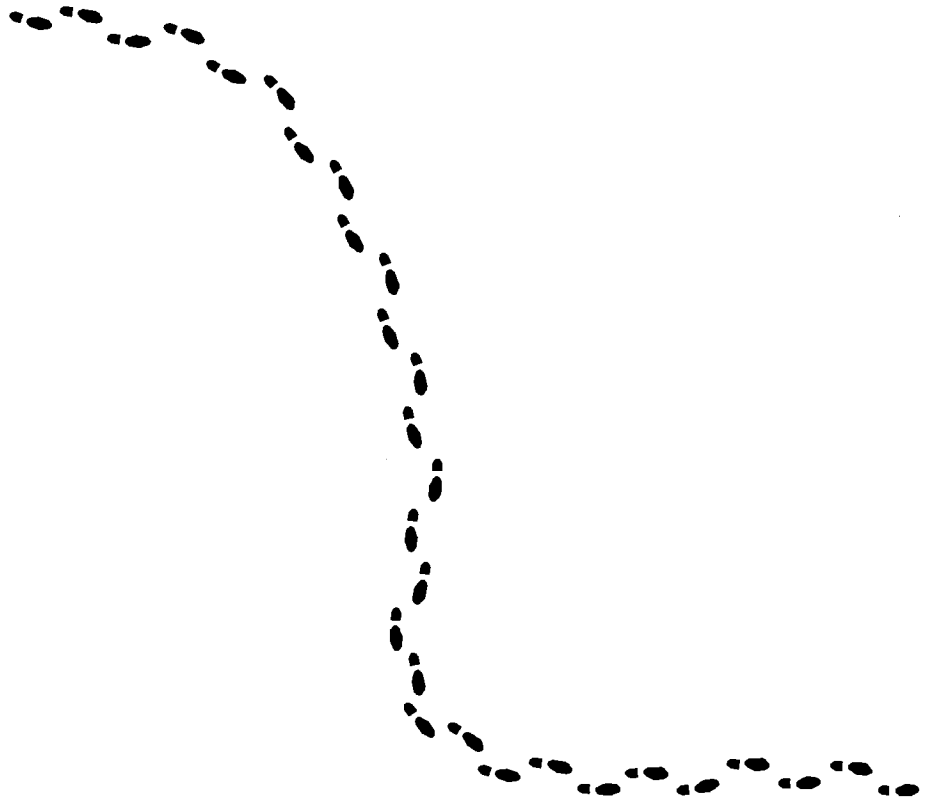
young people should know and be able to do when they complete their schooling.

**The Individual Journeys of Ten Maine Schools.** In the next pages, we profile each school with a paragraph or two of description, a flow chart that traces some of the critical points in its “journey” into restructuring, and a summary of important happenings that is organized around five questions:

- What’s different for students?
- What’s different about teaching and learning?
- What’s different about the organization and operation of the school?
- What connections are being built
  - within the district?
  - with parents and community?
  - with assistance resources such as universities?
- What questions are being asked?

The ten schools described in this booklet have participated in the Maine State Restructuring Program, a department of education-sponsored initiative that has provided funding to undergird their work. However, money alone does not make the difference here; what does is the shared vision developed by each school and its community — along with the shared will to see it through. You will find in these pages few easy answers; rather they raise essential questions and describe some significant steps being taken by the schools. Each school envisioning the future must embark on its own journey. As the Chinese sage would counsel, it begins with a single step.

*Vision +  
will + \$\$  
+ a sense  
of humor  
are essential  
supplies for  
the long  
haul.*



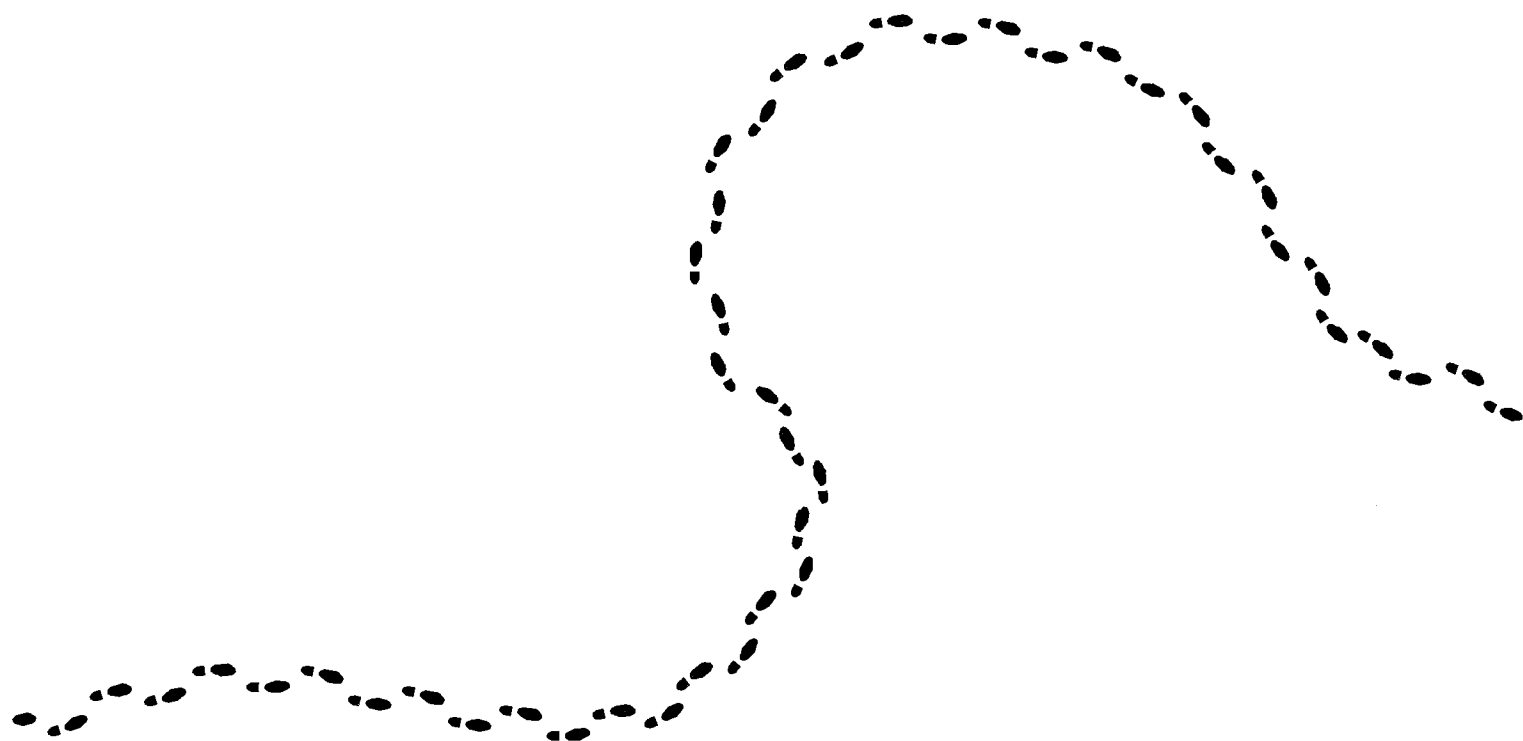


# RESTRUCTURING AT THE PRIMARY SCHOOL LEVEL

For elementary schools, restructuring involves concentrating on cognitive and meta-cognitive development. This means not only bringing more rigor and scholarship to the lower grades but also helping students to reflect on their learning. This does not mean abandoning the elementary teacher's traditional role as nurturer of socio-emotional development, but balancing the two. Principals and teachers are finding ways to stimulate the learning of all children in ways appropriate to their different styles and developmental ages — to challenge each to his or her maximum potential, rather than settle for labels and lower expectations. As one principal said, "Don't kid yourself that there is no tracking in elementary school. We're trying to undo that."

The stories of the three primary schools that have participated in the Maine State Restructuring Program appear on the following pages. The schools are:

- Windham Primary in Windham
- York Elementary in York
- Narragansett Elementary in Gorham

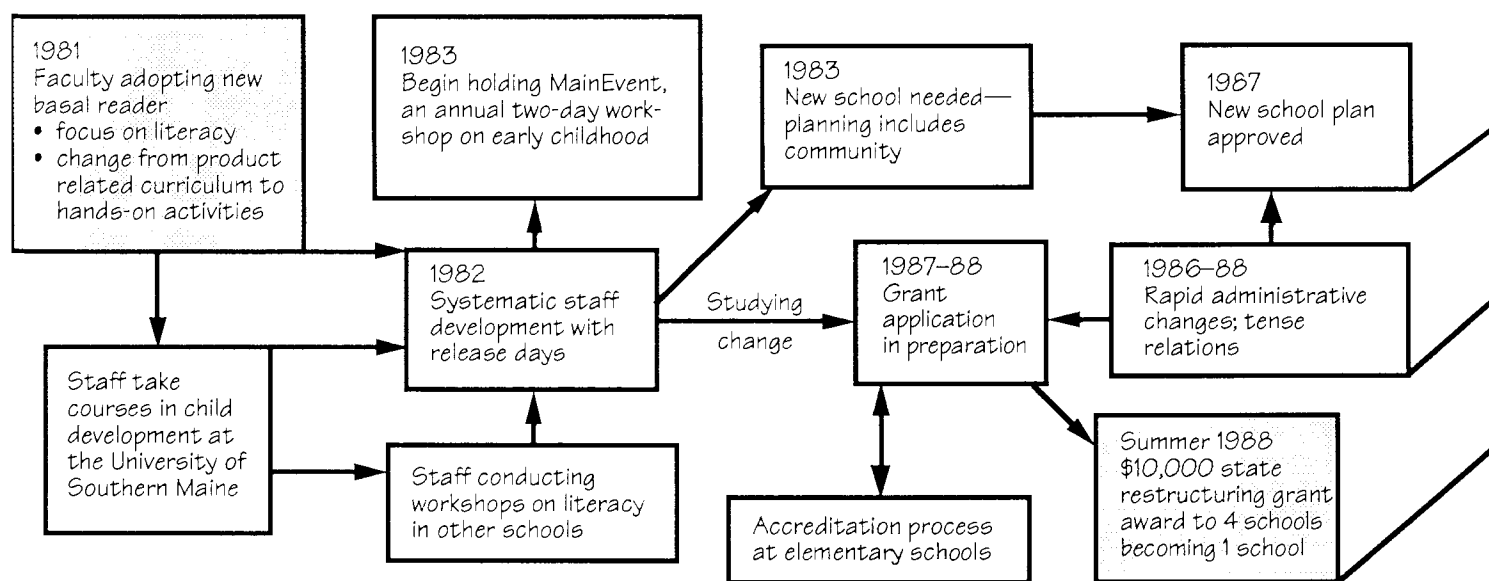


# WINDHAM PRIMARY SCHOOL: "Giving power back to kids, teachers, and parents"

The community of Windham, located about ten miles west of Portland, currently serves approximately 2500 students in grades K-12. A growing population has increased the school enrollment each year. For eight years, the Windham School Department has been examining primary level education to better meet the needs of all children. When the Windham Primary School opened in the fall of 1990, all 800 K-3 students were together in a new building for the first time, moving from

four old, overcrowded schools. Planning for the new building provided a catalyst for rethinking the way education was being delivered to young students. "We have been accustomed to giving the answers, so it's a real change to be on the other end, to ask, 'what are we going to do?' We want always to be in the position of asking questions — restructuring is a way of thinking, not an event or a happening."

## WINDHAM PRIMARY SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT WINDHAM PRIMARY SCHOOL

### 1. WHAT'S DIFFERENT FOR STUDENTS?

All kids:

- see themselves as competent successful learners who are responsible for themselves
- are together in the classroom, with teachers as facilitators
- move on as they learn and develop; they are not limited by grade level or grouping
- work in a variety of groupings and with different teachers
- engage in active learning

### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- provide flexible options to meet individual needs
- consider students' learning styles and developmental levels in grouping

Teachers (continued):

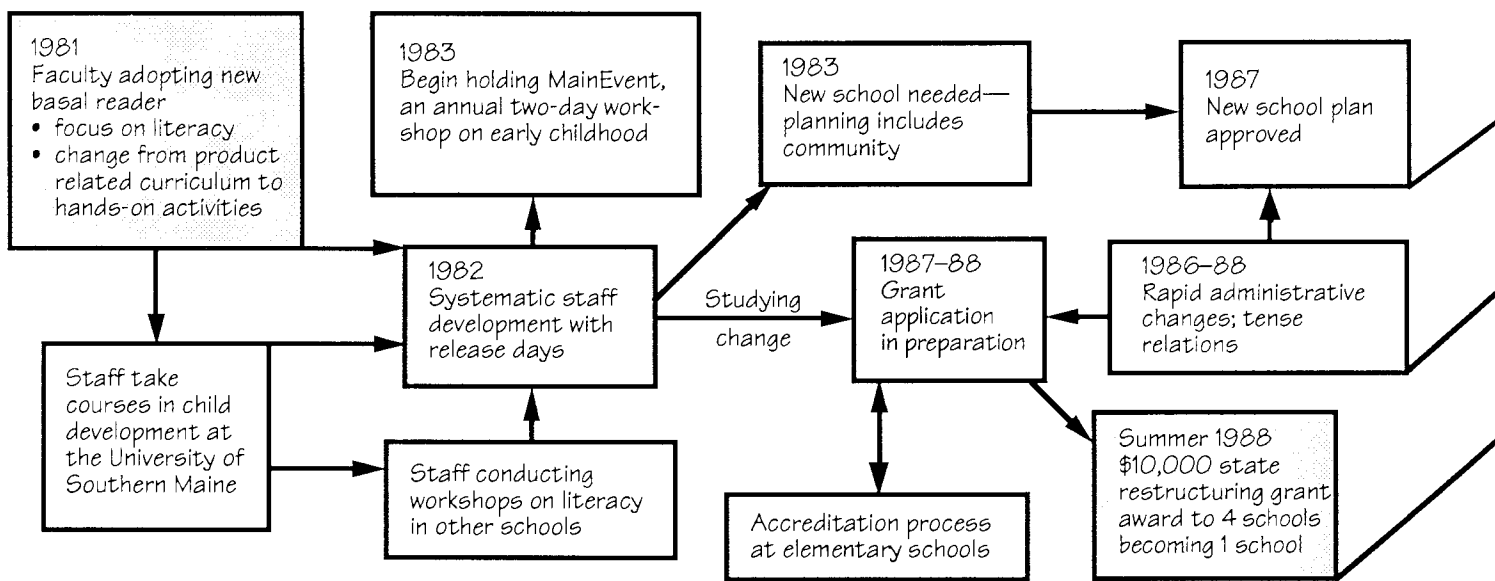
- use multi-age, multi-ability groupings with special education students mainstreamed when appropriate
- use hands-on instructional strategies
- integrate learning by using a writing process theme approach that is literature-based
- use alternative assessment strategies, including structured teacher observation of all students and portfolios
- assess a student's social, emotional and physical growth as well as academic improvement
- have special services integrated into the classroom when appropriate

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## WINDHAM PRIMARY SCHOOL'S JOURNEY .....



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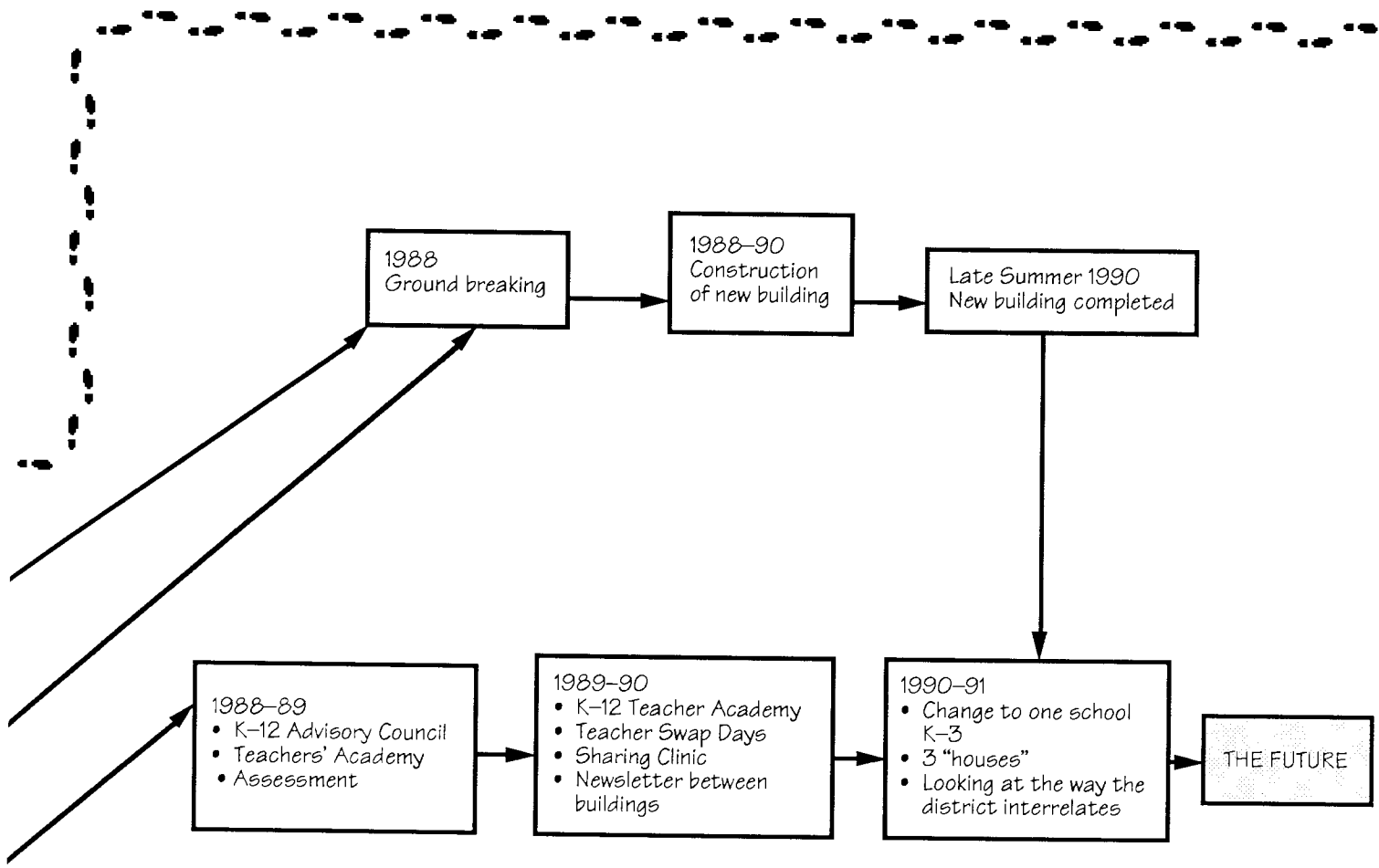
### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

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- consider students' learning styles and developmental levels in grouping

Teachers (continued):

- use multi-age, multi-ability groupings with special education students mainstreamed when appropriate
- use hands-on instructional strategies
- integrate learning by using a writing process theme approach that is literature-based
- use alternative assessment strategies, including structured teacher observation of all students and portfolios
- assess a student's social, emotional and physical growth as well as academic improvement
- have special services integrated into the classroom when appropriate



### 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

- The school is organized to provide:
- a small school atmosphere in a large building by dividing the student population and teachers into three "houses"
  - one early release day each week for students so that there can be staff development for faculty
  - pertinent research and resources to all staff collected by a teacher-researcher who serves in that role two days a week
  - flexibility for teachers to schedule within their houses
  - advancement policies to place students according to their needs

- With parents and community:
- K-3 Parent Council has been honored as a national model
- With assistance resources:
- staff from the University of Southern Maine worked with school faculty to design a developmental approach to early childhood education
  - university consultant worked with the school during restructuring process

### 4. WHAT CONNECTIONS ARE BEING BUILT?

- Within the school district:
- K-12 Advisory Council facilitates systemwide involvement with restructuring
  - swap day with teachers in upper grades
  - annual K-12 Teachers' Academy in the summer serves to draw the school system together

### 5. WHAT QUESTIONS ARE BEING ASKED?

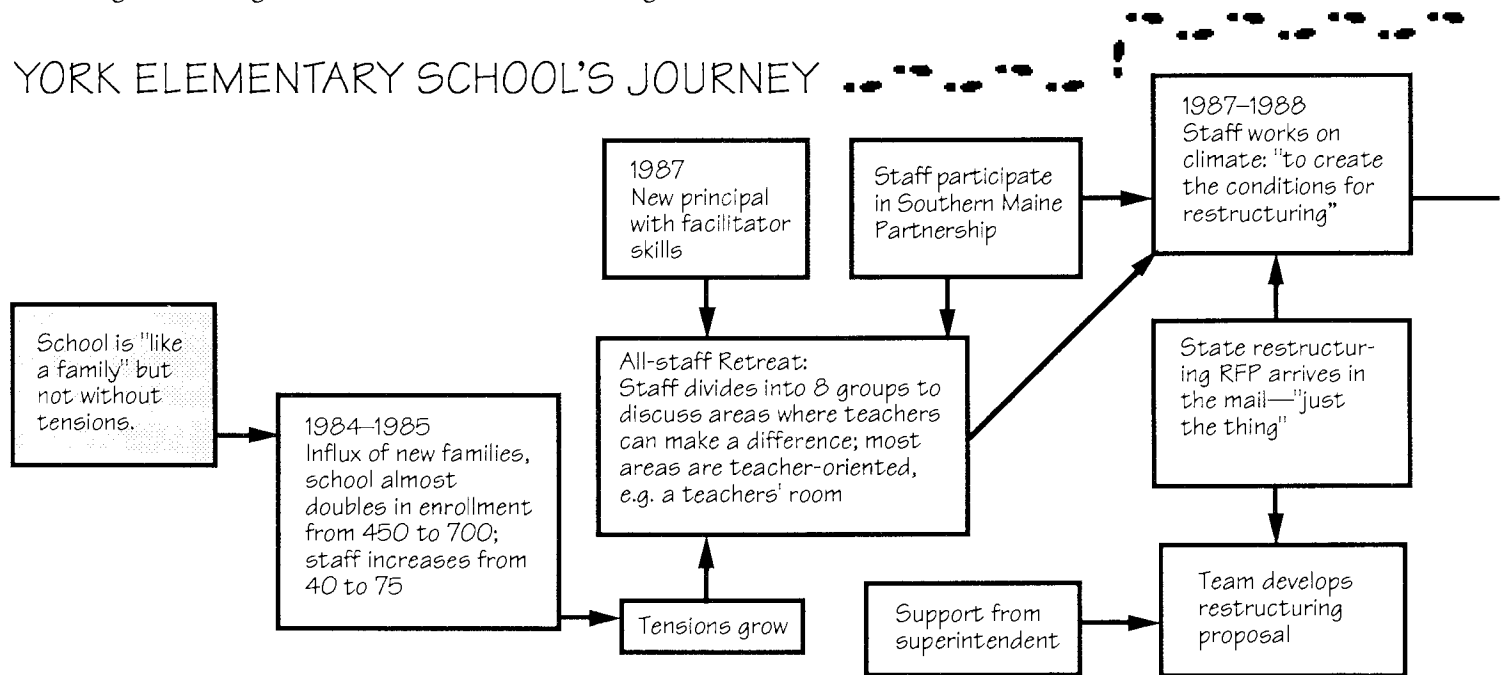
- How do we maintain a small school atmosphere in a large school?
- How do we make sure that the change process is healthy for all children?
- How do we refocus and refine assessment and record-keeping?
- What are the links between restructuring and staff development and how do they tie into certification?

# YORK ELEMENTARY SCHOOL: "The talent and expertise have always been there; now it's being tapped"

York Elementary School is one of three schools in a district located in a popular coastal community in southern Maine. In summer, this area swells with tourists, and in the past several years it has become a haven for young families from New Hampshire and Massachusetts who have come north to find more affordable housing. As a result, York Elementary nearly doubled in size and now enrolls 700 students K-4. The staff nearly doubled in size as well, from 40 to 75 people. The principal and teachers had already initiated efforts to improve basic working conditions for staff and were ready to move on to teaching and learning issues when the state's restructuring

RFP was issued. Awarded a \$10,000 grant, York Elementary has emphasized a process that "focuses on people, their attitudes, feelings, and behaviors, in order to create a climate in which positive change and growth are natural consequences." Among the changes that have been made are the "family" groups that allow adults and children alike to feel at home in a large school. The staff has also attended to the impact of change on both children and adults, realizing that even positive shifts—for example, the move to the new school building now under construction—are stressful.

## YORK ELEMENTARY SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT YORK ELEMENTARY SCHOOL

### 1. WHAT'S DIFFERENT FOR STUDENTS?

All kids:

- can participate in a proactive student council at the school level
- are encouraged to make decisions about changes that affect them
- may belong to a family group
- experience a more integrated curriculum
- are involved in a wellness program allowing them to make better choices about snacks

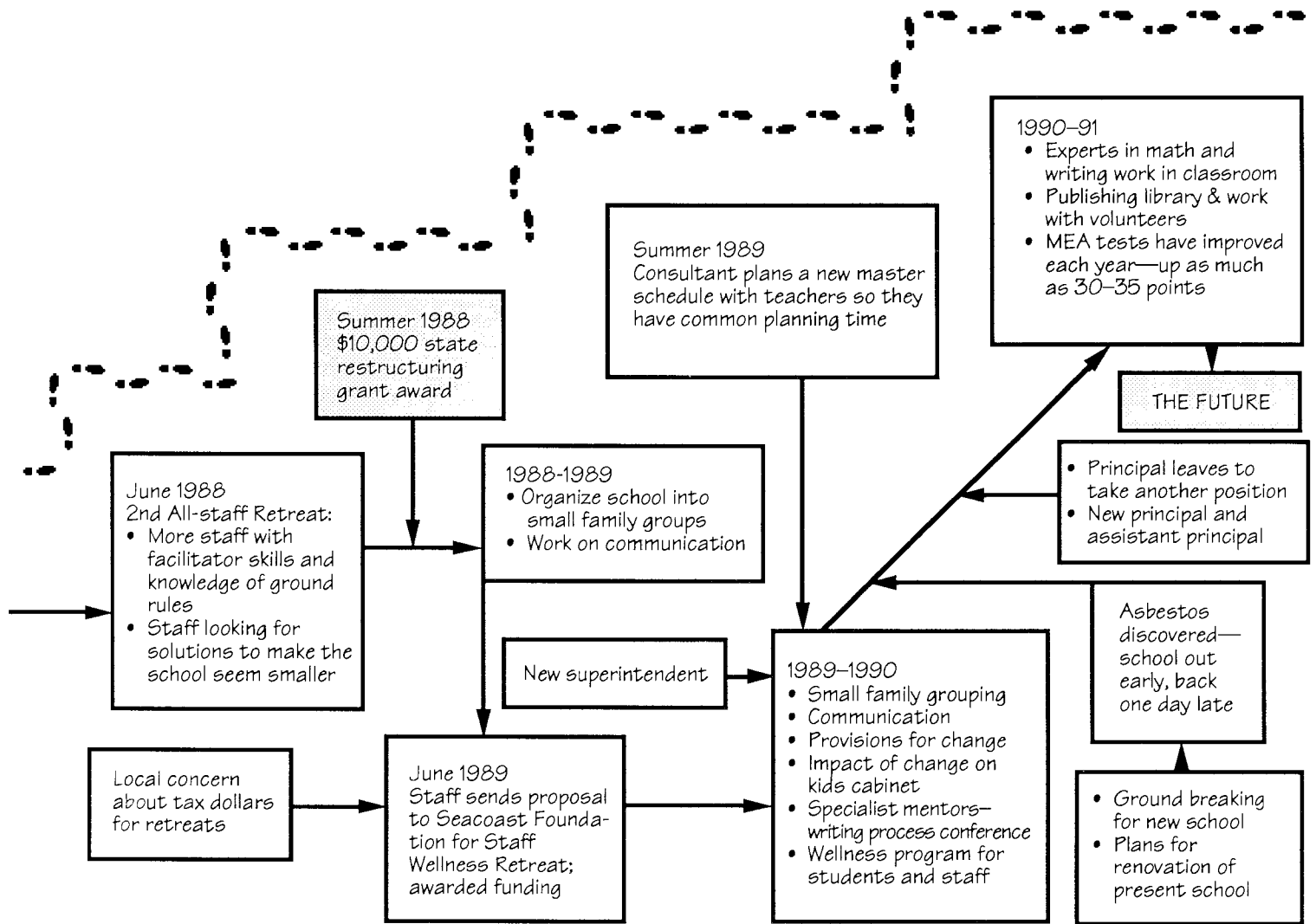
### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- work on writing, math, and publishing with mentors in their classrooms

Teachers (continued):

- work in different family groupings of two or more teachers and their students: these include four first grade teachers and 80 students; four multigrade teachers and 80 students (two combination 1-2 classes and two combination 3-4 classes); one transition teacher, one first grade teacher and two second grade teachers who work with 80 students; and two third grade teachers who team with 40 students
- have explicitly worked on wellness issues, having acknowledged the stress that change brings
- are focusing on critical thinking skills across the curriculum
- have acquired the knowledge and skills for teamwork, e.g., decision making, communication, and facilitation skills
- who are specialists go to the students in their learning environments to provide services and work with all students



### 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- restructuring in five strands: empowerment, communication, change, wellness, and small family groupings
- an extended workday for restructuring committee teachers, who have coordinated the effort overall
- grade level teams, with rotating chairs for each grade level; grade levels meet monthly about curriculum
- six teams of staff to discuss organization-wide issues, each with a coordinator; coordinators meet twice per month with principal
- common planning time for family groupings through a master schedule developed by teachers with a consultant
- a climate that encourages staff to take initiative, e.g., the staff proposal to the Seacoast Foundation of New Hampshire, which funded a retreat on wellness
- ways to sustain the changes made in restructuring through hiring process, new teacher orientation, and staff development

### 4. WHAT CONNECTIONS ARE BEING BUILT?

Within the school district:

- as yet there are no connections with the middle school (5-6) and the junior high (7-8), although the York Middle School has begun a team/family approach to teaching, separate from the elementary school's restructuring

With parents and community:

- the staff has presented their work to the school board
- the school board is invited to an open house at the school
- active parent volunteers have rebuilt four playground areas
- the school is working to revitalize "Friends of Y.E.S."

With assistance resources:

- in-classroom staff development with specialist mentors
- active member of the Southern Maine Partnership, especially the assessment, K-8, and math strands

### 5. WHAT QUESTIONS ARE BEING ASKED?

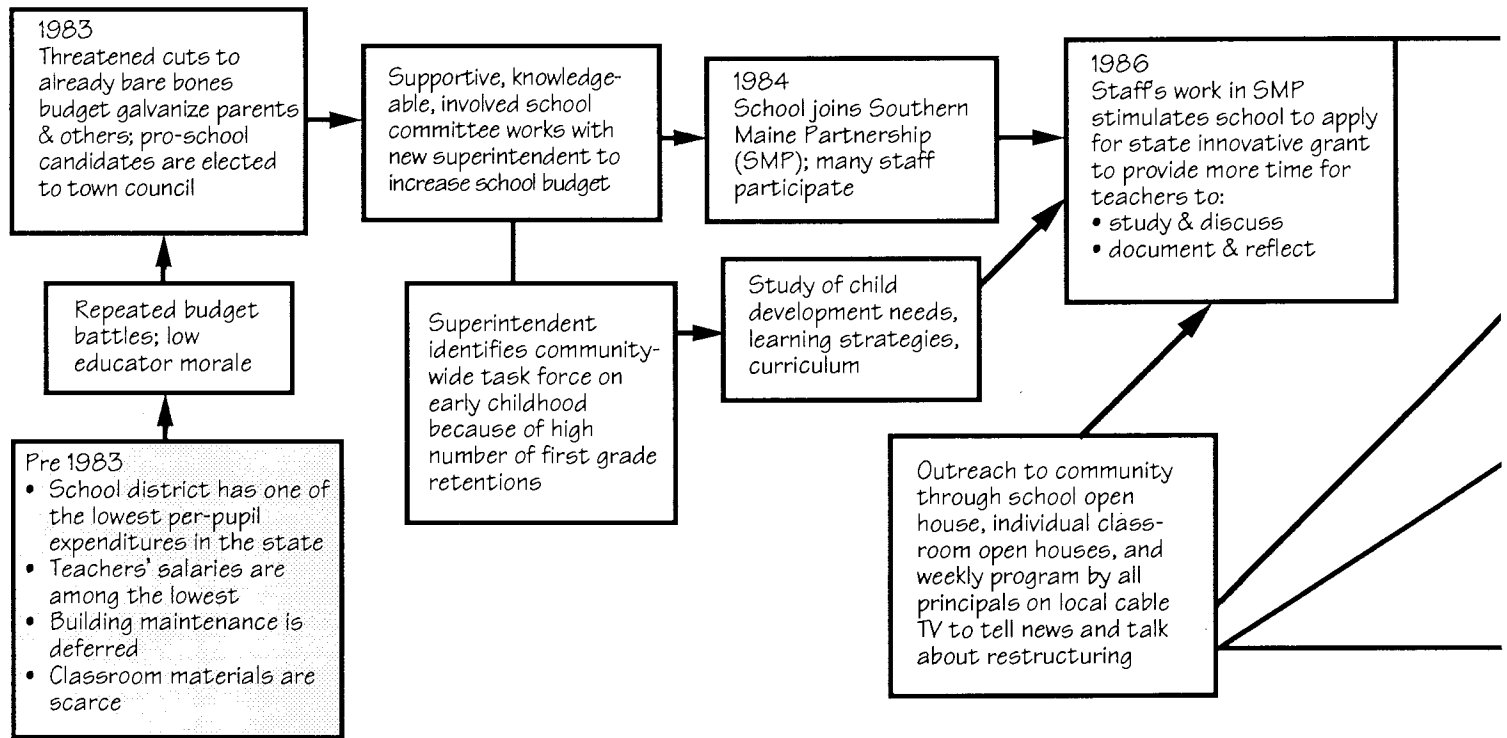
- How are we going to reach out to the community?
- How do we foster communication among the schools in the district without imposing values?

# NARRAGANSETT ELEMENTARY SCHOOL: "Becoming a center of inquiry"

Narragansett Elementary School is located in Gorham, on the outskirts of Portland, Maine's largest city. It is one of six schools in a K-12 school district serving about 2000 students. The population in Gorham is growing rapidly. Until 1990, Narragansett had 580 students enrolled in grades K-3. The formation of a Kindergarten Center in another building in 1990 reduced the number of students at the school to 430, grades 1-3. Narragansett is one of two schools in the district receiving state restructuring grant funds, the other being Gorham High School. The school district has a long history of school improvement efforts. Gorham is also the location of the University of Southern Maine (USM), which has a strong education program. Narragansett has found the USM-sponsored Southern Maine

Partnership, a network of schools engaged in questioning their practices, to be an invaluable vehicle for inquiry and exchange of ideas. In the same spirit that businesses fund R&D to keep their organizations at the cutting edge, Narragansett has used some of its restructuring grant to fund a position devoted to connecting the staff with research: "If we're going to be a center of inquiry, we have to go, think, do, and have access to information — and that takes money." At the same time, the Narragansett staff is acting on the realization that, to continue change over the long haul means that there must be a "community of leaders," with leaders coming forward as needed and then moving back to let others lead: "Nothing meaningful happens if only one person carries it."

## NARRAGANSETT ELEMENTARY SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT NARRAGANSETT ELEMENTARY SCHOOL

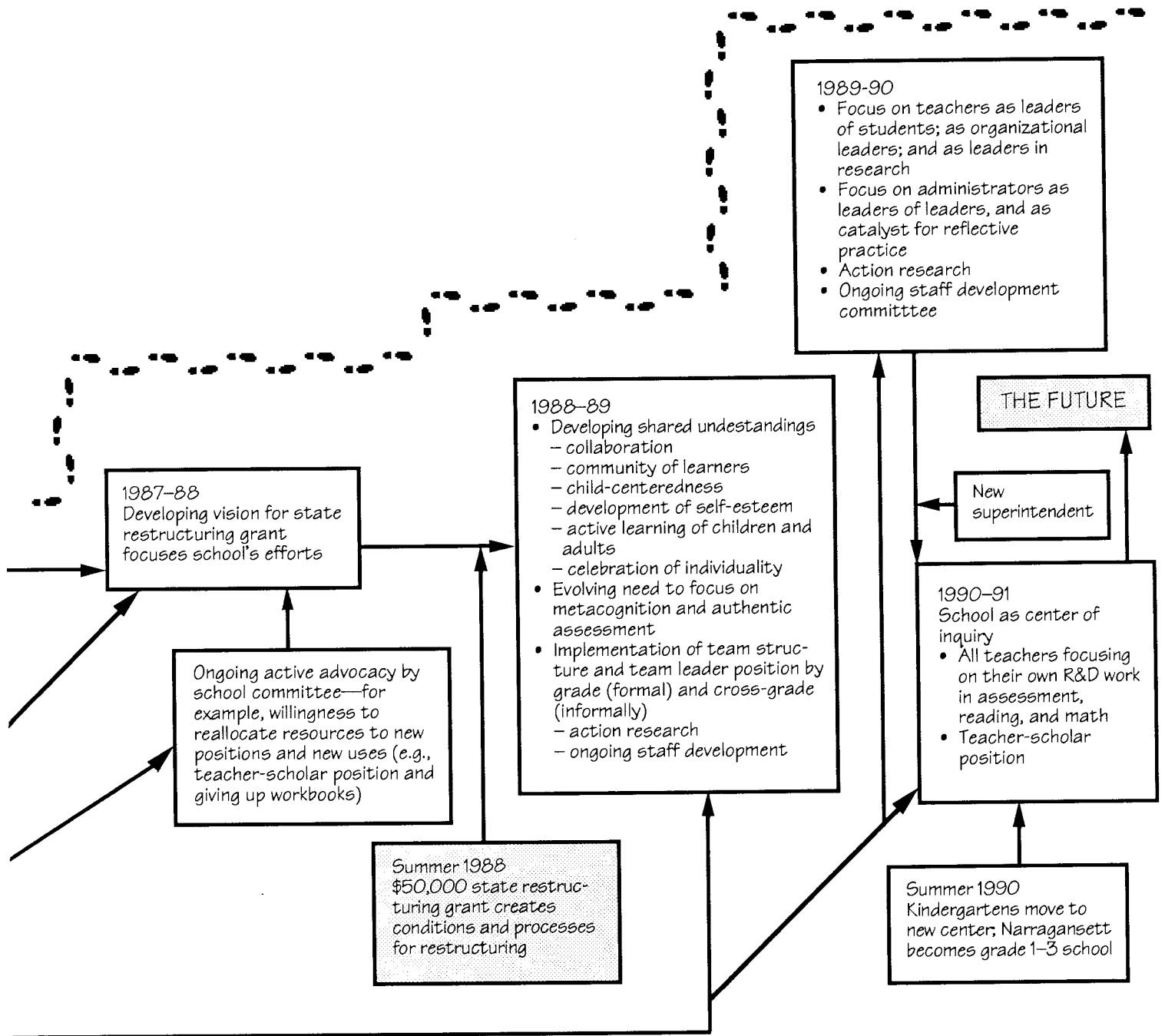
### 1. WHAT'S DIFFERENT FOR STUDENTS?

All kids:

- have an opportunity for success as active learners
- learn in variety of ways with a variety of materials
- are appreciated for their developmental stages and differences

All kids (continued):

- feel safe and successful in school
- see inquiry being respected and modeled
- have choices and involvement in the learning process
- are empowered with skills and treated with dignity
- are taught to think about, talk about, and assess their own learning process



## 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

### Teachers:

- are reflective practitioners modeling inquiry
- have as a key question "how is this child smart?"
- trust one another so all can succeed in his/her own style of teaching
- have the opportunity to try new programs and practices
- engage in cross-grade-level teaching
- team both within and across grade levels

### Teachers (continued):

- have the opportunity to stay with same students for two years
- develop curriculum using children's prior knowledge and curiosity
- have the opportunity to study and to conduct research projects
- use more child-centered assessment approaches
- are working with a district technology specialist to develop a cumulative portfolio assessment system K-12 that uses multiple media (video, document scanners, audio recorders) to record student progress



# WHAT'S BEEN HAPPENING AT NARRAGANSETT ELEMENTARY SCHOOL (continued)

## 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- team leader positions for teachers
- time for teachers to work with and observe colleagues and children at all grade levels
- professional development for all faculty, through which staff learnings have led to a “common language” in which to discuss education
- services to students in the classroom rather than in separate programs, e.g., students with disabilities are mainstreamed
- paraprofessional help in every classroom
- clerical assistance to dignify student work through “publishing” and other preparation of materials and to allow teachers more time to listen to children
- the opportunity for the principal to make facilitation of change an ongoing part of her role
- the position of teacher-scholar, which funds one staff member fulltime for a year to engage in intensive study and to assist colleagues in gathering information, developing and sharing research

## 4. WHAT CONNECTIONS ARE BEING BUILT?

Within the school district:

- working with the computer coordinator at the junior high to develop multi-media assessment portfolio
- strong support from superintendent
- the high school is involved in its own restructuring project
- the other primary school in the district is creating its own restructuring vision

With parents and community:

- parents work with teachers to place students in the appropriate learning settings
- parent volunteers are active in the school
- community television network features weekly reports from principals and scenes at the schools

With assistance resources:

- membership in Southern Maine Partnership with the University of Southern Maine “taught us to think and not to be complacent”
- networking with other schools engaged in restructuring

## 5. WHAT QUESTIONS ARE BEING ASKED?

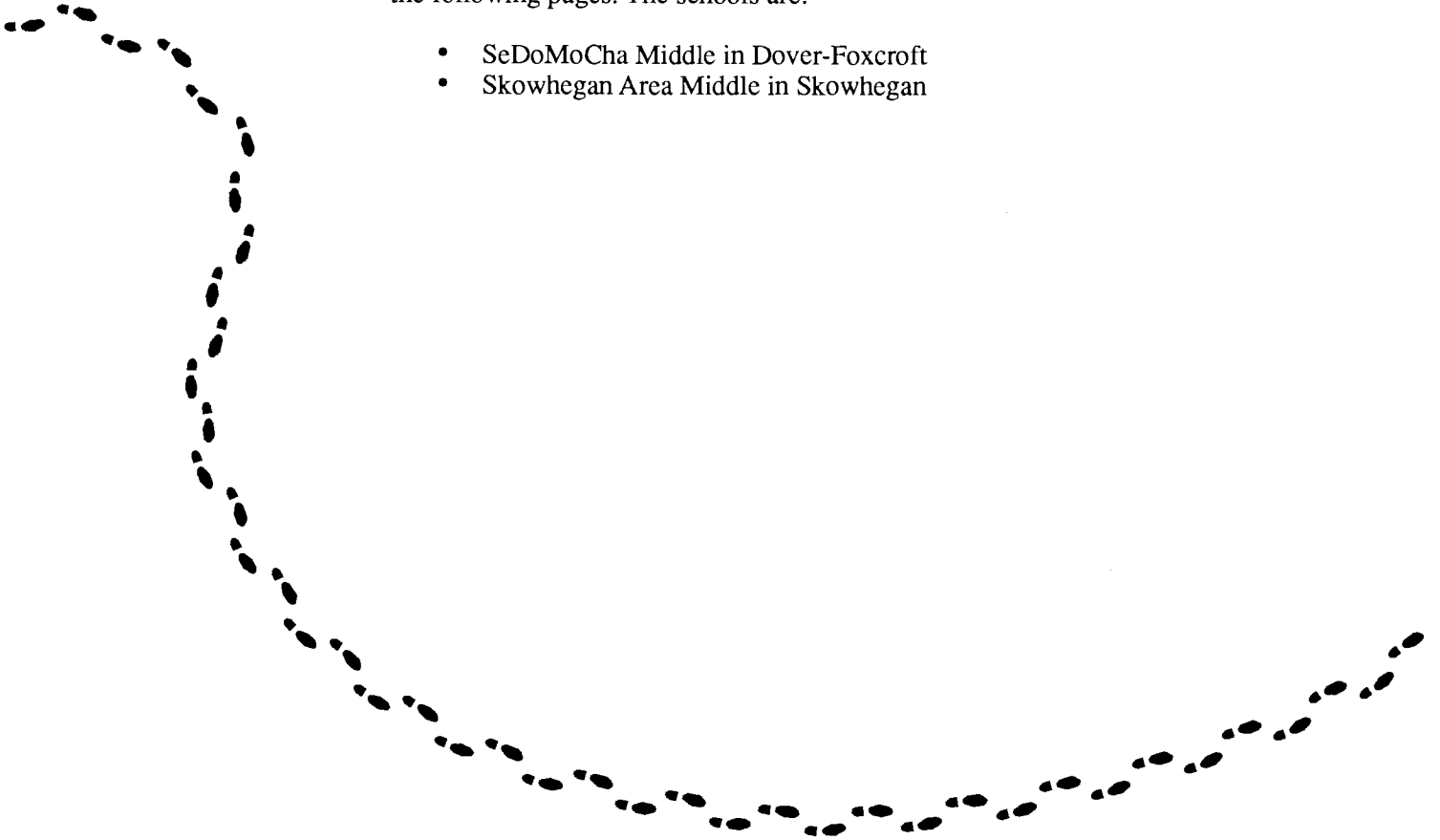
- How does a restructuring school link with other schools in the same district?
- How does one share a changing school culture to keep the restructuring going?
- How does one find the funding from the local school budget to continue the initiatives?
- Looking into metacognition: how do kids perceive themselves and their learnings and what strategies do we give them about how they think?
- How do we know what is important to teach and how do we assess that?

# RESTRUCTURING AT THE MIDDLE SCHOOL LEVEL

Middle school means more than a school that serves students in the middle grades. The term connotes a philosophy and organization of education very different from the junior high school: rather than being a replica of the senior high school, a middle school strives to balance the traditional secondary school concentration on subject matter with a focus on the developmental needs of the young adolescent. Today, schools that serve pre- and early adolescents have a “leg up” on restructuring because the middle school movement has provided a research-based foundation for the transformation of junior highs into places that truly are the middle ground between the student-focused elementary schools and the subject-focused secondary schools.

The stories of the two middle schools that have participated in the Maine State Restructuring Program appear on the following pages. The schools are:

- SeDoMoCha Middle in Dover-Foxcroft
- Skowhegan Area Middle in Skowhegan

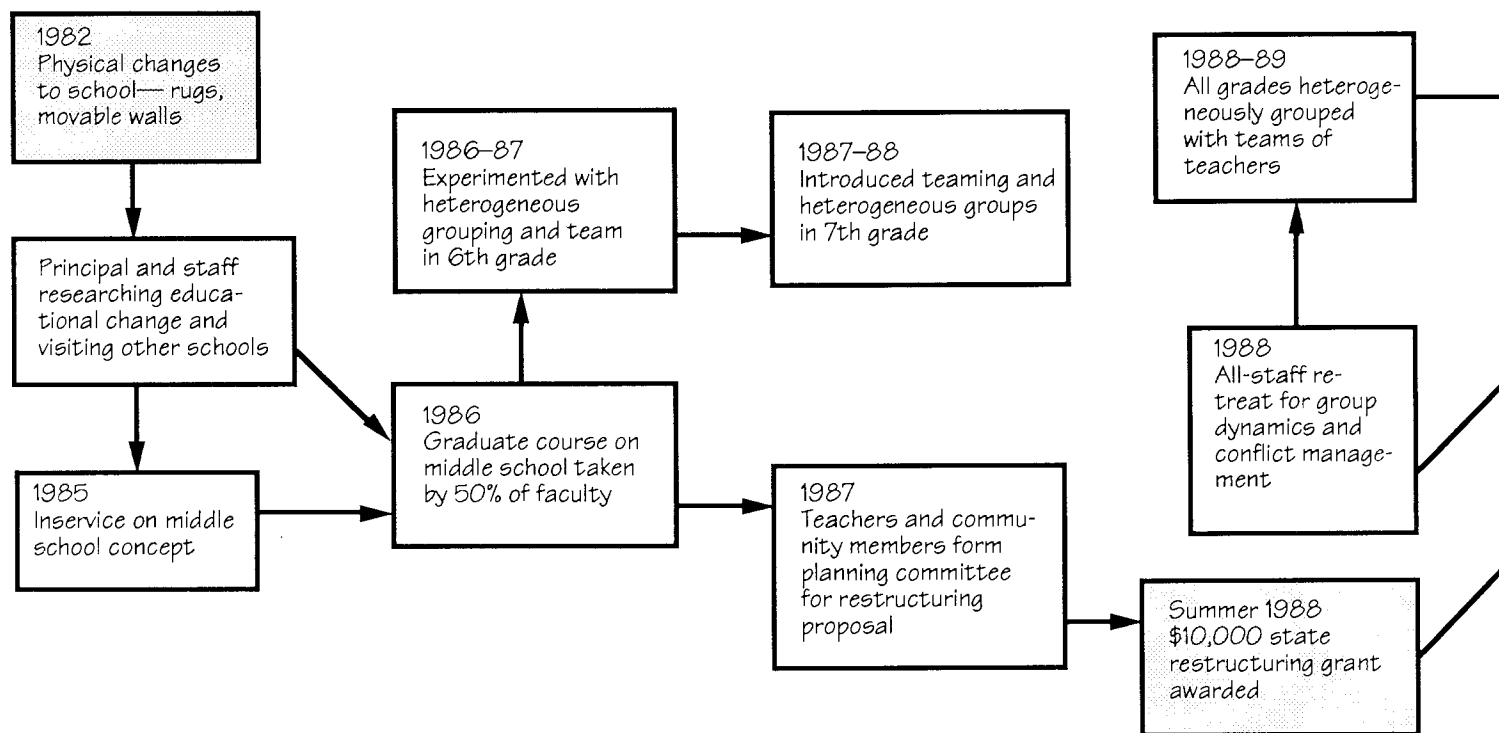


# SEDOMOCHA MIDDLE SCHOOL: "Everybody is somebody"

SeDoMoCha Middle School is located in Dover-Foxcroft, a rural community set in rolling hills 37 miles northwest of Bangor. SeDoMoCha serves 325 students in grades 6–8 from the towns of Sebec, Dover, Monson and Charleston. It is part of a rural K–8 school district with four elementary schools. Students attend a local private academy for high school. The communities

are tightly knit: people choose to live in the area and stay there. They are supportive of their schools, but cautious about expenditures. The staff is extremely stable: for example, the principal has been at the school for fifteen years, starting as assistant principal and becoming building administrator in 1982. Faculty members said that the state restructuring grant "has allowed us to dream."

## SEDOMOCHA MIDDLE SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT SEDOMOCHA MIDDLE SCHOOL

### 1. WHAT'S DIFFERENT FOR STUDENTS?

All kids:

- have a variety of learning options
- have an opportunity to succeed and are happy
- are treated equally and are trusted
- have higher self-esteem so there are few discipline problems
- feel they are in a safe environment
- can change groups if needed
- have an advisor

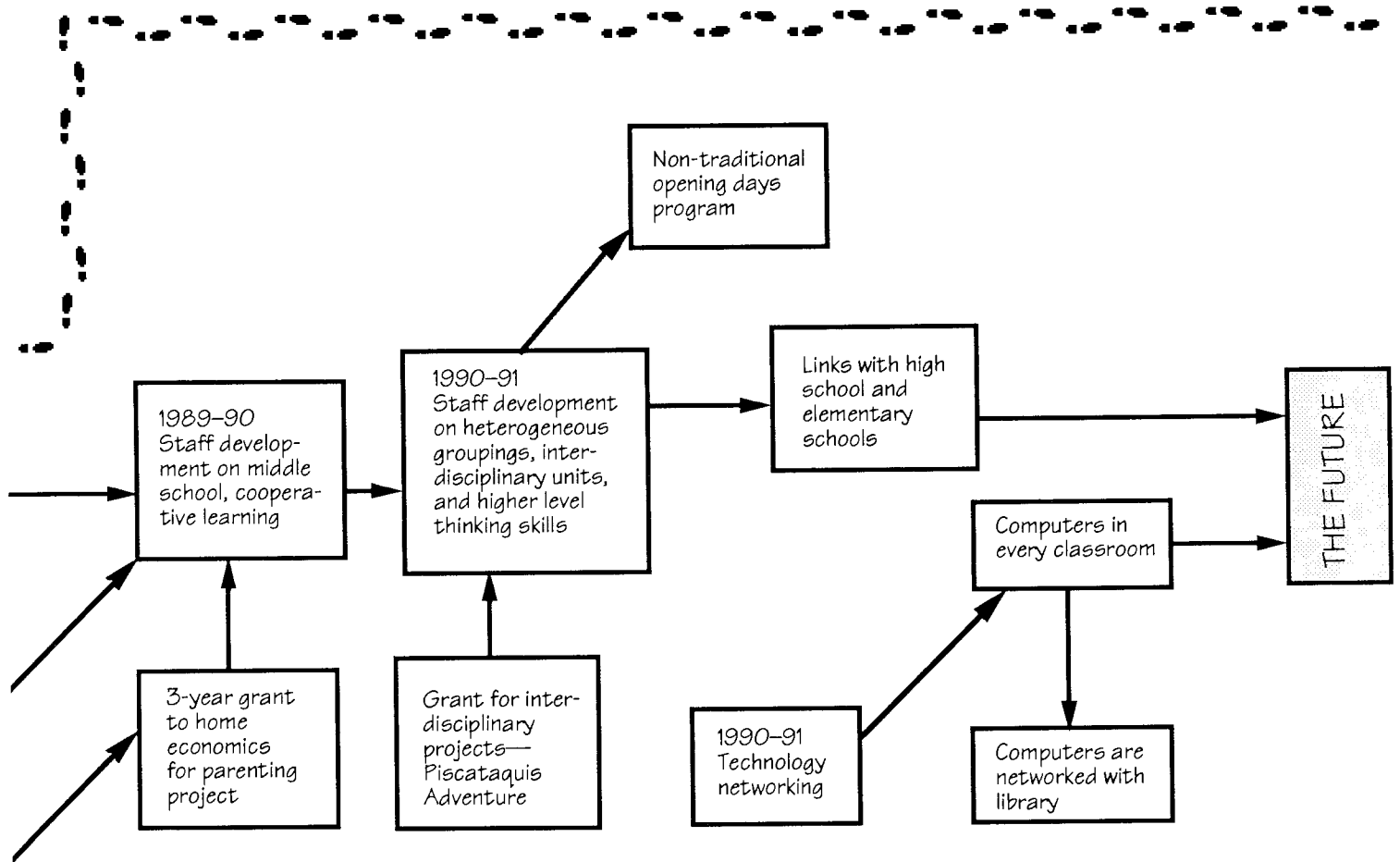
### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- use heterogeneous grouping to focus on individual needs of students

Teachers (continued):

- have adopted a holistic approach to students, rather than focusing solely on the academic; they teach people, not just subjects
- are close-knit as a staff and enjoy working together
- have been involved in staff development focused on the middle school concept, cooperative learning, heterogeneous grouping and interdisciplinary teaching
- have helped to develop a K–12 curriculum
- are developing interdisciplinary units
- run an advisor-advisee system for all students; advisors meet daily with students, conduct an activity weekly, and have an extended period once a month for special activities
- developed a two-day program for staff and students to open the 1990–91 school year that included talks on aspirations and dealing with disabilities, non-competitive sports activities, and workshops on such topics as study skills, getting organized, and understanding puberty



### 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- team building, group dynamics and conflict resolution for the entire school staff
- teachers teamed by grade level
- scheduling so teacher teams can meet every day
- weekly team leaders' meetings
- shared leadership with teachers taking turns serving as team leader each quarter
- grade level teams which schedule their own classes within structure of seven-period day; principal schedules specialties
- "management by walking around"
- computers networked within the building to give teachers and students greater access to information

### 4. WHAT CONNECTIONS ARE BEING BUILT?

Within the school district:

- middle school staff are working with elementary schools and high school to develop orientation for fifth graders and ninth graders
- some high school teachers attended summer middle school academy

Within the school district(continued):

- high school has started teaming in the ninth grade
- high school staff has had a retreat on group dynamics

With parents and community:

- community members were involved in developing restructuring grant proposal
- parents support school changes because kids are happy and want to go to school
- bi-weekly newsletter is sent home

With assistance resources:

- staff from University of Maine (Orono) assisted with planning for grant
- masters level course on middle school given at school by UM (Orono) faculty
- ongoing use of consultants from higher education and other educational resource centers

### 5. WHAT QUESTIONS ARE BEING ASKED ?

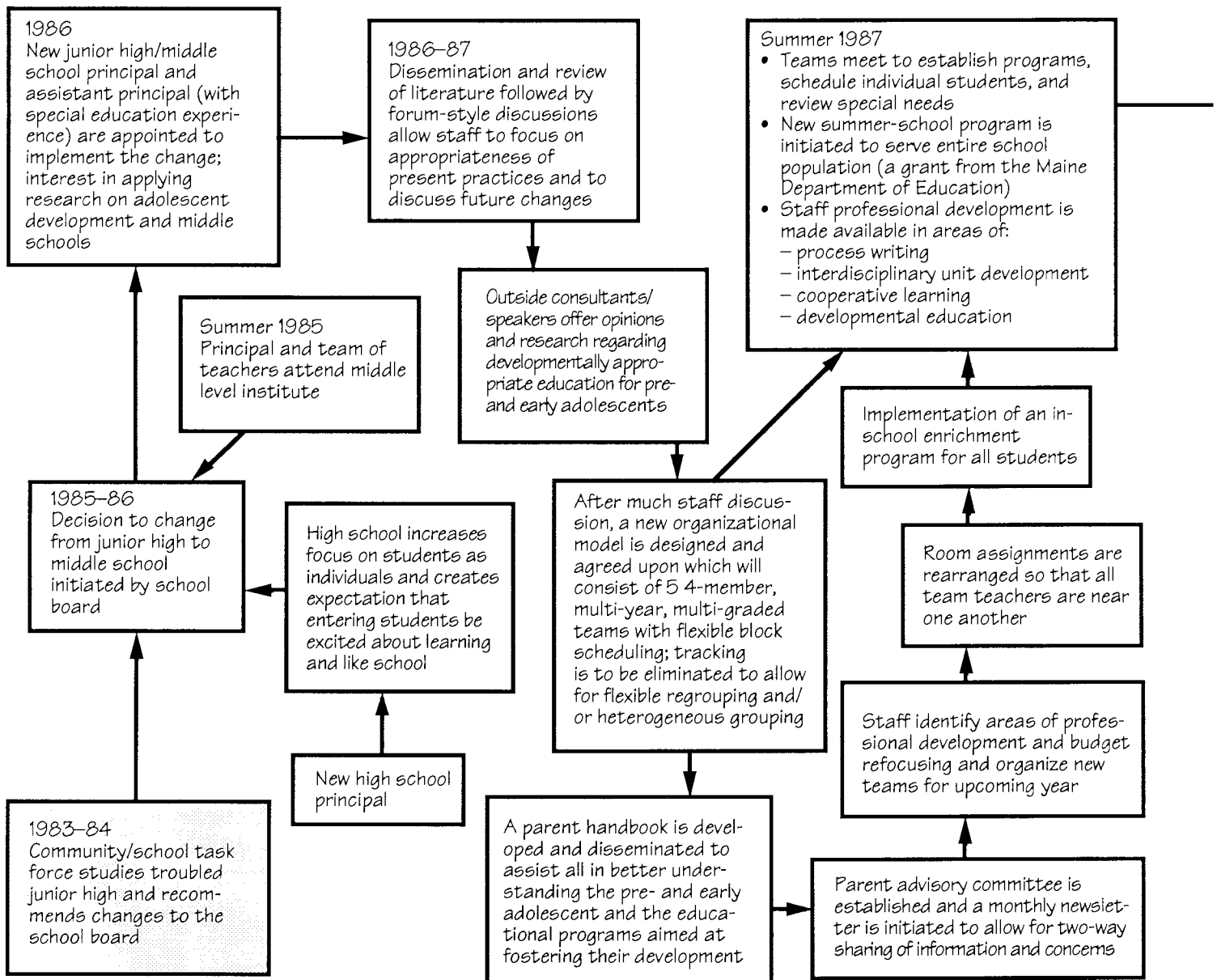
- How can the time be found to do "everything"—meeting, planning, presenting outside the district?
- How can more parent involvement with the school be encouraged?
- How can the momentum created by the changes be kept going?

# SKOWHEGAN AREA MIDDLE SCHOOL: "Is it good for kids?"

Skowhegan Area Middle School is one of ten schools in a large (400 square miles) rural school district in western Maine. The town of Skowhegan is the location of a paper mill, a shoe factory, and other industries. The middle school serves approximately 490 students in grades 7 and 8 from six different towns. In less than three years, the school has changed from a traditional junior high school to a middle school designed "to better meet the needs of all the students." In 1983-84, a task force of junior high and high school teachers, community members, and board members studied the situation in the junior high and found that it was a "closed

system," strictly tracked, tightly controlled, with a "we/they" tension between teachers and students, and the "lower" divisions in havoc. It was seen by parents and younger children as "not a good place to be." The task force recommended change, which was initiated by the School Administrative District #54 superintendent and school board; both were concerned about providing an educational experience appropriate to students in the middle years. A member of the school restructuring team noted, "We are on the right track with the middle school, but there is still lots to do."

## SKOWHEGAN AREA MIDDLE SCHOOL'S JOURNEY



1987-88

- Teams implement interdisciplinary units and use common team planning time to address special student needs
- Schoolwide awards program is implemented to recognize positive accomplishments of all students
- Restructuring grant application process begins following unanimous vote of all staff
- Mainstreaming pilot project begins with students having identified learning disabilities
- After-school enrichment programs expand with addition of transportation for outlying areas and towns
- Parent team selection and change policies are approved by the school board
- Heterogeneous grouping of students for all subjects is tried by some teams; other teams use regrouping for subjects to eliminate tracking
- One team initiates advisor-advisee program for all its students
- Behavioral-academic contracts are introduced for at-risk students in crisis situations

Spring 1988

State restructuring grant of \$50,000 is awarded to the school for further restructuring efforts

Spring 1988

- Teams identify objectives and share them along with team profiles to assist parents with team selections
- Sixth grade students visit the school and attend orientation, assisted by peer helpers, the goal of the visit is to help students better understand the programs and team personalities

1988-89

- Four of five teams move to full heterogeneous grouping in all subjects
- A health program is added and integrated with physical education
- Students with learning disabilities are integrated into all classes with differentiated curriculum and pull-in assistance
- Team-based budgeting is initiated
- Pilot mainstreaming of students with behavioral disabilities starts
- Core objectives are identified for all students in language arts, math, individualized reading, physical education, health, industrial arts, home economics, and music
- Staff assistance teams are established to aid other schools in their efforts to implement research-based education

1990-91

- Transition committee works on middle school/high school core curriculum and with 6th grade
- Continuing work on integrated curriculum
- Computers in classes
- Coordination in "seeing ourselves as a school"
- Increased use of volunteers

THE FUTURE

Summer 1990

- Evaluation results are presented to the school board; 20 of 23 school board members vote in the affirmative that the school is on track and should continue its restructuring process — 3 abstain
- School and district leadership change with middle school principal, middle school assistant principal, superintendent, and special education director moving to new positions outside the district
- Elementary school principal becomes new principal at the middle school

1989-90

- Computer lab is introduced with 24 stations and a program designed to ensure computer literacy and integration of technology into regular curriculum
- Transition committee forms with high school to ensure continued student success after middle school
- School and staff are recognized as Instructional Support School by U.S. Dept. of Education and receives more than 150 visitors from 2 countries and 4 states
- Staff honor requests to present at numerous conferences and inservice programs
- Peer mediation program initiated to resolve conflicts between students
- Staff fitness program is designed for 1990-91 start-up
- For presentation to the school board, multi-faceted evaluation of school and program is carried out during the year and includes input from parents, staff, visitors, outside experts, etc.
- The school is recognized in *Helping Children Succeed*, a publication by the Maine Aspirations Compact

# WHAT'S BEEN HAPPENING AT SKOWHEGAN AREA MIDDLE SCHOOL ..

## 1. WHAT'S DIFFERENT FOR STUDENTS?

All kids:

- like school
- experience support from a number of different services
- have a variety of opportunities for personal and academic development
- are rewarded and honored for achievements
- have a say in team operation
- have continuity over two years with the same teachers
- have, with their parents, a choice of team and the option to change their team if desired
- have access to student mediators to resolve conflicts; focus on internal locus of control
- have representation in the Student Advisory Committee
- use computers in class and for team projects
- have a la carte options in the cafeteria

## 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- use interdisciplinary core curriculum
- have heterogeneous teams with the same students for two years
- use alternative forms of assessment such as writing portfolios
- run small advisory groups for students
- use a contract system for students in both academic and behavioral area with parent participation
- are teaching computer use through classroom work
- are working on providing for gifted students through differentiated curriculum
- provide summer school options for both enrichment and remediation
- are encouraged to participate in professional development opportunities of their choice and to share their experience with their colleagues

## 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- no interruptions by bells during school day
- autonomous teacher teams handling curriculum, scheduling, and budget
- an aide with each team
- specialists who are integrated into classroom work
- mainstreaming for all students
- a special education consultant who works with all teams
- coordination by having weekly meetings for team leaders with the principal and monthly full staff meetings
- administrator supervision which supports teachers
- computers networked into classroom projects and curriculum

The school is organized to provide (continued):

- a student advisory committee which works with the principal
- a parent advisory committee
- a volunteer coordinator two days a week and a volunteer advisory committee
- a computer coordinator to staff laboratory and to assist teachers in using technology in classes
- extracurricular offerings after school to widen student experiences both intellectually and physically
- an extended school day with a late bus run
- student mediation and conflict management
- attention to research in making changes in the school

## 4. HOW ARE CONNECTIONS BEING BUILT?

Within the school district:

- middle school-high school transition team is meeting regularly
- interdisciplinary work is being extended to grades 9 and 10
- positions originally funded from grant are folded into district budget
- grant writing workshops are provided for administrators
- grants for innovation developed jointly with other schools in the district
- the superintendent and the school board demonstrate strong support for the school

With parents and community:

- parents choose team they prefer for their child
- any parent who wishes serves on advisory committee
- an active volunteer program is in place
- parents work with teachers on individual student contracts
- staff is working with high school and local businesses on increased career education
- school is serving as research site for Sports Medicine East, which will provide inservice training on health, diet, and exercise for the staff

With assistance resources:

- staff member coordinates practicum program for student teachers from two branches of the state university
- doctoral program graduate students do internships at school
- Synectics Inc., from Cambridge, MA, helped lead staff efforts with visioning and brainstorming
- training in cooperative teams by a consultant
- middle level research assistance from the University of Maine and the University of Southern Maine

## 5. WHAT QUESTIONS ARE BEING ASKED?

- How can we continue to improve and increase community awareness and support?




# RESTRUCTURING AT THE HIGH SCHOOL LEVEL

High schools may have the hardest road to travel as they journey into restructuring. Held hostage by a master schedule that divides the curriculum along the traditional academic disciplines and shuffles students into a daily routine of seven 45- or 50-minute periods, high schools are beginning to face the fact that 65 percent of their students are not well served by this traditional structure. Just making time for the staff to meet is a major effort in and of itself.

For many high schools, restructuring is an effort to create meaningful connections between subjects and between the adults and students in the schools — to make learning coherent and to humanize the environment. Moreover, they are designing schedules and instruction that foster initiative-taking, acceptance of responsibility, cooperation, and problem-solving.

The cross-cutting pressures that all schools face as they restructure are particularly salient at the secondary level, where the final transition is into higher education or the world of work. Even as high schools search for approaches to learning and ways of demonstrating what students know and are able to do, they face the traditional college entry requirements that reinforce the old ways of teaching and evaluating students. And parents of college-bound students — often a vocal and influential group in the community — may exert pressure to maintain the status quo. At the same time, there are mounting pressures from the workplace to produce graduates who are able to analyze information, continually acquire new skills, and cooperate with fellow workers.

The stories of the five high schools that have participated in the Maine State Restructuring Program appear on the following pages. The schools are:

- Freeport High in Freeport
  - Gorham High in Gorham
  - Kennebunk High in Kennebunk
  - Messalonskee High in Oakland
  - Scarborough High in Scarborough
- 

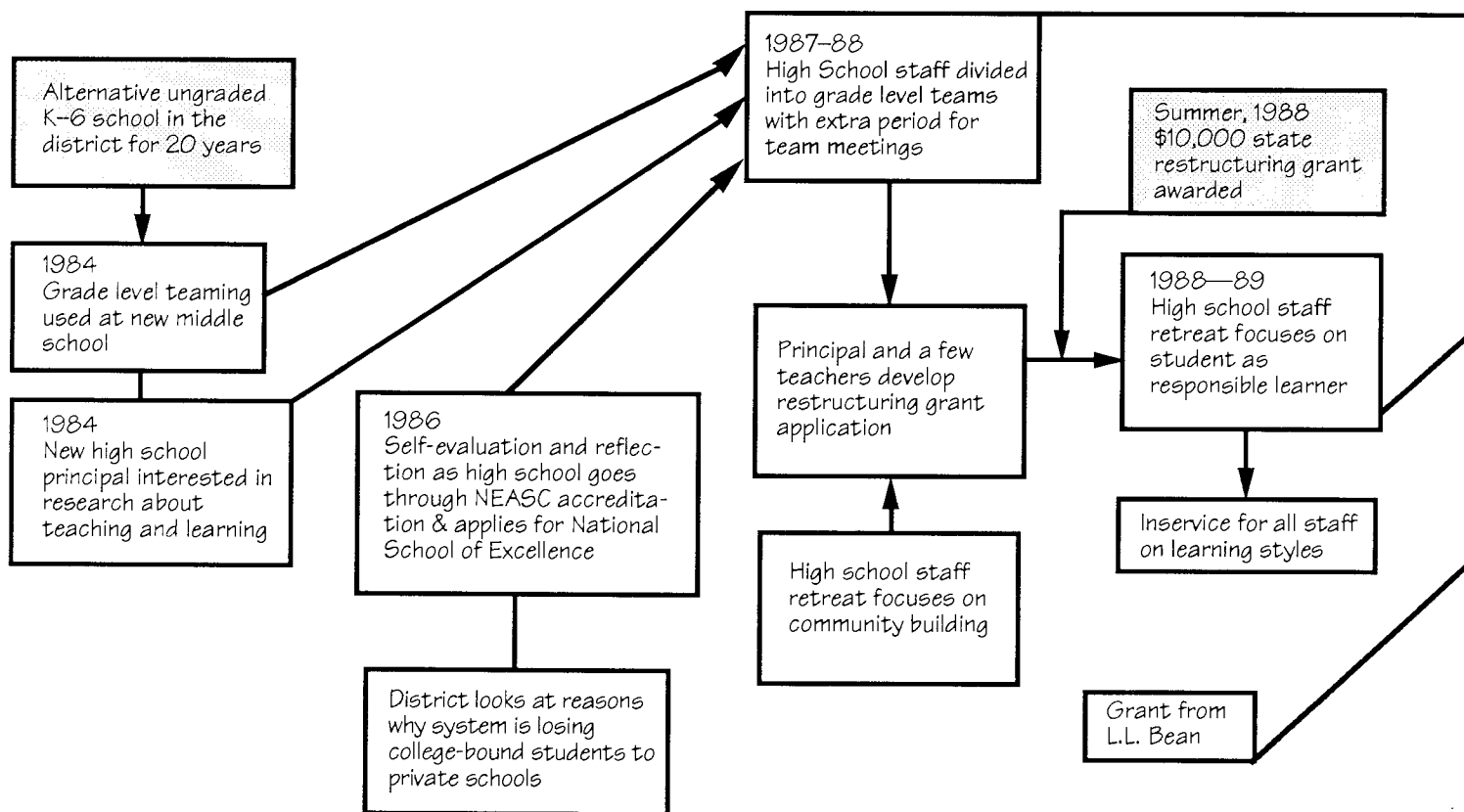


# FREEPORT HIGH SCHOOL: "People have to be ready for change"

Freeport High School is a small school serving approximately 300 students, grades 9-12, in a coastal community 20 miles north of Portland. In the past 20 years Freeport has grown from a small town with a shoe factory, a fishing industry and L.L.Bean, a sporting goods store, to the major location of discount stores in Maine. Young professionals moved into Freeport during these years so the population is now a mix of

long time residents and newcomers. Reflecting on progress during the second year of the grant, a member of the Freeport High School restructuring committee commented: "We spear-headed or encouraged a variety of efforts—perhaps too many for our own good. The committee has decided to limit its tasks next year for the sake of doing just a few things quite well."

## FREEPORT HIGH SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT FREEPORT HIGH SCHOOL

### 1. WHAT'S DIFFERENT FOR STUDENTS?

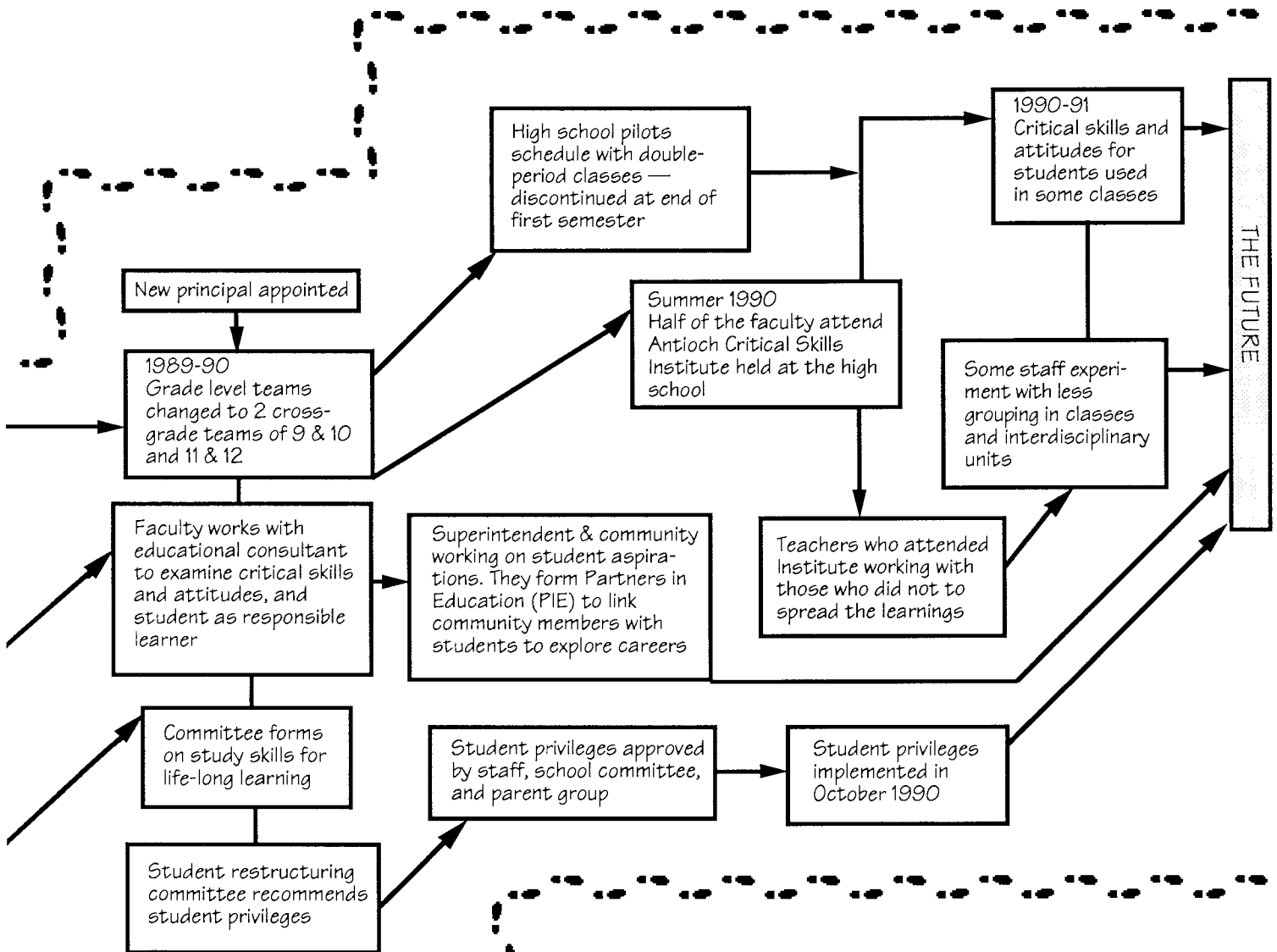
All kids:

- know their own learning styles
- are being taught critical skills across all subject areas
- were surveyed about the best and worst aspects of the high school
- can earn senior privileges that allow them freedom to move about the community
- have representatives on a student restructuring committee

### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- had the opportunity to attend Antioch's Critical Skills Institute (Summer 1990)
- who attended the Critical Skills Institute are paired with those who did not to share learnings
- present critical skills to students through subject areas
- are limiting areas on which teaching is focused
- are exploring different methods of assessment
- are experimenting with interdisciplinary curricular projects



### 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- two teacher teams, grades 9–10 and 11–12, which deal with students, educational issues, and schoolwide goals
- specialists who work with teams as needed
- an eight period day with one period of team meetings each day
- retreats for entire staff
- ways of helping staff to consider different ways of using time (tried double periods during the 1989–90 school year but did not continue)
- privileges for students adopted from student recommendations

### 4. WHAT CONNECTIONS ARE BEING BUILT?

Within the school district:

- middle school concept is in place with untracked classes

With parents and community:

- parents are involved in restructuring committee
- parents are kept informed of school events through regular mailings
- superintendent and townspeople formed Partners In Education (P.I.E.); community members work with teachers
- the school worked with local businesses to develop a pamphlet on student rights and responsibilities as workers
- parents have a choice of three different programs at the elementary level

With assistance resources:

- high school staff worked with an independent consultant to define critical skills
- high school participates in the Southern Maine Partnership

### 5. WHAT QUESTIONS ARE BEING ASKED ?

- How to schedule time in school day to meet and balance all needs?
- What are alternative methods of assessment?
- How to continue restructuring after the end of the grant?

# GORHAM HIGH SCHOOL: "Restructuring begins with time for thinking"

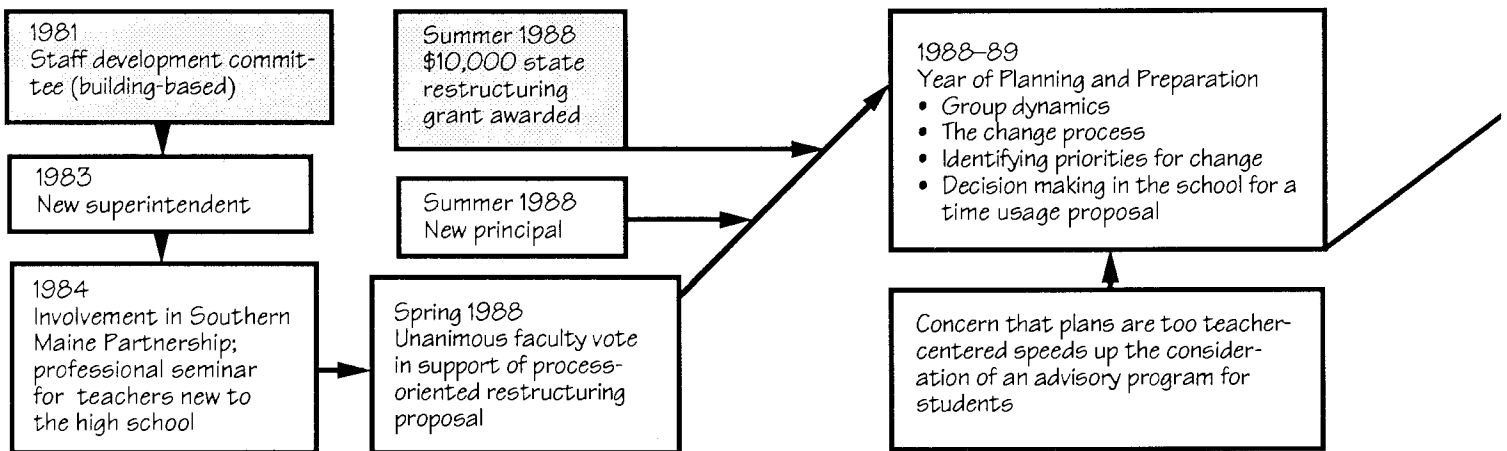
Gorham High School, which serves a rapidly growing community west of Portland, has a staff of 45 and a student body of 520. It is one of two schools in Gorham that received state restructuring grant money, the other being the Narragansett Elementary School. The town of Gorham is also home to the University of Southern Maine (USM) which has a strong education program; USM's Southern Maine Partnership played a critical role as an initial catalyst in the high school's restructuring effort. The high school is continuing to use a schedule that was piloted during half of the 1989-90 school year. This schedule has three major "new" components: 1) a two-hour School Development Period each week during which the entire faculty works on restructuring issues and staff development; 2) a student advisory program; and 3) four class periods per subject per week, with one of them an extended period. Together, these changes have enabled and promoted efforts by the faculty to seek new teaching and learning strategies.

During the last two years, the Staff Development Committee has struggled to sufficiently meet the needs of all faculty

members. Disagreements have arisen regarding the priorities for school improvement, how decisions should be made, and whether the advisory program should be continued and/or changed. Although there is still some disagreement regarding the priorities for school improvement, this has diminished since eight task forces were created in the fall of 1990 for the restructuring issues that the faculty decided were their top priorities. In addition, a new decision making process was implemented in the fall of 1990 and has been received very favorably by all constituencies.

The point on which there is the most widespread agreement is that the weekly School Development Period is essential to enabling the faculty to succeed in the difficult task of improving student performance. As expected, the change process has proven to be very difficult, but there is optimism that the support for restructuring will continue and that the change process that has begun at the high school will soon begin to have a significant impact on student performance.

## GORHAM HIGH SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT GORHAM HIGH SCHOOL

### 1. WHAT'S DIFFERENT FOR STUDENTS?

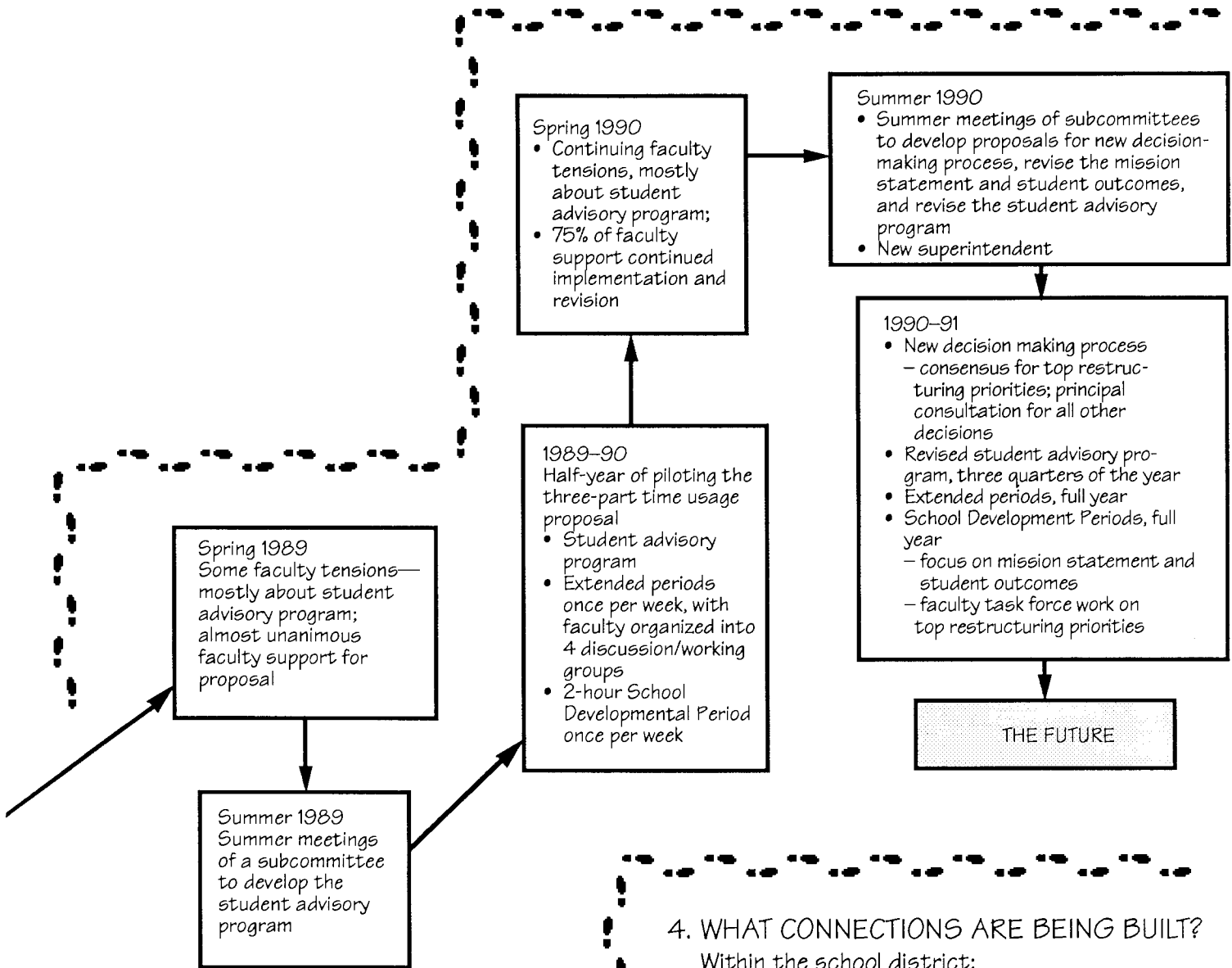
All kids:

- have student representatives on the Restructuring Team
- participate in grade level advisory groups once per week to focus on group process skills, school/community projects, and academic advising
- attend classes in each subject four times per week; one class each week is 73 minutes long
- experience an untracked math curriculum in ninth grade

### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- have a two-hour block of time each week for staff development and restructuring work
- are exploring changes in teaching strategies for longer class periods
- have the choice to be advisors or observers in the student advisory program
- are defining desired student outcomes



### 3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- task forces on assessment, tracking, interdisciplinary curriculum, school technology
- two approaches to decision making that include faculty consensus for top restructuring priorities and principal's decision with consultation on other matters
- a late start for students on Wednesdays to give faculty time for staff development and restructuring work
- faculty development and discussion of new mission statement and general student outcomes
- weekly professional seminars for teachers new to the high school

### 4. WHAT CONNECTIONS ARE BEING BUILT?

Within the school district:

- professional trust (but little communication) exists among the schools in the district
- school board representatives serve on the Restructuring Team
- the school board supported the change in schedule

With parents and the community:

- parents serve on the Restructuring Team

With assistance resources:

- membership in Southern Maine Partnership
- university consultant has been part of the Restructuring Team

### 5. WHAT QUESTIONS ARE BEING ASKED?

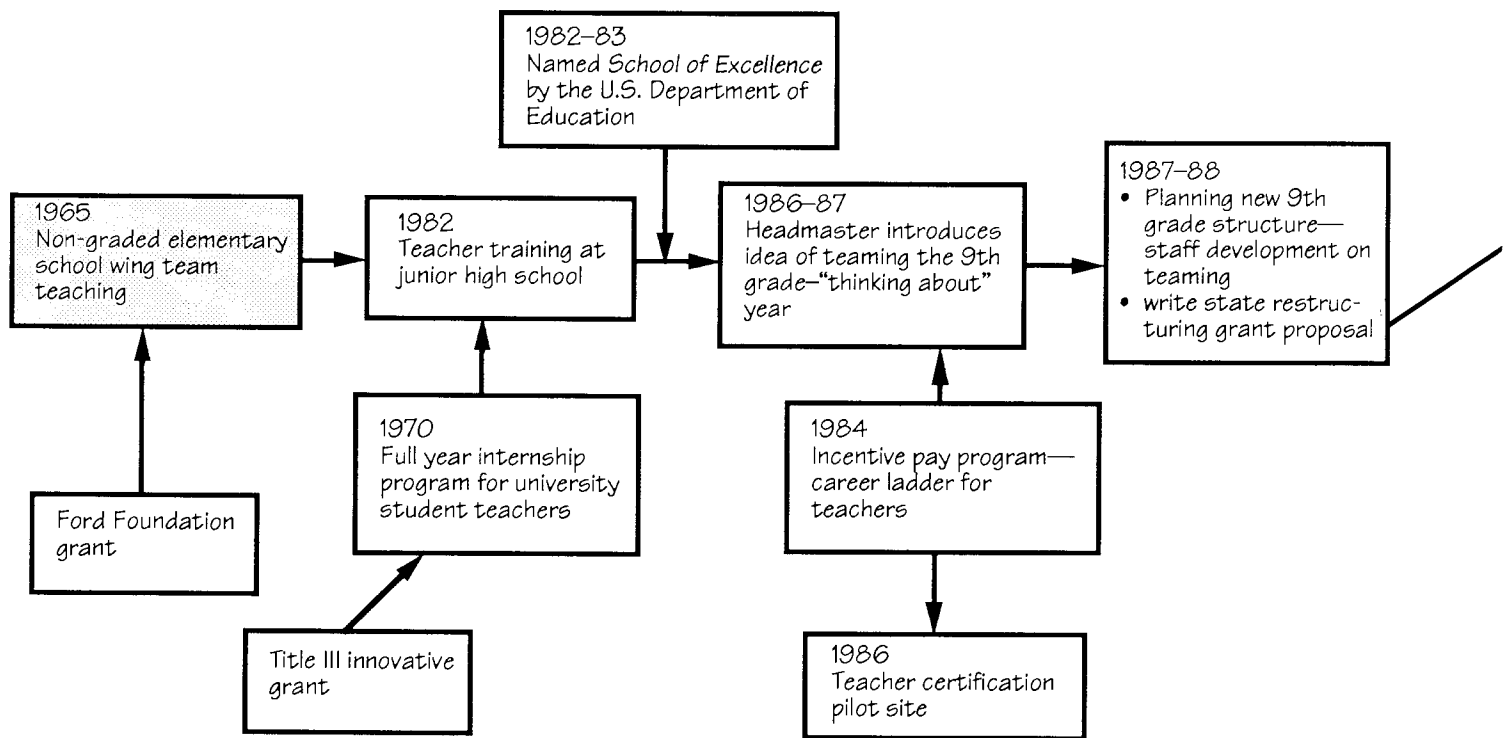
- How can we improve student performance?
- How can we simultaneously accommodate the individual differences among faculty members and restructure as a school?
- To what degree will the School Committee support the restructuring effort with budget funds if state grant money does not continue past the original three-year grant?
- How can we support efforts to continue restructuring districtwide and statewide?

# KENNEBUNK HIGH SCHOOL: "Using teaming to individualize education for each student"

Kennebunk High School serves approximately 625 students in grades 9-12 in the southern Maine coastal communities of Kennebunk and Kennebunkport and tuitioned students from the neighboring town of Arundel. The area has wide economic diversity. For example, Kennebunkport has many summer homes as well as year-round residents who commute to jobs as far away as Boston. Locally, the major industries are fishing, lobstering, and tourism. The school district has a history of educational innovation and excellence. The ninth grade restructuring is one of a number of initiatives being implemented or studied by the high school staff. Others include:

developing incentives for community members to join under-enrolled high school classes; consideration of an 18-hour school day with six hours for academic classes, six hours for interest areas such as art, music, dance, and photography, and six hours for adult education; creating a more relevant curriculum for career bound students; and studying Howard Gardner's theory of seven intelligences and its application to teaching and learning. The Kennebunk High faculty are always searching for better ways to meet the needs of their students: "We are restructuring our restructuring."

## KENNEBUNK HIGH SCHOOL'S JOURNEY



## WHAT'S BEEN HAPPENING AT KENNEBUNK HIGH SCHOOL

### 1. WHAT'S DIFFERENT FOR STUDENTS?

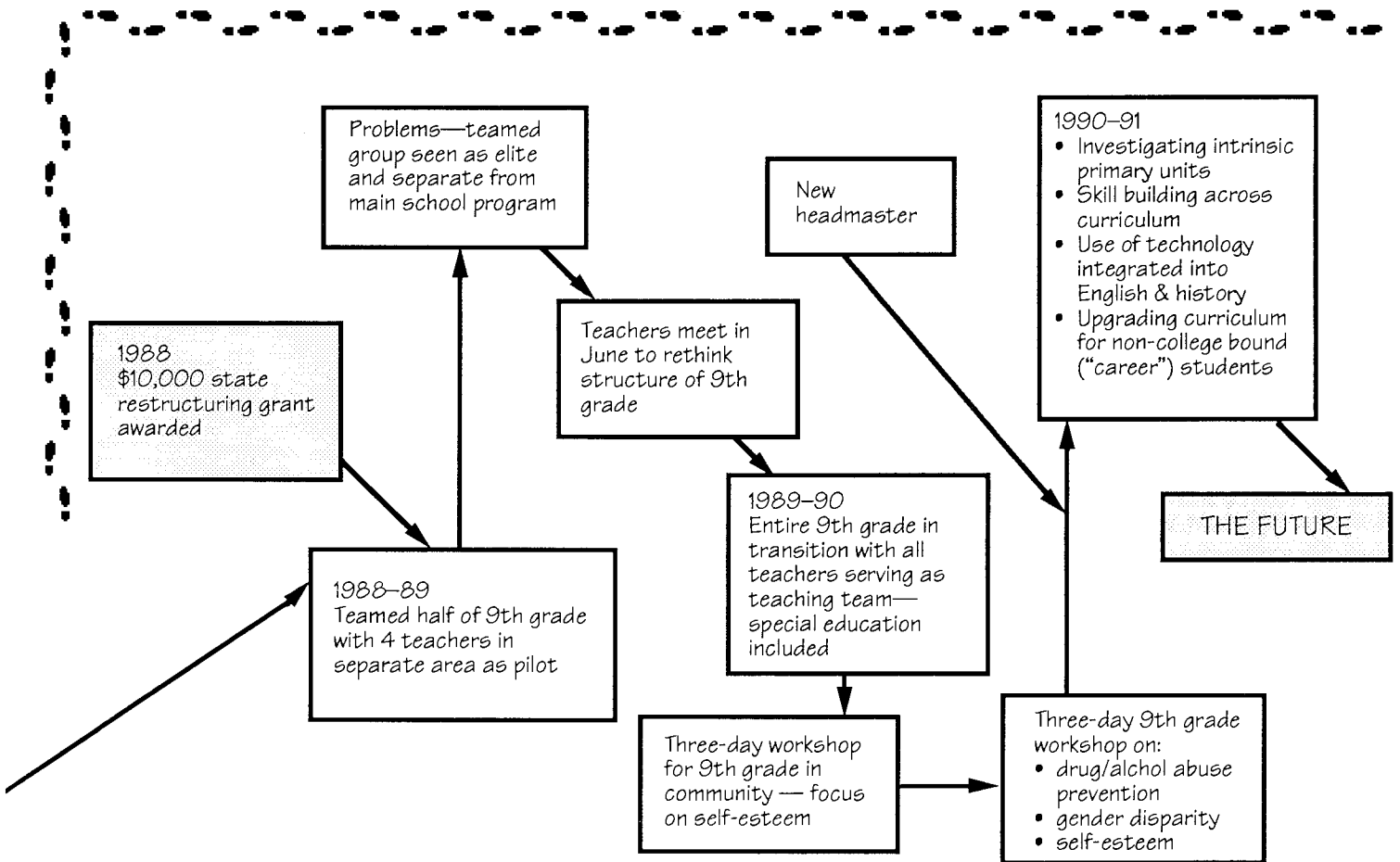
All kids:

- have thinking and organization skill building in all classes during ninth grade
- are supported as individuals
- learn word processing
- use computers regularly in their course work
- have access to extra tutoring as needed
- visit area vocational programs for career exploration
- participate in a three-day community sponsored event on drug and alcohol abuse prevention, gender disparity, and self-esteem

### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- of ninth grade students operate as a team
- integrate skill building into all classes
- use integrated thematic approaches to learning, developing common themes across disciplines
- in English and history work with business educators in the computer technology lab
- in math and science team teach with industrial arts staff, using industrial arts as a technology lab for those subject areas



*Teachers (continued):*

- use a variety of teaching strategies, including “hands on,” to meet individual needs
- intervene immediately when students are having either academic or personal difficulties
- use local educational resources like the Great Bay Living Lab to supplement courses

3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

*The school is organized to provide:*

- team meeting time for ninth grade teachers every day to discuss interdisciplinary teaching and to monitor individual student progress, both academic and behavioral
- special services staff working with the teacher team to develop support strategies for individual students
- a technology lab with Macintosh computers
- ongoing exploration of ways to improve teaching and learning through synectics

4. WHAT CONNECTIONS ARE BEING BUILT?

*Within the school district:*

- ninth grade staff works closely with middle school to ensure continuity and comfortable transition to high school for students

*With parents and community:*

- local Rotary helps provide a program that includes academic and extracurricular offerings
- businesses provide mentors for students to explore job opportunities
- community people serve as facilitators for the three day ninth grade self-esteem workshop

*With assistance resources:*

- close links with the University of Southern Maine
- student teachers from the University of New England and the University of Southern Maine
- science classes have programs with the University of New Hampshire's Great Bay Living Lab

5. WHAT QUESTIONS ARE BEING ASKED?

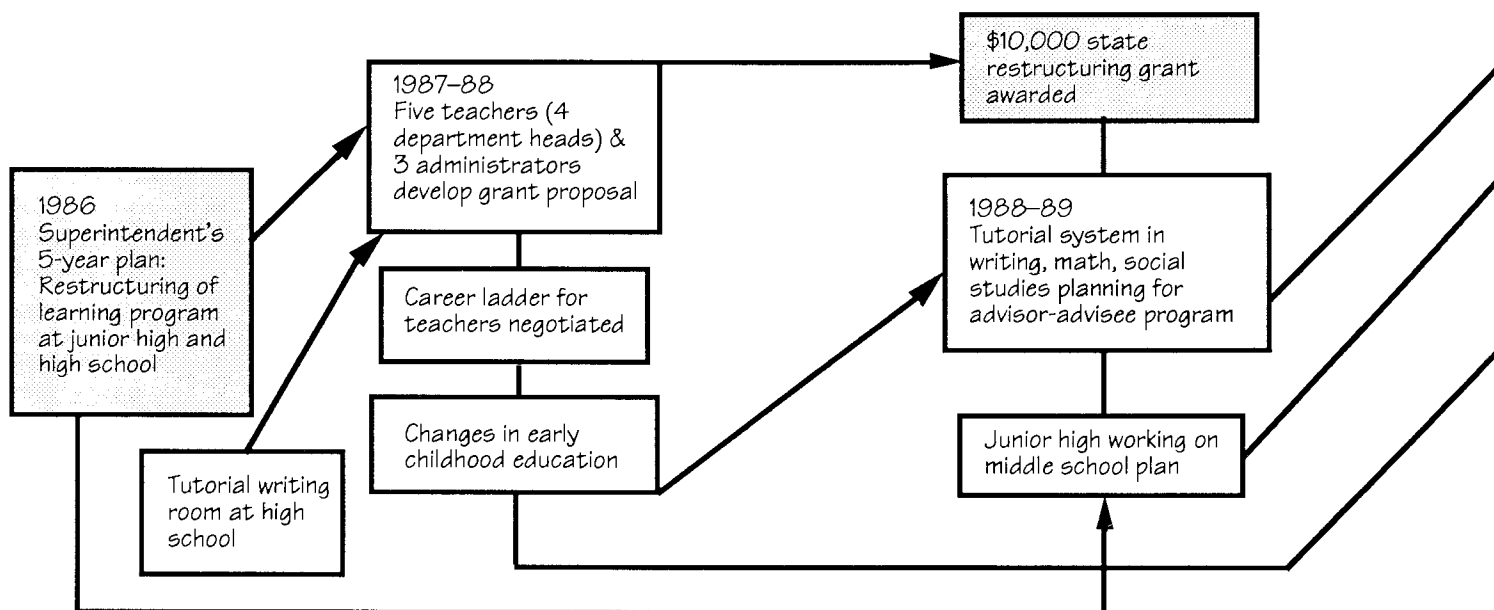
- How do we develop a comparable program appropriate for each age level and student development level at the high school?
- How can we restructure ourselves to create an even closer working unit of teachers and students?
- How do we reschedule ourselves to allow for more flexible teaching time slots and still be comfortably integrated with overall high school schedule of allied arts, foreign language, etc.?

# MESSALONSKEE HIGH SCHOOL: "What goes on inside the school should look as different as the new outside"

Messalonskee High School is located in the central Maine community of Oakland and serves 674 students in grades 9-12 from Oakland and the surrounding towns of Belgrade, Sidney, and Rome. Colby College, an excellent liberal arts college, is a nearby resource. The school district has been growing rapidly during the past few years as more and more people settle in the rural farming area and commute to work in nearby Augusta and Waterville. The district reflects the socio-economic and educational diversity of its surroundings: about half of the graduates go directly to work and half to college. Of the high school student population, at least 25 are living totally on their own. As the principal commented, "If anybody is going to mirror the range of what's out there, it's us." A multi-million dollar addition to the school, currently in progress, will add new classrooms and a performing arts center.

The restructuring effort at the high school is part of a districtwide initiative spearheaded by the superintendent, who has gained widespread public support for the schools. School staffs are working on K-12 curriculum coordination, professional growth programs for both teachers and administrators, and a student aspirations project. The superintendent and other staff saw the physical change of the high school building as a time to consider redesigning teaching and learning. Having begun by attempting an all-school advisor-advisee program, the high school is now working on "transitions"—the connections between the middle school years and ninth grade and between the senior year and work or college. During the three years of the project, faculty said, "We've stumbled and we've recouped; now things are really rolling."

## MESSALONSKEE HIGH SCHOOL'S JOURNEY



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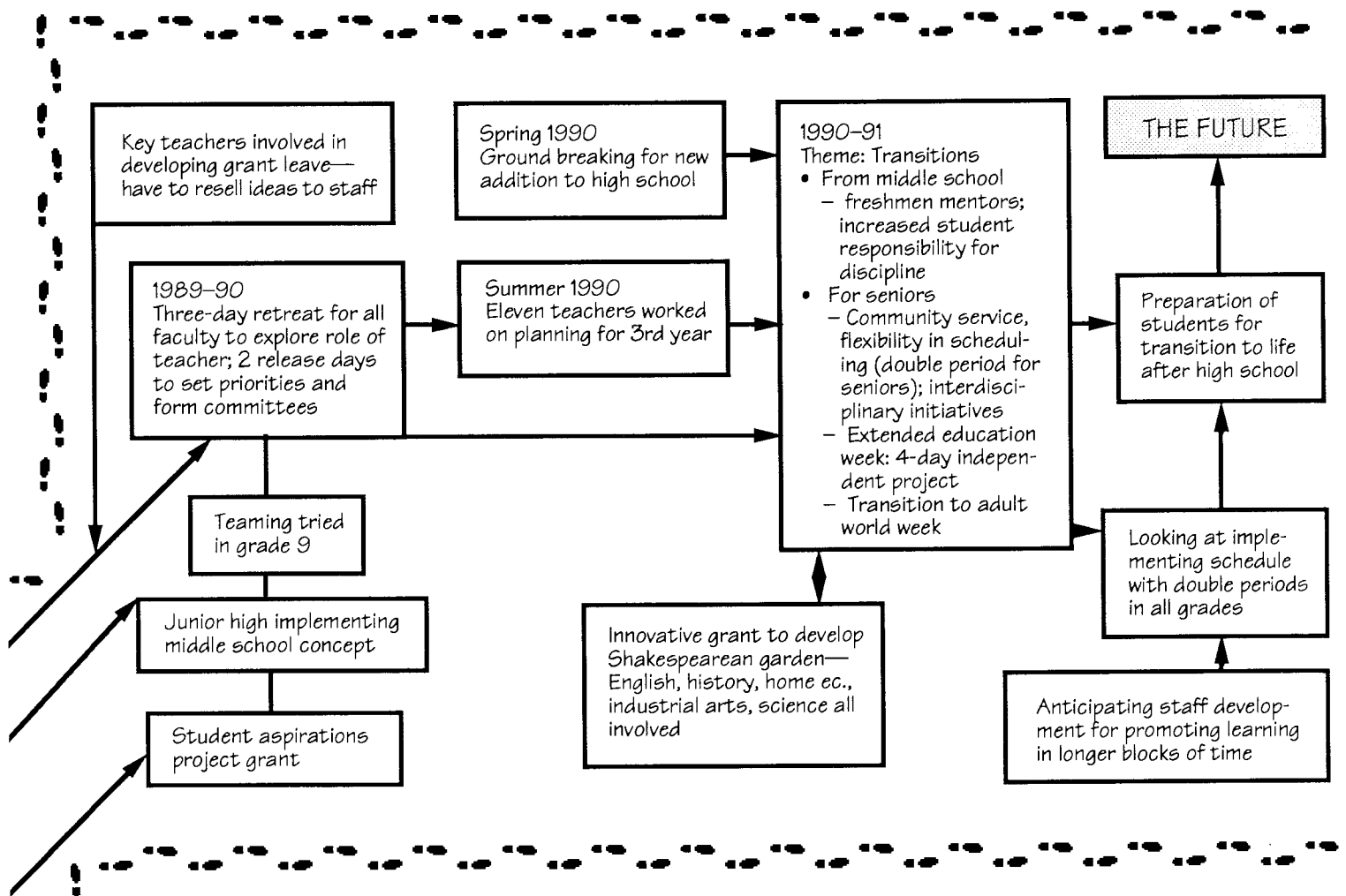
All kids:

- can get help from teachers on any aspect of their learning through a tutorial system available in all subject areas
- have mentors as ninth graders
- develop community service projects as seniors
- have double period classes and classes that do not meet daily as seniors to prepare them to manage learning experiences after high school
- have a retreat to start the senior year that prepares them for new experiences and increased responsibility
- have planned experiences to assist with transitions

### 2. WHAT'S DIFFERENT ABOUT TEACHING AND LEARNING?

Teachers:

- have tutorial periods to work with students in many different ways
- are developing interdisciplinary units
- serve as mentors for ninth graders
- worked with the principal to develop a new schedule
- are exploring strategies for learning in longer blocks of time, e.g., cooperative learning
- are creating innovative learning experiences — e.g., the project to build a Shakespearean garden, which involves



Teachers (continued):

English, social studies/history, science, home economics, and industrial arts

- are seeking ways to help students to become more responsible citizens

3. WHAT'S DIFFERENT ABOUT THE ORGANIZATION AND OPERATION OF THE SCHOOL?

The school is organized to provide:

- an untracked education with much higher expectations for the broad middle of the student body (75% of the total)
- a state-of-the-art library that "is the core of our curriculum"
- a schedule for seniors and their teachers that concentrates on fewer preparations per day

4. WHAT CONNECTIONS ARE BEING BUILT?

Within the school district:

- linkage with middle school provides smooth transition for students
- staff development and curriculum is coordinated K-12
- kindergarten is being restructured into integrated transitional program
- a new cross-level initiative focuses on open-ended assessment and is part of a larger effort sponsored by the state department of education and *Newsweek*

Within the school district (continued):

- a two level career ladder for teachers
- a Director of Staff Development and Special Projects who coordinates new initiatives
- training in clinical supervision for teachers serving as mentors and peer coaches
- computer communication — "Messalonskee Bulletin Board"
- district aspirations team

With parents and community:

- parents are serving as leaders for senior project teams
- school has a corps of substitute teachers from the community
- an active community booster group supports all sports

With assistance resources:

- students and teachers use the library at Colby College
- students attend college science classes
- student teachers from Colby do their practicum at the school
- school shares library resources with other area high schools through an innovative grant, Infifax

5. WHAT QUESTIONS ARE BEING ASKED?

- How can teachers be encouraged and supported to take on new leadership roles?
- How do we assist or encourage students to become life-long learners?

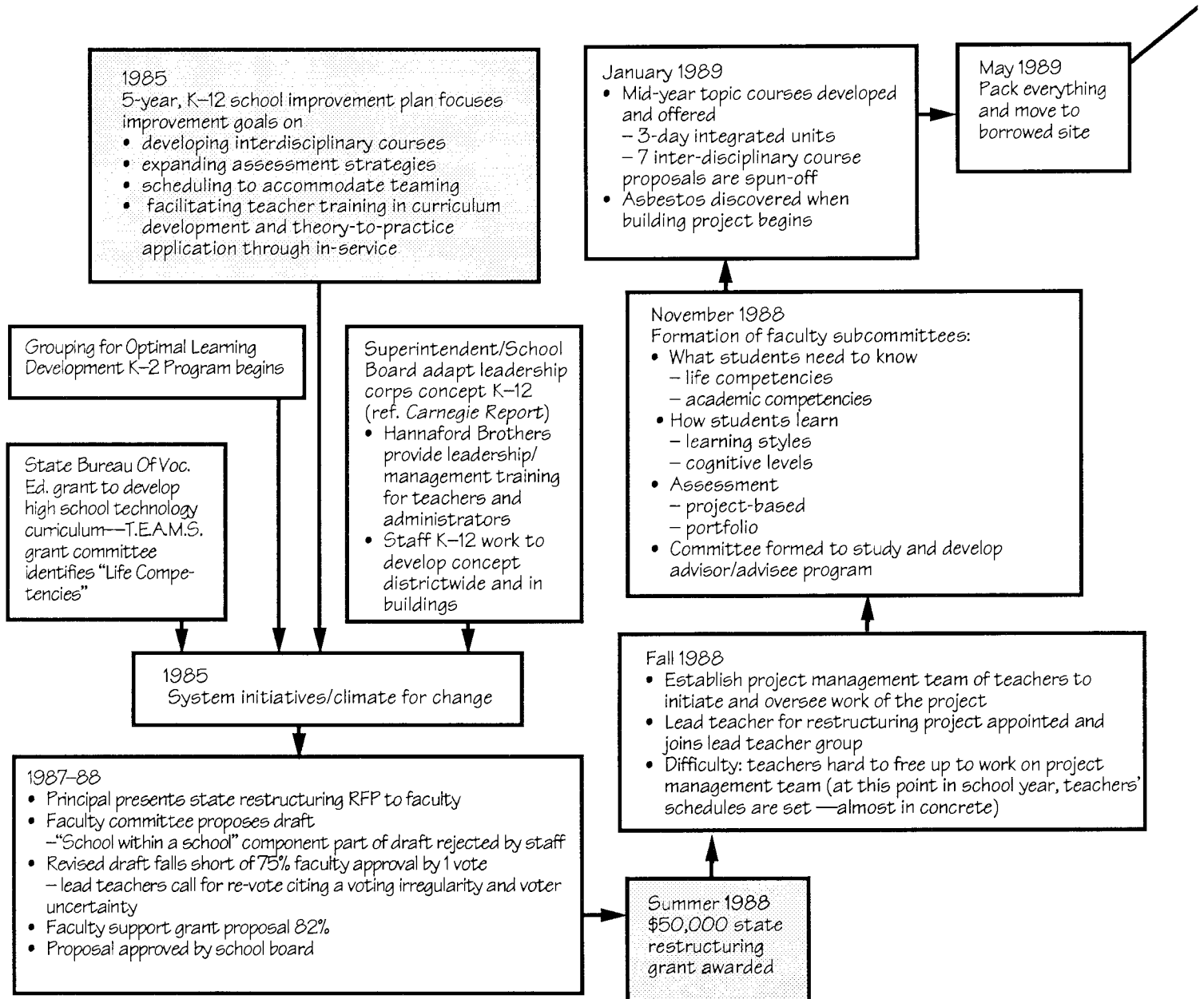


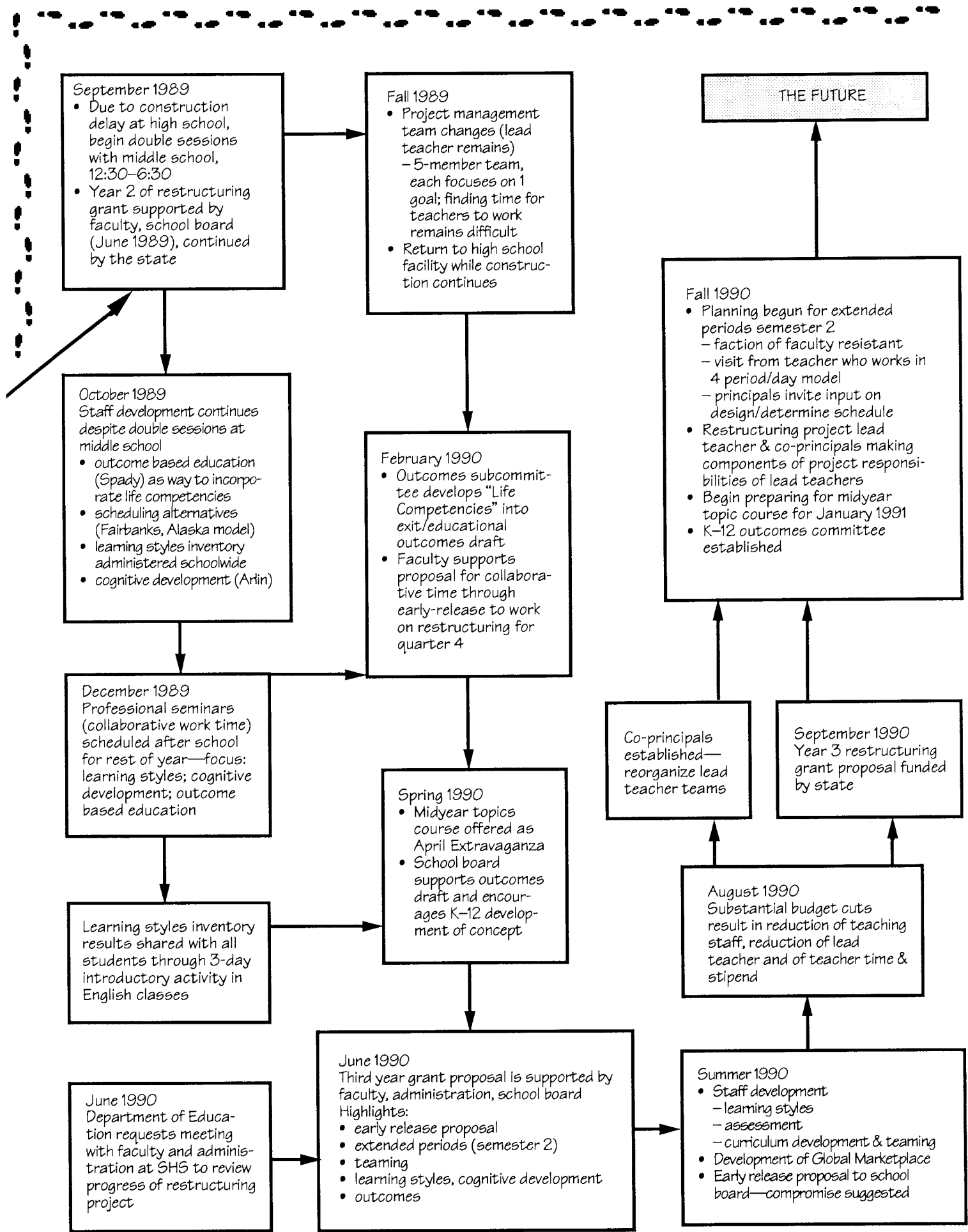
# SCARBOROUGH HIGH SCHOOL: "Student outcomes have become the catalyst for moving in restructuring"

Scarborough High School, located in a fast growing suburban community a few miles south of Portland, serves about 500 students in grades 9–12 and has a faculty of about 50. Scarborough's socio-economic and educational diversity is reflected in the high school: 40% of the school's graduates go directly to work and 60% to some form of higher education. The school district has been involved for some time in initiatives that give students and parents a choice about the structure and delivery of their educational programs. For example, in 1985, the Grouping for Optimal Learning Development Program, a multi-age development-based program, was developed and implemented in the primary grades K-2 as an alternative approach to learning. This program has been

expanded to include the intermediate grades 3-5 and is being introduced at the middle school, grades 6–8. About 50% of parents choose this program for their children. In addition, on the secondary level, an alternative program for "at risk" students was designed in 1986 and implemented in 1987. Further building on the Board of Education's policy promoting choice in educational programs, the high school restructuring effort has sought to foster continued discussion, experimentation and implementation of programs at that level. As the high school staff work to enhance learning for all students, they find they are constantly "bumping the boundaries" in areas such as student assessment and interdisciplinary teaming and teaching.

## SCARBOROUGH HIGH SCHOOL'S JOURNEY





# WHAT HAVE WE LEARNED SO FAR?

The preceding pages have profiled the experiences of ten Maine schools that have been working to rethink and reshape their learning environments in ways that work for ALL students. Each of these schools has been aided in its efforts by a restructuring grant from the Maine Department of Education, which has been an active participant during the three years of the Maine State Restructuring Program.

What have the schools, the department of education, and others learned through these efforts? In interviews with individuals and at meetings of school teams and the restructuring program steering committee, participants shared the following reflections.

**There is no single recipe for restructuring.** Each school, each district, each community, each state must work out its own vision, plan, and action to develop the potential of its young people.

**While there is not a single recipe, there are some common ingredients in the schools' restructuring experiences.** These ingredients can be grouped under four broad headings: getting clear on the focus of change; making change organizational and systemic; managing the ongoing change process; and deploying state restructuring grant funds to spur change.

## GETTING CLEAR ON THE FOCUS OF CHANGE

Although the schools may have begun their work in different places, they have all focused in some way on five critical elements of the teaching and learning process: shared vision, student outcomes, curriculum and instruction, assessment, and professional development.

### **Building a shared vision of what students should know and be able to do**

- *Restructuring depends on vision and action within each school and community, which means getting beyond doing what “they” want, whoever the “they” is.* Significant change in many of the schools began long before the state grant was awarded; other schools used the restructuring grant to get started. In either case, the designation as a restructuring school and the funding that accompanied it were significant boosts but did not cause the efforts — the main initiative came from, and remains with, the schools. Indeed, the major requirement of the request for proposals issued by the state department of education was that a school had to have or develop a vision to guide its restructuring effort.

*This is not a tidy process but involves a lot of crashing and clashing like tectonic plates.*

## Defining student outcomes that bring the vision to life

- *Restructuring surfaces the need for school staff to articulate explicitly the expected results for students.* This does not mean hundreds of mastery objectives, but a limited list that focuses on each student as a whole person. At some point, all the schools have turned to recent research on child development, learning processes, and related topics to assist them in understanding the rich varieties of potential that youngsters can possess. As one lead teacher commented, “Each issue we work on has its own orbit; you may swing out but you end up coming back to it, over and over again. It’s coming back to student outcomes that keeps us from going too far out on any aspect of our work.”
- *Restructuring centers on helping ALL students to learn successfully.* The schools are taking as their challenge doing well by all students, not just the college-bound. All students are to be encouraged to take responsibility for their own learning and made to feel that they are capable and competent to master the job at hand. To achieve this end, the teacher’s role becomes one of a facilitator of learning, providing the frame and the experiences for exploration. In like manner, principals work to facilitate the efforts of teachers and others to create an organization in which all staff make decisions about the use of time and resources to foster student learning, where innovative ideas are encouraged, and where adult learning is a priority as well. School-based educators work with superintendents and school boards to make certain that the restructuring vision is widely shared and supported. Parents and community members become resources for the schools, serve on planning committees, and are mentors for students.

When you think of it, education has always been focused on curriculum and teaching, not on learning.

## Distilling and integrating curriculum along with broadening the repertoire of instructional strategies

- *Restructuring shifts the emphasis of curriculum and instruction from proliferation of subjects and facts to be conveyed to a focus on essential concepts and relationships that students need to learn.* Interdisciplinary units, theme and project work allow in-depth study. Hands-on science and problem solving in other curriculum areas actively engage students in learning. These types of approaches require longer periods of time than have traditionally been allotted and stimulate teachers to move beyond the whole class lecture method.

**Altering assessment to capture what students know and are able to do in order to inform next steps**

- *Restructuring demands that assessment of student performance be an integral part of the learning process, so that students and their teachers get feedback on their actions.* The schools, working in different ways, have begun to change assessment so that students — starting at the primary level — learn to reflect on the quality of their work; teachers learn to evaluate the impact of their teaching; and schools and districts learn to judge the effectiveness of their support.

**Expanding professional development to include learning while doing and learning from doing**

- *Restructuring requires that adults in the school and in the community acquire new knowledge and skills to be able to provide enhanced learning opportunities for the young.* Research on learning processes, on cognitive, social, and emotional development, and in the content areas provides critical direction for restructuring. All ten schools have made acquisition of new knowledge and skills by adults an essential part of their restructuring efforts. Just as businesses are finding that change is happening so rapidly that learning must be done “on the job,” so schools are realizing that learning has to be an ongoing part of their staffs’ work.

*There needs to be quality time for adult learning, not just time tacked on at the end of a school day.*

Conceptions of professional development are changing: from “preservice education prepares one for everything,” to “one day of inservice each year,” to “several days per year,” to “professional development as a routine part of work,” to “the school as a center of inquiry,” where learning for both children and adults is an ongoing process. Adults in and around the school need continual learning of two types: a) about how and what their students are learning and b) about the best of research and exemplary practice on a whole range of topics, including organizational development and systemic change.

The schools are working to get beyond the “gap” created when teachers are absent from their students for professional development or team work. They are rethinking the teacher’s relationship to students. For example, if teachers work in a team with students, one teacher can be absent for a meeting while the rest of the team works with the students so learning time will not be lost.

*No change that’s significant is easy change.*

- *Restructuring is an intensely personal experience.* As one coordinator put it, it means “gut-wrenching” change and reconceptualizing oneself as a learner as well as a knower and one’s work as learning as well as teaching.

## **MAKING CHANGE ORGANIZATIONAL AND SYSTEMIC**

As the schools have discovered, fundamental changes in teaching and learning are not possible without changes in the way the school is organized and operated. They have also found that change inside the school has implications for parents and community, for other schools in the district, for higher education, and for the state department of education and others.

- *Restructuring is all about time — making time, taking time, finding more meaningful ways to spend time.* Imagine a community business that operated three plants, each of which handled a part of the company’s core function, a process requiring a total of 12 years of work by about 60 people to produce each “product” — that is, an “educated” young adult. Imagine that in this establishment, there was no “company time” to discuss any “company business” at all except one hour each month. Such is the reality in many schools. This is the situation that most of the restructuring schools were in as they began their work: their first change initiative had to be to wring time from the master schedule to begin exchange about company business: students and learning.
- *Restructuring is systemic, because all the levels and parts are interrelated.* The experience of the ten restructuring schools profiled in this booklet illustrates that when one piece of an educational system changes, it causes ripples that affect all the other parts of the system as well. As students learn in new ways and as parents and community members are invited to participate, they develop new expectations of their schools. Changes in teaching and learning at the elementary level have direct impact on the middle school level. Changes at the middle level mean rethinking both by the schools that feed into that school and by the high school. Changes at the high school are felt at the lower levels. Changes in the schools mean change in the district office and vice-versa. Changes in schools and districts mean change in the state department of education and vice-versa. And on it goes: communities, institutions of higher education, and others are all affected by and, in turn, influence other parts of the system.

All those opposing agendas converging can be immobilizing.

- *Restructuring means forging vital links to new ideas and new practices, altering the way state and local people work together, the way school people and university people relate to one another, and so on.* Restructuring around learning in schools and districts means restructuring departments of education and institutions of higher education as well. State departments must reexamine both their regulations and their support for schools. Higher education must look at the way they prepare educators for their roles as well as their requirements and expectations for entering high school graduates.

Just as schools have been rethinking the way they do business, so has the Maine State Restructuring Program Steering Committee, which has overseen the effort. For example, rather than providing answers, the committee has tried to ask good questions that will help schools, allowing the teams and staffs to find their own answers. The steering committee is composed of representatives from educational groups across the state — the department of education, teachers, administrators, MaineLEAD (Leadership in Educational Administration Development), higher education, the Maine Center for Educational Services, and The Regional Laboratory for Educational Improvement of the Northeast and Islands —and is chaired by the Deputy Commissioner of Education. The committee has coordinated the grant application process and organized workshops and opportunities for the restructuring schools to network. In selecting workshop topics, the committee has tried to address what the schools have identified as their priority issues rather than what the committee thought the schools would need.

*Restructuring  
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Another important source of good questions and useful resources has been the Southern Maine Partnership at the University of Southern Maine. A part of John Goodlad's national School Renewal Network, the Partnership has inspired teachers and administrators by providing a forum in which to share and test ideas, explore research on teaching and learning, and reflect on their knowledge and experience. For example, the Partnership helped one school design an action research component that allows information about progress to be constantly collected and shared among the staff.

- *Restructuring provokes questions about power: what does it mean to have young people who can think, teachers who can make decisions, administrators who are effective advocates for learning, and school boards and parents who are active and knowledgeable participants in the education process?* As one steering committee member said, we are getting beyond the rhetoric to the reality of sharing power

— into the unsettling and disorienting, but ultimately rewarding, process of trying out new roles and relationships.

## MANAGING THE ONGOING CHANGE PROCESS

The schools are realizing that change is going to be a part of their lives forever and that change management — including ongoing design, implementation, support, and evaluation — needs to be a routine part of organizational operations. In short, the schools are becoming increasingly expert at taking charge of change rather than thinking of it as something that just happens.

The way school is supposed to be ingrained in all of us, especially teachers who have spent their whole lives in school.

- *Restructuring means learning to manage and maintain change over time, among many people, and in many arenas of action.* The process begins in different places in different schools, but no matter where it starts, restructuring includes the process of getting adults and young alike to be supportive of and participate in change. Not only must the people within a school be receptive to changes, but so must the people in the larger environment in which the school is located — school board, parents, and other community members.
- *Restructuring is simultaneous, interactive, and messy, rather than a tidy and finite sequence of steps.* Moreover, the schools are realizing that they must actively work to maintain changes, or things will revert back to the way they were. Restructuring around student learning is not a “project” with a finite end. It is a new way of working that simultaneously focuses on the process of the work and the products of the work.
- *Restructuring involves adults in the school and in the community talking to one another and with students about what constitutes successful learning and then joining forces to make it happen.* This means that there must be time in the school schedule for adults to work together regularly. Communication between the school and the community must be ongoing. Exchange between adults and youth about learning must be continuous — not just in the classroom but in the home and around the neighborhood. While the ten schools have gone about it differently, initiating and sustaining authentic communication have been necessary parts of the restructuring process for each one.
- *Restructuring around successful learning for all students takes many years and the persistence to make changes, assess results, and modify as necessary.* It involves developing more meaningful ways of “telling if we’re getting there,” whether it be assessing student progress and helping students to assess their own learning or judging whether a



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learning experience has been successful or examining the organizational supports for teacher teams. It means being able to say something didn't work, to regroup, and move on.

It would be easy to look at the ten restructuring schools and say, "They've got it all together; no wonder they could restructure." It is important to note that the schools that have altered learning environments to promote successful learning for all have been at it for five or more years. Moreover, if you examine the histories of these schools, you will find that many of them began with low student motivation and achievement, low faculty and administrator morale, bare-bones budgets, and little community support. For these schools, restructuring has been a process of "getting their act together." Those schools that began the process with more advantages have had to ask hard questions about the reality of how much and how well their students are learning. In doing so, they have rocked the boat — equally an act of courage.

- *Restructuring begets questions faster than they are answered.* Long accustomed to thinking of education as supplying answers, the restructuring schools are finding that they are now in the business of helping students and one another to ask questions: What are we doing? Why is that important? How can we work together to make it better? What do we need to work on next?

We are living in an era where the pace of change and the level of complexity mean there are few simple answers and a lot of unknowns—education is not exempt from this.

The ten schools don't feel they have it all together: they have more questions than answers, more doubts than certainties—but isn't that what true learning is all about?

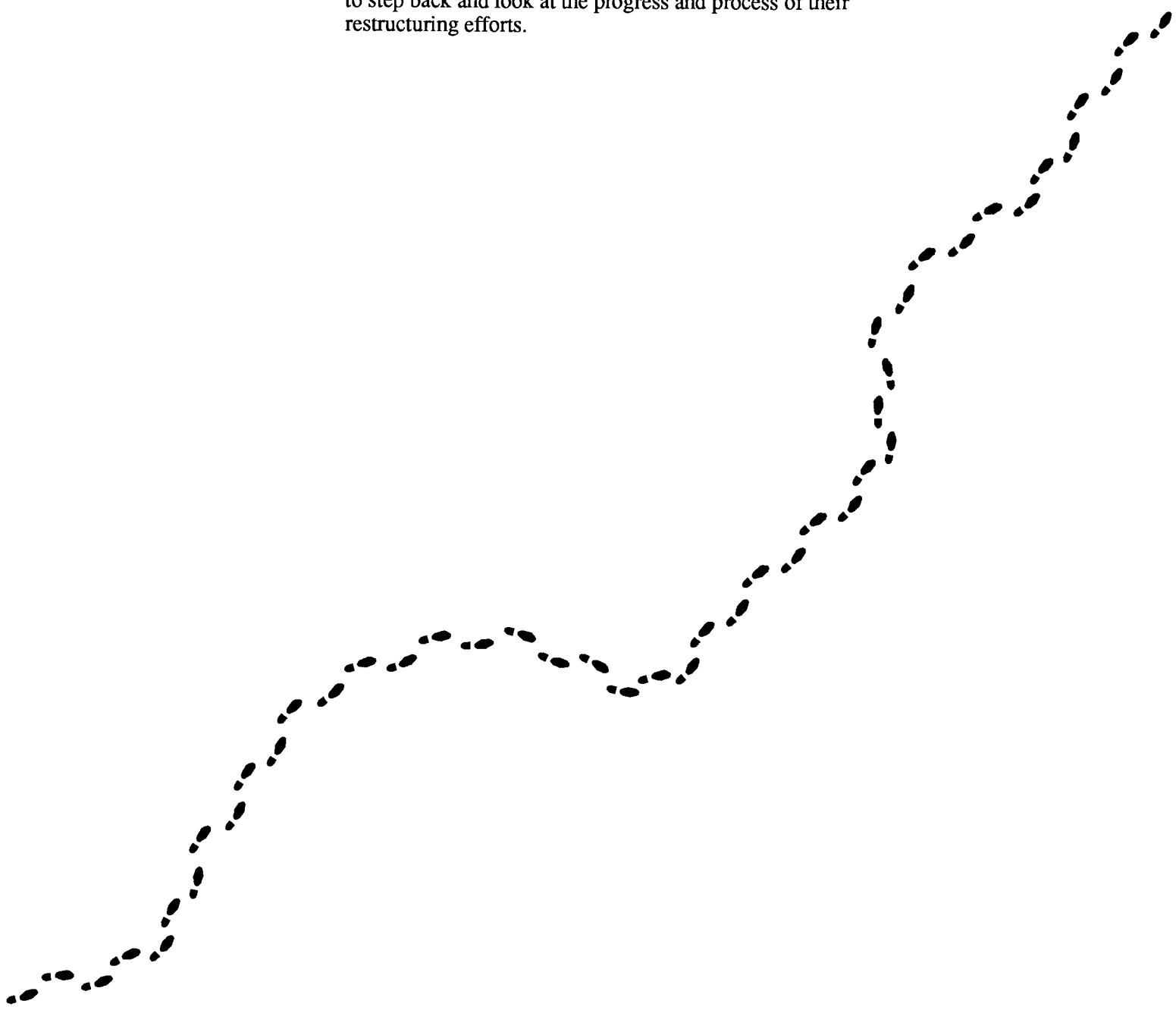
## DEPLOYING STATE RESTRUCTURING GRANT FUNDS TO SPUR CHANGE

All the schools have spent grant funds to make available new skills and knowledge along with time for school staffs to acquire them. *Professional development* that focuses on both learning and organizational issues is a long-term investment in the educators who must reshape schools around learning. School-based educators are working together and using their expertise to make school and classroom changes, assisted by outsiders with other expertise. *Release time* has been another important use of grant money: to free people not only for professional development but also to work together. Ultimately such shared work time needs to be a regularly funded part of the day.

According to the staffs of several schools, the grant funds fostered a "*can do*" attitude and an *impetus to organize budgets around student learning* rather than programs. The grant funds provided *budget flexibility* and "*permission to dream*," as one school staff put it. The grant funds leveraged more money as schools reallocated and reprioritized beyond traditional budget line items. In a period of financial retrenchment, we must learn to restructure budgets to target resources for enhanced student learning.

The schools mentioned the *recognition and legitimization* that the restructuring award brought and how it helped win and sustain support in their communities.

Finally, the school restructuring teams valued the opportunity provided by the Maine State Restructuring Program to get together three or four times each year to *analyze and reflect in a setting away from the daily routines of the school building*. Through these gatherings staff were able to step back and look at the progress and process of their restructuring efforts.



# WHERE DO WE GO FROM HERE?

Restructuring is not another fad; it will not go away. Designing schools to develop the potential of all youngsters will require the continued active engagement of all stakeholders — students, educators, parents, communities, businesses, and policymakers. Together we must work to build visions of schools that focus on what students need to know and be able to do; we must develop and find new ways for students to reflect on and demonstrate their skills and knowledge. Then we must act and reflect in turn as these visions are brought to life. We must work in many places, at the same time, and over the long haul.

## On the local level, let us:

- engage in communitywide discussion of restructuring issues, especially the new types of attitudes, knowledge, and skills that all young people must develop;
- create public awareness about new learning outcomes and the development of new teaching and learning experiences along with more useful ways of assessing student progress;
- articulate the connections between learning outcomes and learning opportunities and how the community, system, and school can be organized to support them;
- expand the use of communications technology to support new ways of teaching and learning within school and to link school to home;
- develop new methods of assessment, such as multimedia portfolios and demonstrations, to supplement standardized testing;
- develop ways of scheduling use of time in schools (at all levels) to support and manage the work of restructuring and ongoing professional development for educators;
- consider how a restructuring school can forge linkages with other schools in its district;
- rethink staffing and use of resources as more types of learning opportunities are invented;
- reorganize school and district budgets around the learning of all students; and
- recast the role of the central office as the facilitator of learning-centered restructuring.



**On the state level, let us:**

- continue to foster the development of new visions of the way we educate the young;
- form a statewide coalition of educators, business people, municipal officers, and legislators to forge and support a vision of new ways of schooling that support teaching and learning, and to broaden the effort school district by school district;
- use the Maine Common Core of Learning as a basis for community forums about teaching and learning within schools, within communities, and across the state;
- consider the role of the department of education in encouraging and modeling new structures;
- examine the implications of learning-centered restructuring for the department of education's own organization and operation;
- find funding and other resources to support and encourage continued innovation;
- build coalitions between higher education and K-12 education to address changes in teacher education and professional development that support restructuring and college admission requirements that include new assessment strategies; and
- link with national efforts to exchange current research and ideas about school change.



# WHERE DO WE GO FROM HERE?

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- recast the role of the central office as the facilitator of learning-centered restructuring.



# MAINE STATE RESTRUCTURING PROGRAM STEERING COMMITTEE

**Margaret Arbuckle**  
Maine Department of Education

**Nini McManamy**  
Maine Teachers Association

**Richard H. Card**  
Maine Department of Education

**Betsy Parsons**  
University of Southern Maine

**Jane deFrees**  
The Regional Laboratory

**Doris Ray**  
Maine Computer Consortium

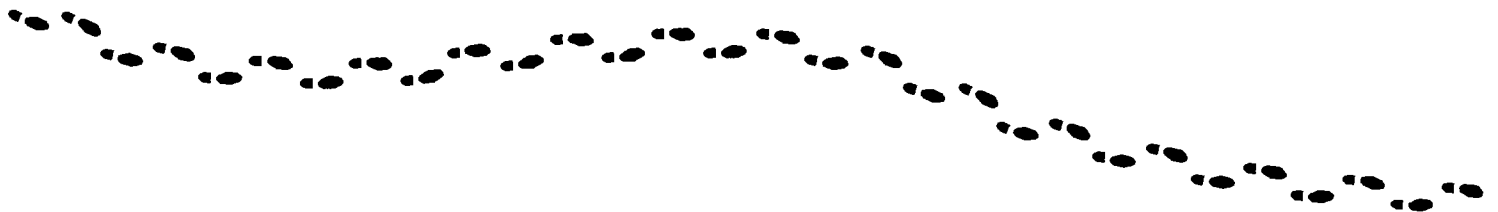
**Loren Downey**  
University of Maine System

**Elaine Roberts**  
Maine Center for Educational Services

**Jean Konzal**  
Maine Department of Education

**Nelson Walls**  
MaineLead

**Leta Young**  
Maine Department of Education

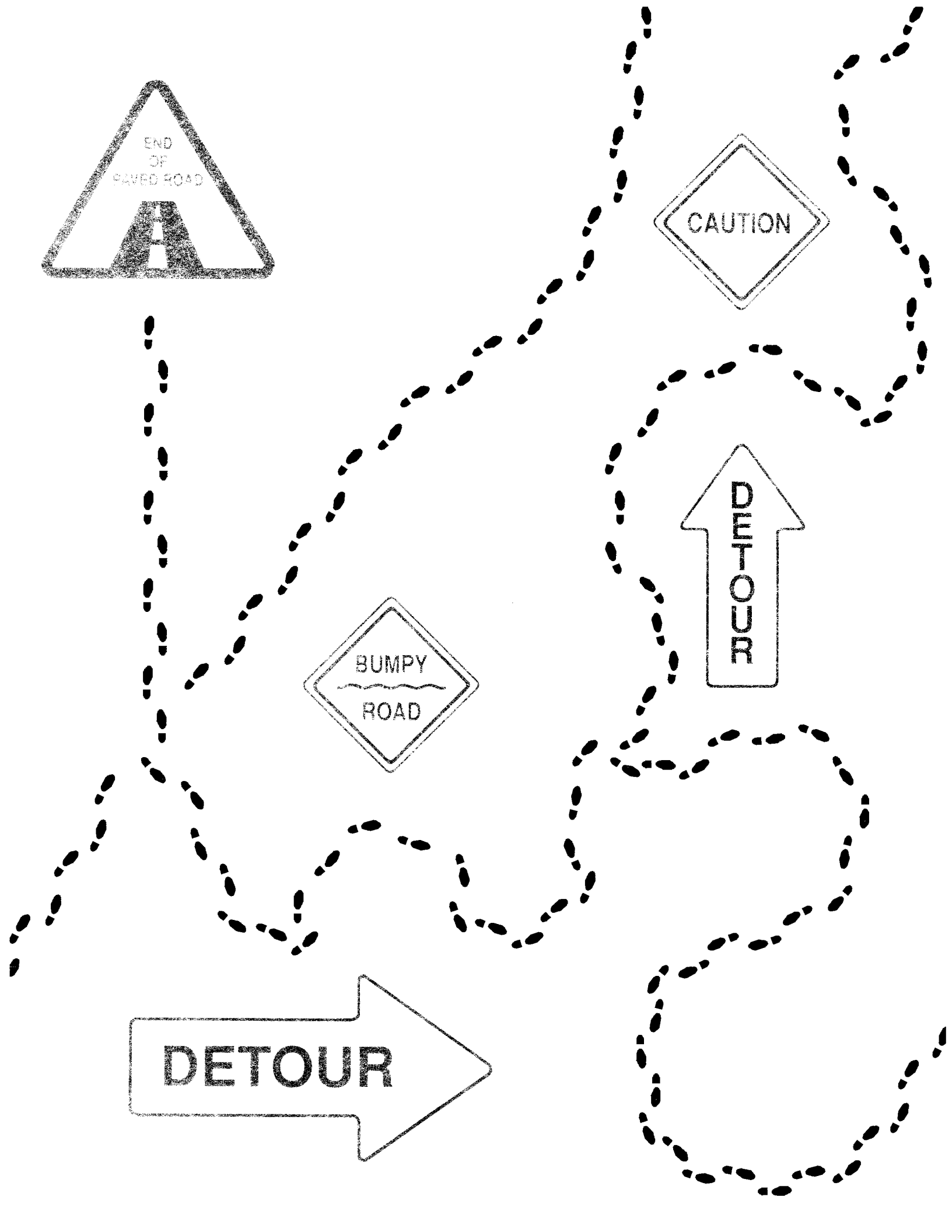
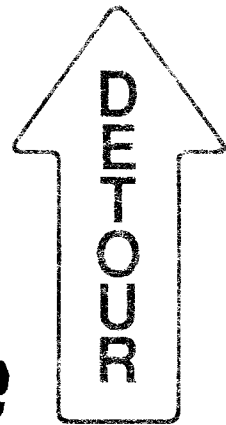
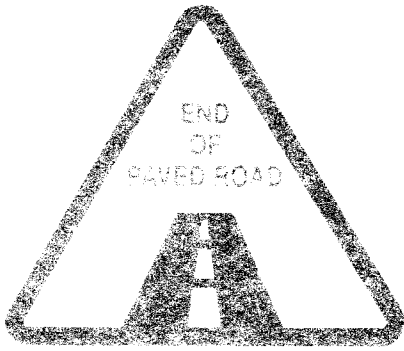


## ACKNOWLEDGEMENTS

The process of developing *Work in Progress: Restructuring in Ten Maine Schools* has itself been an opportunity for reflection and learning: the school teams and the steering committee have been active shapers of its content. The booklet was prepared by Pat Cox and Jane deFrees of The Regional Laboratory for Educational Improvement of the Northeast and Islands. They would like to thank the teams of the restructuring schools for sharing their experiences and contributing learnings. The contributions of Doris Ray and the Maine State Restructuring Program Steering Committee are also gratefully acknowledged along with the editing assistance of Jill Kaufman and Janet Angelis, The Regional Lab communications team. A special note of appreciation goes to Dick Card, who suggested that a booklet be developed. As always, any errors in the booklet are the responsibility of the authors.

Graphic design by Leona DeMartino





**COMMITTEE ON EDUCATION AND CULTURAL SERVICES**

Materials Distributed

9/2 - 9/19

See Mike Higgins in  
OP1A for full copy

### **§401. State Board of Education**

The State Board of Education is established by Title 5, section 12004-C, subsection 1. The State Board of Education shall be an autonomous body and shall maintain an office in Augusta. The appointments, terms and expenses of the State Board of Education members shall be as follows.

1. **Appointment.** The state board shall consist of 9 members who shall be appointed by the Governor. Each appointment shall be subject to review by the joint standing committee having jurisdiction over education and to confirmation by the Legislature.

2. **Composition.** The membership of the state board shall be broadly representative of the public and the regions of the State. A person whose income is derived in substantial portion from work as a teacher or as an administrator in an educational institution may not be eligible for appointment to or service on the state board. Members must have strong interest in and knowledge of education.

3. **Expenses.** Members of the state board shall be compensated according to the provisions of Title 5, chapter 379; a member shall receive compensation whenever that member fulfills any board duties in accordance with board bylaws.

4. **Term.** The term of office of each member shall be 5 years. Any vacancy shall be filled for the remainder of the unexpired term. The state board shall promulgate rules in accordance with the Maine Administrative Procedure Act, Title 5, chapter 375, which establishes the procedure and criteria by which the state board may recommend to the Governor the removal of a member from office prior to completion of the term of appointment for failure to perform the duties of office.

5. **Assistance.** The department shall provide staff assistance to the state board in carrying out its functions.

#### **§401 A. Responsibilities of the State Board of Education**

The State Board of Education is intended to act as a body with certain policy-making, administrative and advisory functions. In those capacities, the board has the primary responsibility for the following:

1. **Formulating policy.** Formulating policy by which the commissioner shall administer certain regulatory tasks;

2. **Advising commissioner.** Advising the commissioner in the administration of all the mandated responsibilities of that position; and

**§12701. Definitions**

As used in this chapter, unless the context otherwise indicates, the following terms have the following meanings.

1. **Administrative council.** "Administrative council" means the administrative council of the system as established in section 12713.

2. **Board of trustees.** "Board of trustees" means the board of trustees of the system.

3. **President.** "President" means the president of a technical college.

4. **President of the system.** "President of the system" means the President of the Maine Technical College System.

5. **College.** "College" means a technical college as established in section 12714.

6. **System.** "System" means the Maine Technical College System.

7. **Maine Technical College System Office.** "Maine Technical College System Office" means the office of the president of the system, together with the offices of supporting staff, as established in section 12710.

**§12702. System established**

There is established the Maine Technical College System which shall be a body corporate and politic and a public instrumentality of the State and the exercise of the powers conferred by this chapter shall be deemed and held to be the performance of essential governmental functions. The system shall consist of the board of trustees, the Technical College Support Office and the technical colleges.

**§12703. Mission and goals**

The basic mission of the Maine Technical College System is to provide associate degree, diploma and certificate programs directed at the educational, occupational and technical needs of the State's citizens and the workforce needs of the State's employers.

The primary goals of post-secondary vocational-technical education and the Maine Technical College System are to create an educated, skilled and adaptable labor force which is

BY-LAWS  
MAINE MARITIME ACADEMY

Pursuant to the provisions of chapter 37 of the Private and Special Laws of 1941 of the State of Maine, as amended by Chapter 97 of the Private and Special Laws of 1943, Chapter 102 of the Private and Special Laws of 1943, Chapter 16 of Private and Special Laws of 1943, Chapter 20 of the Private and Special Laws of 1943, Chapter 87 of the Private and Special Laws of 1945, Chapter 24 of the Private and Special Laws of 1947, Chapter 39 of the Private and Special Laws of 1949, Chapter 68 of the Private and Special Laws of 1959, and Chapter 71 of the Private and Special Laws of 1962, the Trustees of Maine Maritime Academy have adopted the following By-Laws:

ARTICLE I  
Meetings of the Board

Section 1. Meetings of the Board of Trustees may be called by the President-Chairman, or by the Secretary upon receipt of written requests for a meeting from a majority of the members of the Board.

Section 2. The Board shall meet a minimum of four (4) times annually and, insofar as it is practical and reasonable, these meetings shall be held quarterly. Members of the Board are expected to attend all regularly scheduled meetings and, therefore, absence from three or more Board meetings in any one fiscal year may be deemed by the Chairman to be a resignation from membership on the Board.

Section 3. The annual meeting of the election of officers shall be the first meeting of each fiscal year.

Section 4. The Secretary shall send by mail to each member of the Board at his last known address a notice of all meetings of at least ten (10) days before the date thereof.

Section 5. A majority of the members of the Board shall constitute a quorum for the transaction of business.

Section 6. The President-Chairman shall preside at all meetings of the Board. In his absence the Vice-President-Chairman shall preside if present and if not the Board shall elect a chairman pro tempore.

**§201. Purpose of the department**

The Department of Education is established to:

1. **Supervise public education.** Supervise, guide and plan for a coordinated system of public education for all citizens of the State;

2. **Interrelation with other programs.** Interrelate public education with other social, economic, physical and governmental activities, programs and services; and

3. **Cultural services.**

4. **Advancement of education.** Encourage and stimulate public interest in the advancement of education.

5. **Cultural and historical heritage.**

**§202. Department organization**

The department shall include the following:

1. **State Board of Education.** The State Board of Education;

1-A. **Commissioner of Education.** The Commissioner of Education;

2. **Maine Education Council.** The Maine Education Council;

3. **Maine State Commission for Higher Education Facilities.** The Maine State Commission for Higher Education Facilities;

4. **Maine Representatives to the New England Board of Higher Education.** The Maine Representatives to the New England Board of Higher Education;

5. **Maine School Building Authority.** The Maine School Building Authority;

6. **Governor Baxter School for the Deaf.** The Governor Baxter School for the Deaf;

7. **Maine Arts Commission.**

8. **Arts Bureau.**

9. **Maine State Museum Commission.**

10. **Maine State Museum Bureau.**

ROLE OF THE STATE BOARD OF EDUCATION:  
SOME HISTORICAL AND STATUTORY PERSPECTIVES

The role of the State Board of Education should be set in historical as well as statutory context for an appreciation of the role of this lay board within the Department of Educational and Cultural Services. This memorandum is intended to outline briefly the historical role of the board and describe its present statutory duties and authority.

The State Board in Historical Perspective:

The State Board is, in one perspective, a unique creature in state government among the many "boards and commissions" established by the Legislature. A number of boards are advisory in nature to various departments. Some boards have important licensing roles, but only a narrow spectrum of authority, e.g., licensing of physicians, nurses, cosmetologists. The State Board of Education, however, is an integral part of the Department of Educational and Cultural Services, acting, sometimes, as a policy-maker (and rule-maker) other times as a direct administrator or decision-maker, and still other times in an advisory capacity. The precise delineation of the State Board's role, as distinct from that of the Commissioner and distinct from state boards elsewhere, is explainable only in historical terms.

Until 1949,\* the Department of Education exercised general supervision of public education and private academies under the leadership of the Commissioner of Education, an official appointed by the Governor and Executive Council. The Commissioner's authority and duties were quite comprehensive. He was a policy-maker (within the context of the enabling legislation), a decision-maker (again, within the context of legislative delegation), and chief (and sole) administrator of the Department. The Commissioner, for example, set school approval standards, adopted certification standards and awarded (or denied) professional certificates, prescribed the general course of study for public and private schools, and ran the state teachers' colleges and schools in the unorganized

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\* The very first State Board was created in 184<sup>6</sup> and lasted until 18<sup>54</sup>, making Maine a pioneer among the states in supervision of local education.

Univ. of  
Maine

Updated through 1983  
Further changes have been  
made and may be tracked  
down through ROS files  
(card catalog) 2 26-91

## CHARTER OF UNIVERSITY OF MAINE

Section 1. Trustees; corporate name; college authorized to be established; trustees to receive from the state income of fund; such income, how applied. Samuel F. Perley, N. T. Hill, Bradford Cummings, Thomas S. Lang, Dennis Moore, William D. Dana, S. L. Goodale, Robert Martin, Alfred S. Perkins, Joseph Farwell, Seward Dill, Joseph Day, Ebenezer Knowlton, Hannibal Hamlin, Charles A. Everett and William Wirt Virgin, are hereby constituted a body politic and corporate, by the name of the University of Maine System, having succession as hereinafter provided, with power to establish and maintain, subject to the provisions and limitations of this Act, such a college as is authorized and provided for, by the Act of the Congress of the United States, passed on the second day of July, in the year eighteen hundred and sixty-two, entitled "an act donating lands to the several states and territories, which may provide colleges for the benefit of agriculture and the mechanic arts." They shall be entitled to receive from the state the income which shall accrue from the funds granted to the state by the act aforesaid, and shall apply the same, together with all such income as they shall receive from any other sources to the maintenance of the college in conformity with the act of congress.

P&SL 1865, c. 532 (new). P&SL 1897, c. 551 (amd). PL 1985, c. 779, §87 (amd).

Section 1-A. Establishment; purposes. To develop, maintain and support a cohesive structure of public higher education in the State of Maine and in full recognition of the principle that each institution of higher education shall have a proper measure of control over its own operations and that its faculty shall enjoy the academic freedoms traditionally accorded institutions of higher education in teaching, research and expression of opinions, a system unifying the University of Maine, Gorham State College, Farmington State College, Aroostook State College, Washington State College and Fort Kent State College is established under the name of the University of Maine. As used in this Act, unless the context otherwise indicates, "university" means the University of Maine System.



EDUCATION

HB 3565

Chapter 693, 1991 Oregon Laws

Sponsored by Representative Katz, et al.

Establishes Oregon Educational Act for the 21st Century

House Education Committee  
Senate Education Committee  
Joint Ways & Means Committee  
Joint Conference Committee on HB 3565

HB 3565: The measure is the Oregon Educational Act for the 21st Century, continuing and expanding educational innovations adopted by the Legislature beginning in 1985. HB 3565 provides for extensive changes from early childhood education through adult learning, gradually implemented over the next two decades with the goals of producing the best educated citizens in the nation by the year 2000 and a work force equal to any in the world by 2010.

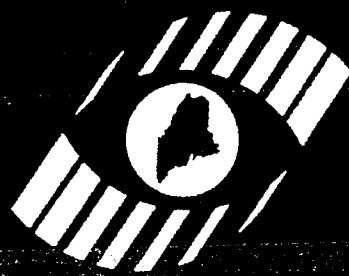
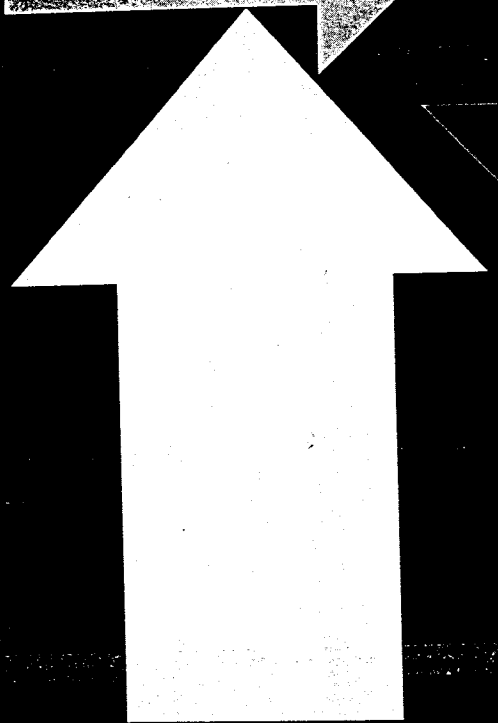
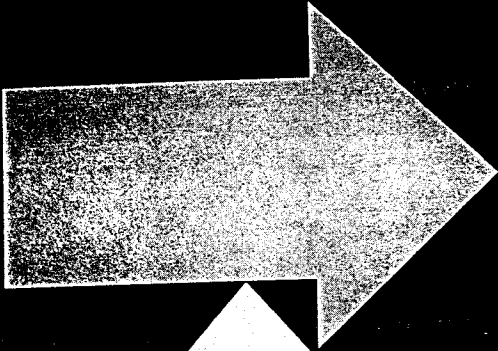
The Department of Education and the Office of Community College Services will be the lead agencies in implementing the plan, working closely with other appropriate agencies, local school districts, and citizens. The measure requires constant legislative oversight, evaluation, and action as it becomes necessary in the light of implementation experience. Finally, the measure provides assurance that the various mandated changes will not be enforced against local school districts unless there is adequate state funding. The major features are:

- > The Board of Education will adopt upgraded statewide Common Curriculum Goals and Essential Learning Skills by 1992.
- > The Department of Education will continue and expand a public accountability system, including on-site school standardization visits, monitoring of local school district self-evaluations, statewide testing of all students in grades 3, 5, 8, and 10, and collection of data for an annual "report card" on the state of the public schools.
- > Site-based management committees with teachers in the majority will be established in every school district by 1994 and in every school building by 1995.
- > The Board of Education will appoint "Distinguished Oregon Educators" beginning with the 1992-93 school year to act as technical advisors and offer assistance to school districts.
- > The State Board of Higher Education, in consultation with other agencies, will develop programs of research, teacher and administrator preparation, and continuing professional development

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*The Community College of Maine*

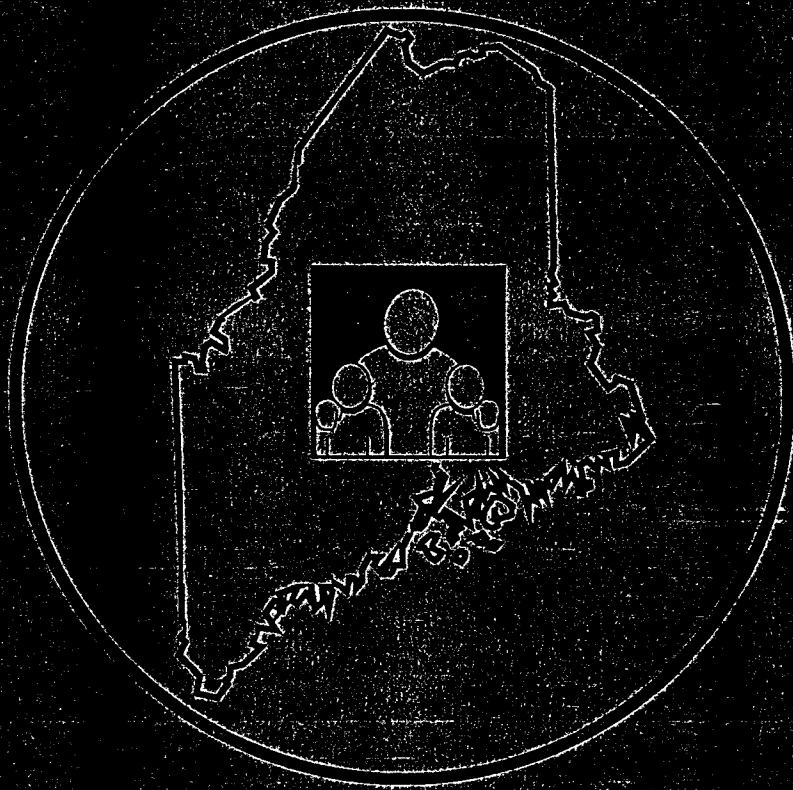
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Annual  
Report  
Year Two  
1990-1991

*Office of Distance Education  
University of Maine at Augusta  
June 30, 1991*

# Maine Head Start/Literacy Collaboration Project



Cheryl A. Leeman, Director  
State Office of Head Start  
Division of Community Services  
Augusta, ME  
Summer 1991

PERFORMANCE REPORT:  
JANUARY 1990 THROUGH JANUARY 1991

STATE OF MAINE

CHILD DEVELOPMENT SERVICES (CDS) SYSTEM  
P.L. 99-457: PART H AND SECTION 619

A Summary Status Report to the  
Joint Standing Committee on Education  
Maine State Legislature  
115th Session

March 1, 1991



**child  
development  
services**

State Office  
87 Winthrop Street  
State House Station # 146  
Augusta, ME 04333



**child  
development  
services**

**STATE OF MAINE**

A statewide, interdepartmental coordination network of services for Maine families and children (0-5), who are handicapped, or at risk for developmental delay.

# Philosophy



**child  
development  
services**

STATE OF MAINE

A statewide, interdepartmental coordination network of services for Maine families and children (0-5) who are handicapped, or at risk for developmental delay.

**Historical Perspectives  
on  
Maine's 0-5 Interdepartmental  
Early Intervention System**



**child  
development  
services**



S C R E E N I N G



E V A L U A T I O N



S E R V I C E S



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## PROJECT HEAD START

### Summary of the Program

Project Head Start is a demonstration program which provides comprehensive developmental services for low-income preschool children. Since its inception in 1965, Head Start has provided educational, social, medical, dental, nutrition and mental health services to over eleven million children and their families across the nation. Launched by the Office of Economic Opportunity, it is now administered by the Administration for Children, Youth and Families in the Department of Health and Human Services. As an innovative program, it has had a significant impact upon the thinking of educators, psychologists and other specialists in the child development field.

### HEAD START PROGRAM GOALS

The Head Start Program is based on the premise that all children share certain needs, and that children of low income families, in particular, can benefit from a comprehensive developmental program to meet those needs. The Head Start program approach is based on the philosophy that:

- (1) A child can benefit most from a comprehensive, interdisciplinary program to foster development and remedy problems as expressed in a broad range of services, and that
- (2) The child's entire family, as well as the community must be involved. The program should maximize the strengths and unique experiences of each child. The family, which is perceived as the principal influence on the child's development, must be a direct participant in the program. Local communities are allowed latitude in developing creative program designs so long as the basic goals, objectives and standards of a comprehensive program are adhered to.



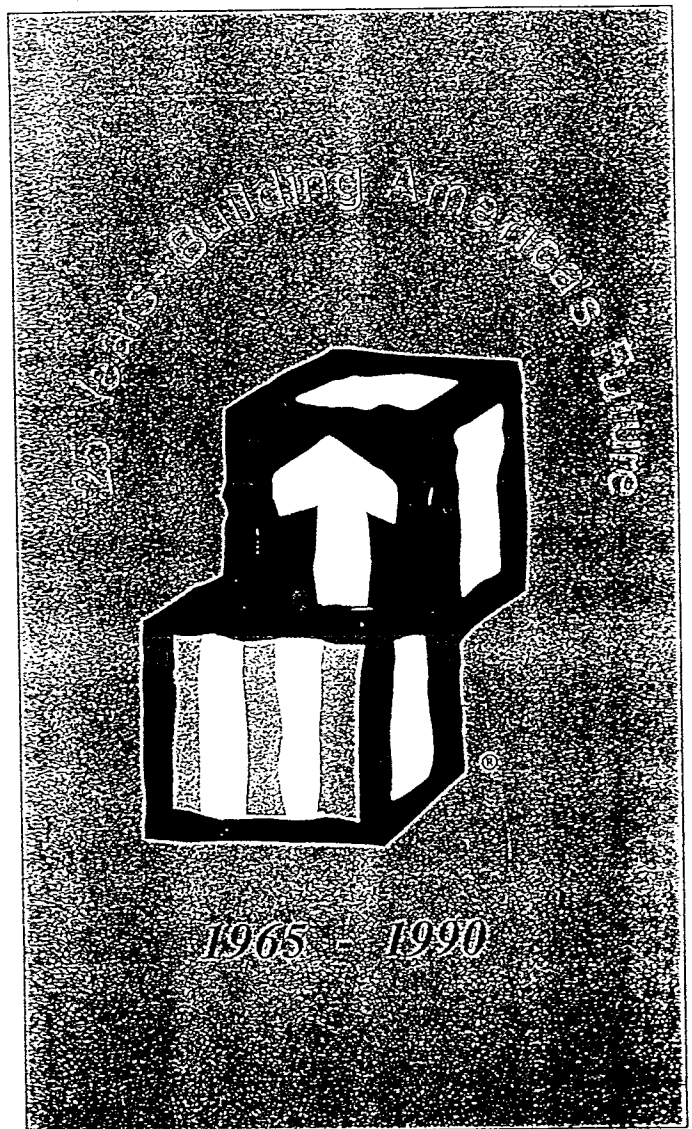
U.S. DEPARTMENT OF  
HEALTH AND HUMAN SERVICES

Office of Human Development Services  
Administration for Children, Youth and Families  
Head Start Bureau



# HEAD START

A Child Development Program



1990

# MAINE HEAD START COLLABORATION PROJECT

Grantee            State of Maine  
                  Division of Community Services  
                  State House Station #73  
                  Augusta, ME 04333

Contact            Ms. Cheryl Leeman, (107) 289-3771

Duration          September 30, 1990 - September 30, 1993

Cost               \$112,212 (FY 1990, all sources)

Grant No.         90-CD-0745

Focus              JOBS, Early Childhood Education, Transition, CDA,  
                  Health Social Services, Day Care

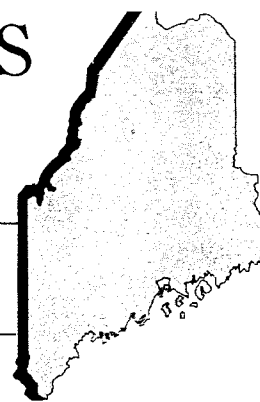
## Primary Objectives:

- o Coordinate the integration of Head Start with the Maine ASPIRE and apprenticeship programs to facilitate families toward self-sufficiency;
- o Strengthen child development curriculum, expand classroom teacher training in managing special needs children, develop policies for transitioning children to the primary education system and increase literacy level of Head Start families;
- o Improve family health education, accessibility to health care, services to special needs children and continuing education for nurses;
- o Identify family support services to be targeted to Head Start and establish a Masters Social Worker (MSW) supervising family service workers in each program;
- o Explore options for integrating Head Start and day care to initiate full-day child care;
- o Regionalize the CDA training program;
- o Develop a short-term and long-term plan to meet changing needs of Head Start;
- o Reconstitute statewide Head Start Parent Advisory, create workplan to address substance abuse and set forth a public relations campaign.

# MAINE DEPARTMENT OF HUMAN SERVICES OFFICE OF CHILD CARE COORDINATION

John R. McKernan, Jr.  
Governor

Rollin Ives  
Commissioner



## SCHOOL-AGE CHILD CARE TECHNICAL ASSISTANCE PAPERS



Public School Based Child Care For Teen Parents - 1990-91

<u>Programs</u>	<u>Location</u>	<u>Coordinators/Directors</u>
Augusta	Capitol Area Regional Vocational Center	Karen Upton (YMCA) Marie Warren (Home Economics)
Lewiston	Lewiston Regional Vocational Center	Virginia Marczak (Home Economics)
Lubec	Regional Medical Center (For Lubec High School)	Rosa (Care Giver)
Mt. Desert	Mt. Desert Island High School	Katrina Norberg (Home Economics)
Skowhegan	Skowhegan Regional Vocational Center	Shelly Lahti, Director (Program run by KVCAP Agency at the Vocational Center)
Standish	Bonny Eagle High School	Lauren Cyr (Home Economics)
Van Buren	Van Buren High	Pat Cyr (Teacher of Vocational Child Care, Van Buren High)
Waterville	Waterville High School	Bonnie Brown (Program Operated through Head Start) Located at high school
Westbrook	Westbrook High School	Frances Audette (Former home economics teacher and now teacher of Vocational Child Care program Westbrook Regional Vocational Center)

Required parenting course taught by certified home economics teacher.

Brunswick -

Community Health and Nursing Services provides day care services for teens at Brunswick High in facilities located near the high school. Parenting classes held at high school.

jc/corres3/cross

September 1991

## Child Care/Parenting Initiatives

### Consumer and Home Economics Education

Nearly all nursery school programs in Consumer and Home Economics are in-school as part of child development/ parenting courses. Preschoolers usually participate at least two periods of the school day. The number of weeks for the experience vary from program to program. The primary purpose of the programs is to provide students with knowledge and understanding about the growth and development of all stages children. Expected outcomes are better prepared parents and an awareness of careers in the areas of child care/child development.

Child development is one of the major courses in the Home Economics Curriculum. During 1989-90, the 122 high schools (grades 9-12) offering home economics programs, over 40 of them had an on-site nursery school component. Each year, more schools are including the experience in their child development/parenting units.

Of those schools not able to provide the hands-on experience due to scheduling and space, most teachers provide community-based opportunities by utilizing Head Start, nursery schools, and kindergartens. Many more teachers would incorporate school-based nursery school experiences if schedules could be arranged for the high school students.

During 1989-1990, about 7,500 students in grades 9-12 (23% of those were boys) were enrolled in courses that embraced parenting and child development. Several students in those courses were pregnant or parenting teens (including fathers) and had remained in school.

About 22,500 middle school/junior high students in grades 5-8 were enrolled in home economics classes. Parenting, child development, personal development and family roles were a part of the curriculum at that level.

Carl Perkins Consumer and Home Economics funds have provided incentives for several schools in economically depressed areas to develop in-school nursery school experiences to enrich their child development courses. In those schools providing school based child care for teen parents, students are provided experiences in infant/toddler care.

Both preschoolers and their junior high or high school care givers have reaped benefits. Many have given second thoughts to early parenthood! Some who truly despised children (largely because of long term responsibility for siblings) gained an understanding and appreciation of "little ones" and became involved in the nursery school activities. Young men as well as women have gained a better understanding and appreciation of themselves through their exposure to the literature and experiences with the pre-schoolers. Stories of their own child abuse unfolded along with other situations to which they had never faced up to before.

Discoveries have been made about preschoolers not previously recognized before by parents. Efforts were made to correct any problems.

jc/corres3/cross2

# What Is The Secret Of Teaching Values?

*In an increasingly complex society, old ways are no longer guaranteed to work.*

By James A. Michener

**V**ALUES ARE THE EMOTIONAL RULES BY WHICH A NATION GOVERNS ITSELF. Values summarize the accumulated folk wisdom by which a society organizes and disciplines itself. And values are the precious reminders that individuals obey to bring order and meaning into their personal lives. Without values, nations, societies and individuals can pitch straight to hell.

I was a tough, undisciplined youngster, suspended three times from school, twice from college. I was a vagabond at 14, rode freight trains in my late teens. But because I had accumulated an iron-clad set of values, I was able to hack out a fairly acceptable life. In my day—and I am 84—young people acquired their system of values first in the home. I was raised in a terribly broken home, which never had enough money for normal living. But I had an adoptive mother who took in abandoned children, who worked around the clock, and who read to us at night. By the time I was five, I had the great rhythm of the English language echoing in my mind.

I learned values in church, in school and on the street. I learned them through travel, military service and the movies. I acquired values through athletics, where a high-school coach took me, fatherless and without a rudder, and pointed me in the right direction. I learned values in the library and, in fact, it could be that my intellectual life was saved by the little library opened in our town of Doylestown, Pa. about the time I was seven. Records recently recovered showed that the first two cards taken out were issued to Margaret Mead and me. What a start for us; what a start for the library.

Modern kids, regrettably, face extreme pressures that I simply didn't. This is a more complex world and the youngster of the 1990s absorbs a heavy hammering. There's an assault from all sides by news that's threatening; there's been a breakdown of traditional safeguards like the family. Stanford University professor John Gardner, the founder of Common Cause, notes, however, that after many years of exploring "the limits of living without ethics, a lot of people are saying, 'It won't work.' I think there's a movement back

toward commitment to shared goals." If so, it's mighty welcome.

What should these goals be? Nationally, there must be a drive for public service, to see society protected and moved ahead. There must be encouragement to blow the whistle when something goes wrong.

Individually, we must develop compassion, a willingness to work, loyalty to family and friends and organizations,

the courage to face temporary defeat and not lose forward motion. I think we must learn fairness and honesty in economic matters. And we've got to keep reviewing our value decisions from decade to decade. You're never home free just because you went one way one time.

Adults can keep updating their value systems from the best of what they read and see on television—and from the very fine adult study programs I've observed in places as diverse as Alaska, Maine and Florida. For young people, the home still ought to be the cradle of all values, but unfortunately a staggering proportion of them do not live in stable homes. It is thoughtless beyond imagination for older people to say rigidly, "The child must learn his or her values at home" when there is no home. Some substitute must be found.

Religious training? It would be wonderful if every child had the warm, comforting experience I had in my Sunday school, with its songs, its stories, its bags of candy at the holiday, but many are denied that. And while religion is an admirable teacher for those connected to it, it is a silent voice for those who are not.

The school is the only agency legally established by organized society and supported by taxation whose sole job it is to teach the child the knowledge, the skills and the values required for a successful

## CIVIC VIRTUES

### ECHOES FROM YESTERDAY

*... A good citizen shall be... willing to pull his weight.*

—Theodore Roosevelt, 1902

### IDEAS FOR TOMORROW

*For many, individualism has come to mean that "anything goes" as long as it's in their interest—as opposed to recognizing that one is part of a larger society. As long as our attitude, for example, continues to be, "Don't tax me, tax the guy behind the tree," we're not recognizing we're part of a larger society.*

—Former Secretary of Defense James Schlesinger for REDISCOVER AMERICA  
1492-1992

**INTERVIEW**

# Watching a Generation Waste Away

**Economist SYLVIA ANN HEWLETT argues that America is callously treating its youth like excess baggage and throwing away its future prosperity**

By JANICE CASTRO NEW YORK

**Q. Feminists call you a backslider and a traitor, conservatives say you sound like a big-spending liberal, and liberals say you sound like a reactionary. Why do so many different groups attack you?**

**A.** Because I am extremely concerned about what is happening to the American family. Those of us in the sane center are always being clobbered by both the left and the right. We think of ourselves as a nation that cherishes its children, but, in fact, America treats its children like excess baggage. In all other countries, childbirth is seen as an event that is vitally important to the life and future of the nation. But in the U.S. we treat child rearing as some kind of expensive private hobby.

**Q. In what ways?**

**A.** Our tax code offers greater incentives for breeding horses than for raising children. We slash school budgets and deny working parents the right to spend even a few weeks with their newborns. We spend 23% of the federal budget on the elderly but less than 5% on children. We refer to pregnancy as a "temporary disability," putting it on a par with breaking your leg.

**Q. What is the impact on children?**

**A.** Children of all races and income levels are suffering. Nearly one-third of our children drop out before finishing high school; only 6% do so in Japan, 8% in western Germany.

**Q. What kinds of changes are needed to address these problems?**

**A.** We need parenting leaves, for one thing. When Brazil rewrote its constitution in 1988, it was seen as an inalienable right for mothers to spend some time with their newborn children. In this country, 60% of working women have no maternity leave. If they must spend time at home with their new baby, they stand to lose their job.

**Q. What about private child care?**

**A.** Most parents cannot afford decent child care. I spoke recently with a young father in Phoenix. He and his wife must both work to make ends meet. He told me what it felt like to put his five-week-old baby daughter in what he called a kennel: third-rate day care. It was all they could afford. They have

no health benefits, and neither had the right to time off when their daughter was born. The worst part is that their situation is normal in this country. But the average European country now guarantees five months off with full pay after the birth of a child. You would never find a five-week-old child in day care.

**Q. In your new book, *When the Bough Breaks: The Cost of Neglecting Our Children*,**



**you maintain that this is a peculiarly American problem. Why?**

**A.** When it comes to family policy, we're caught between two fantasy worlds, one described by the right, one described by the left. The left behaves as if we do not have children. They have focused on equal opportunities, ignoring the fact that individuals who are nurturing children cannot compete on equal footing with those who are not. The left has been so concerned with the rights of people to live however they choose that they cannot even decide what a family is.

Meanwhile, the right talks about traditional family values but does nothing to help families. They act as if we are living in the '50s, when women stayed home to raise the children. Day care was a dirty word. A hands-off government policy on families

made more sense then. More families were intact, for one thing.

**Q. In part because there were strong social prohibitions against divorce, parents were expected to put their children's interests first, and staying together was viewed as the best way to care for children.**

**A.** Yes, even if that is not always true. At least we put the children first. These days we treat divorce as just another personal choice. Birth control has made it possible to choose when to have children, and liberalized divorce laws have made it easy to abandon them. Parents now spend 40% less time with their children than they did about 15 years ago.

**Q. What about the argument that working women have brought these problems on themselves and are now asking the government to pick up the slack?**

**A.** No, no, no. Working mothers are always the scapegoat. But look, real hourly wages

**"We have forgotten that while marriages may not last, parenthood is forever. We are living with the appalling consequences of all this neglect."**

have fallen 19% since 1973, so most families need two jobs just to get by. If women were not working, the American family would be in desperate financial trouble by now. Yet we seem to expect women somehow to rear their children in their spare time. We persist in thinking of child care as a woman's issue. It's not. Fathers are more to blame for the parenting deficit in our society.

**Q. Why?**

**A.** Too many still think that taking care of the children is women's work. And after divorce, almost half the fathers drop out of sight.

**Q. In your book, you argue that the liberalization of social attitudes and the changes in family law are partly to blame. Weren't no-**



## Community Schools: A Vision of Equity and Excellence for Young Children

Jenifer Van Deusen



© Harvey R. Phillips, PPH

*Collaboration among all community elements can produce schools that better meet community needs. And educators can no longer simply pay lip service to parent involvement. Creating schools that welcome and teach all children demands energy and creativity from all of us.*

*Jenifer Van Deusen, M.Ed., is an Early Education Consultant with the Maine Department of Education. She currently administers grant programs and participates in policy development. Her experience in early childhood education has included positions as primary grade, kindergarten, and preschool teacher, and child caregiver.*

People are saying that our school system no longer meets our children's, families', or society's needs. We need to restructure our schools to forge together all elements of our diverse communities. It would seem that the community school is needed now as never before.

A current example of schools with a sense of community are those based on the ideas of James Comer (1988). In "Comer schools," intensive, democratic collaboration of parents, administrators, teachers, and support staff, aided by a team of mental health practitioners, not only raises achievement levels of the children but also inspires many parents to further their own education. This approach also provides a means for somewhat equalizing what James Coleman (1987) calls *social capital*, that is, the resources available to a child for nurturance, mentoring, personal attention, and intimacy. This social capital has been seriously eroded by societal changes, even for middle-class children. Community schools can increase these resources and ensure that each child benefits at least to some extent from them. But what are each of us doing to move toward this model in our communities?

People are saying that the business sector, aware that today's children are tomorrow's work force and that the information age demands a new type of worker, can be an important factor in the community school equation, an equal partner with parents, community members, and educators in the work of designing new programs to meet the emerging needs of tomorrow's citizens. It is frequently written that perpetuating the existence of an educational underclass threatens our ability as a nation to compete in the global marketplace (The National Commission on Excellence in Education, 1983). It also imperils the basis of our democratic society, which rests on a citizenry literate enough to make informed choices (Natriello, Pallas, & McDill, 1987). It is said that the business sector is ready to participate in a partnership with schools to help children learn how to learn. But what are each of us doing to bring business and schools together in our communities?

How can we connect this rhetoric with the reality of what is needed for equitable and excellent schools for young chil-



# 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

 CED

# MORE THAN MONEY

*Big budgets don't boost achievement, it's parental influence that counts*

By ROGER RICKLEFS

**Y**OUR PROPERTY TAXES are eating you alive. Relax, you tell yourself. Isn't the bulk of the money going to improve our schools? And doesn't that mean our kids will be better fitted for more-demanding modern jobs? Won't we be better able to compete with the Japanese and everyone else in the dog-eat-dog global economy? Of course. So it's all worth it.

But is it?

A growing number of people think not. In fact, as a panacea for educational reform, money is actually getting a bad name. There are numerous indications that the sheer weight of cash thrown at the many problems of the U.S. educational system has had little effect in solving them. The hard fact is that our schools are in many ways worse off than they were when we were spending a lot less.

Indeed, our fixation on numbers—spending per pupil, teacher salaries, class size—may only be distracting us from more-fundamental issues that can't readily be expressed in numbers but that are far more important. It is even possible to argue that schools themselves don't matter much, at least compared with parental influence on children—and no one in this nation of statistics worshippers can put a numerical value on that.

This isn't meant to suggest that the U.S. can afford to reverse course and slash educational spending. More money pumped into teacher salaries brings more and better teachers into the system and helps keep them there, something everyone agrees can only improve our schools in the long run. More money also makes possible reductions in class size that can be of some benefit, buys needed equipment and funds special education, sports and other programs of enormous value to many students.

So, adequate funding remains important. But even more important is the realization that cash alone can't do the trick, that educational reform can't be purchased like a sack of groceries. The U.S. has already tried that, and it has failed.

Given the national hand-wringing over the condition of the public schools, Americans could be forgiven for believing that we are spending less on them than we used to. Actually, we have been spending more, a lot more.

Between 1959-60 and 1985-86, inflation-adjusted

spending per public-school pupil more than doubled in this country. Average teacher salaries, again adjusted for inflation, went from less than \$19,000 to \$27,000, and average class size in elementary schools fell. But if there is anyone out there who believes this has brought the dawn of a Golden Age in U.S. education, no one has heard from him.

Instead, "there is an increasing disillusionment with money [as a solution]," says Eric Hanushek, a University of Rochester economist who has made extensive studies of educational performance as re-

most likely to harbor residents who place a high value on education and impart that value to their children at home. The apparent cash-and-achievement correlation "disappears when differences in family background are controlled for," according to a study by Prof. Hanushek.

His work, supported by that of others, also casts doubt on additional assumptions about the power of money—one being that higher teacher pay will magically translate into higher pupil achievement. Though there is little serious doubt that boosting salaries will benefit the system over the long haul, those expecting a quick payoff may be disappointed; Prof. Hanushek analyzed 69 academic studies of the subject and could find little connection between salaries and student achievement.

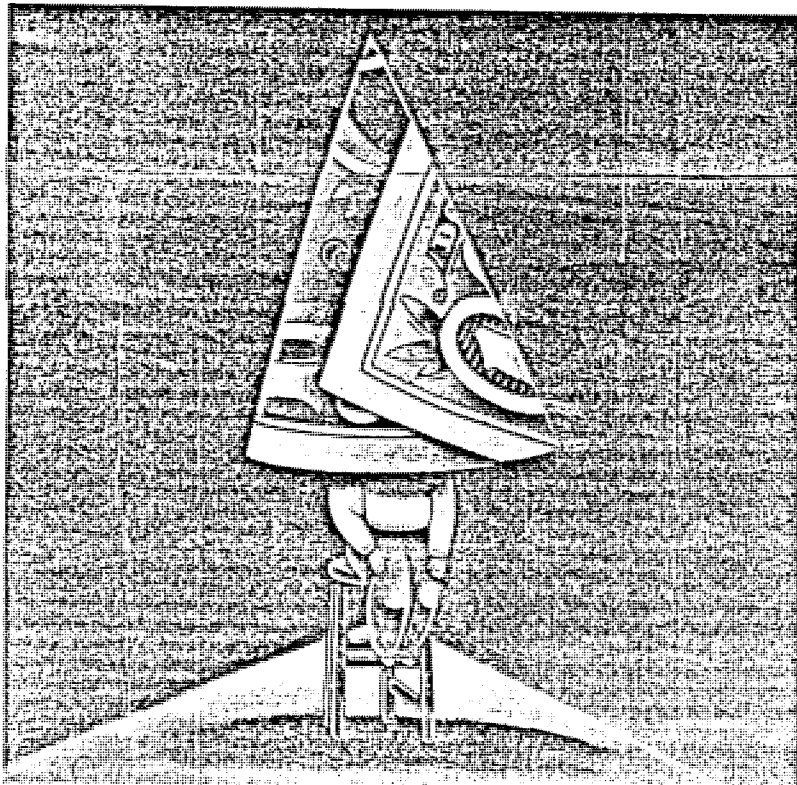
Another cherished but perhaps mythic belief: that smaller classes, made possible by spending more money to hire more teachers, promote better student performance. It's true that sometimes this is the case. For example, if deep cuts can be made—reducing large classes by perhaps half—solid benefits may accrue, and research suggests that even smaller cuts can help the performance of young children in particular. But as a universal principle, the idea that smaller classes automatically mean more learning doesn't hold water.

The usual reduction in class size (from 28-30 pupils, say, to 22-24) isn't enough to make a difference, researchers say; teachers simply go on using the same methods, and results remain about the same. Plowing through another 152 academic research reports addressing this issue, the indefatigable Prof. Hanushek found only 14 that concluded smaller classes had helped student achievement significantly.

Standing amid the fragments of all these shattered assumptions, what then is the taxpayer to think? What should he do?

If he is a parent and he believes Prof. Coleman is right about the overarching importance of family influence, he ought to do everything in his power to instill a love of learning in his own children and make plain to them that their education is a vitally important thing to him.

He might also look at his school system with a new eye. Is it offering a choice of schools that students can attend, is it making academic standards more rigorous, is it giving teachers greater autonomy and is it teaching the basics more effectively than it was? If not, all the numbers it generates about higher teacher salaries, smaller classes and spending per head may mean little. If money can't buy happiness, neither can it buy learning. ■



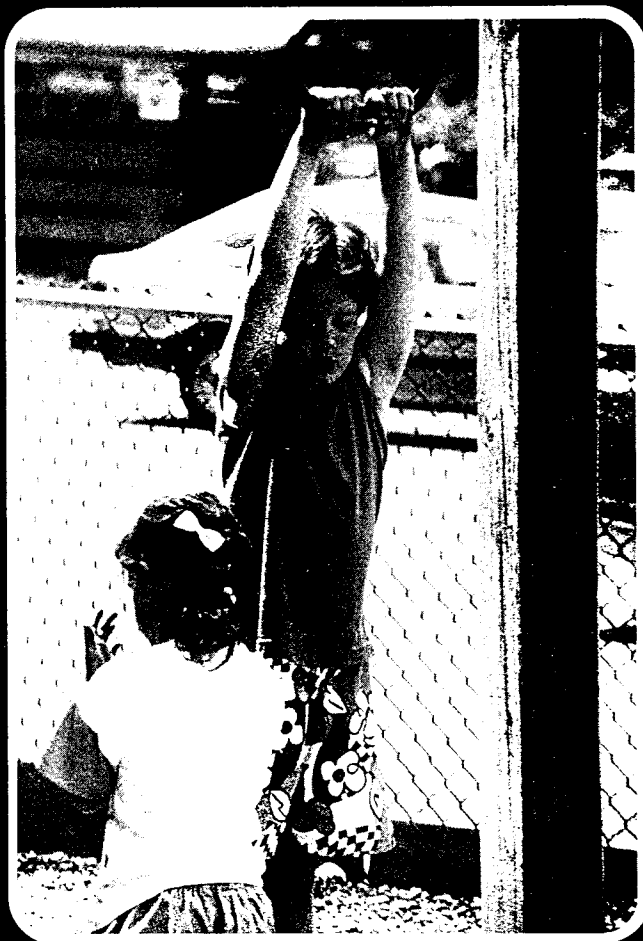
Terry Widener

lated to spending. Another well-known researcher, James S. Coleman, professor of sociology and education at the University of Chicago, adds: "Expenditure just isn't the key."

In an exhaustive 1966 study, Prof. Coleman concluded that family background mattered far more in student achievement than the school itself. He found that spending on instruction accounted for less than 1% of the variance in achievement among whites and less than 3% of the variance among blacks.

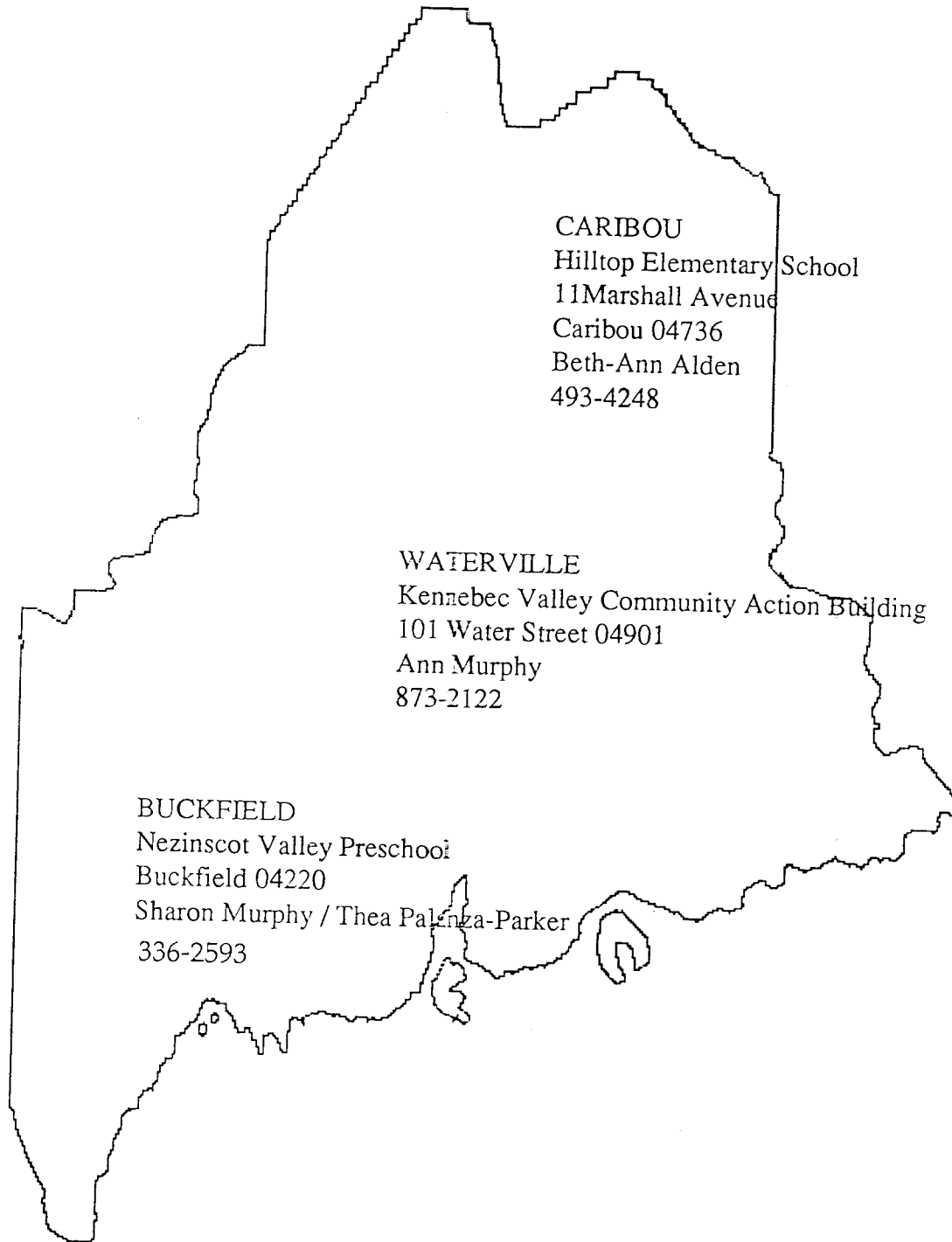
But what about school districts that spend a ton of money on education and where pupils have correspondingly high achievement? Researchers now question that the cash spent is the important thing; such communities, they reason, are exactly those

# **SCHOOL-AGE CHILD CARE**



**A Guide for  
School Administrators  
in Maine**

# EARLY CHILDHOOD DEMONSTRATION SITES



CARIBOU  
Hilltop Elementary School  
11 Marshall Avenue  
Caribou 04736  
Beth-Ann Alden  
493-4248

WATERVILLE  
Kennebec Valley Community Action Building  
101 Water Street 04901  
Ann Murphy  
873-2122

BUCKFIELD  
Nezinscot Valley Preschool  
Buckfield 04220  
Sharon Murphy / Thea Palanza-Parker  
336-2593

FOR MORE INFORMATION:  
Jenifer Van Deusen  
Early Elementary Office  
Maine Department of Education  
State House Station 23  
(207) 289-5981

**Legislative Budget Procedures in the 50 States:  
A Guide to Appropriations and Budget Processes**

by

Tony Hutchison  
Senior Staff Associate

and

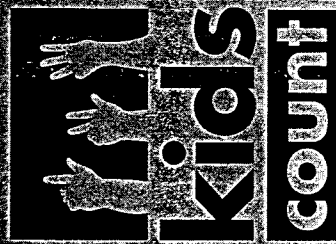
Kathy James  
Administrative Assistant

Fiscal Affairs Program

National Conference of State Legislatures  
1050 17th Street, Suite 2100  
Denver, Colorado 80265  
303/623-7800

September 1988

# KIDS COUNT DATA BOOK



## State Profiles of Child Well-Being

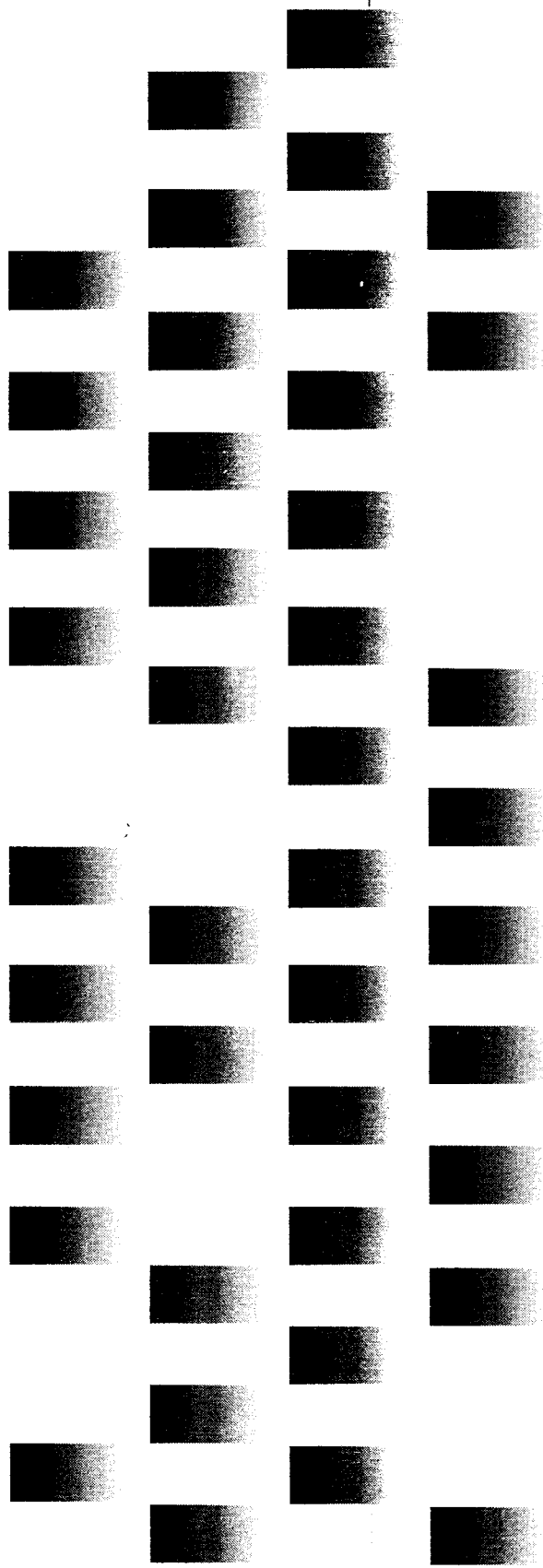


# CHILDREN 1990

A Report Card,  
Briefing Book, and  
Action Primer



CHILDREN'S DEFENSE FUND



# Building Early Childhood Systems

A Resource Handbook

By  
Jule M.  
Sugarman

CHILD WELFARE LEAGUE OF AMERICA



[COMMITTEE PRINT]

101st Congress }  
2d Session }

HOUSE OF REPRESENTATIVES

FEDERAL PROGRAMS AFFECTING  
CHILDREN AND THEIR FAMILIES, 1990

A REPORT

together with

ADDITIONAL MINORITY VIEWS

OF THE

SELECT COMMITTEE

ON CHILDREN, YOUTH, AND FAMILIES

ONE HUNDRED FIRST CONGRESS

SECOND SESSION



Printed for the use of the  
Select Committee on Children, Youth, and Families

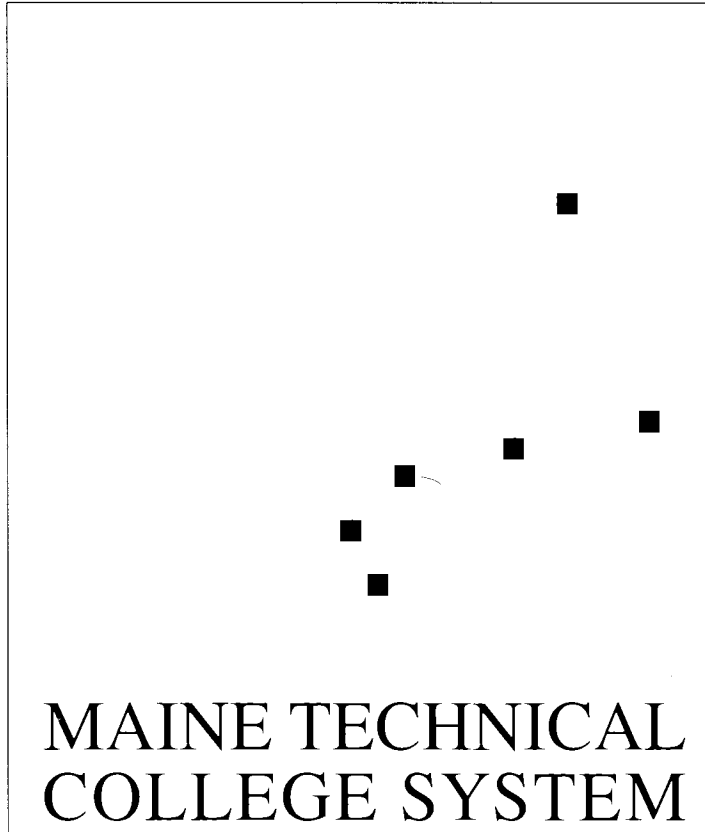
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Washington, DC 20402

# *Education for Life*



- Northern Maine Technical College  
*Presque Isle*
- Washington County Technical College  
*Calais/Eastport*
- Eastern Maine Technical College  
*Bangor*
- Kennebec Valley Technical College  
*Fairfield*
- Central Maine Technical College  
*Auburn*
- Southern Maine Technical College  
*South Portland*

## Admission

Rolling admissions policies afford candidates the opportunity to apply and be considered for acceptance throughout the year, but early application (9-10 months prior to the beginning of a given academic year) is recommended because of competition and strict enrollment capacities established for each program. Application forms may be obtained from high school guidance counselors or from the Admissions Office at any of the Technical Colleges. Prospective students are encouraged to visit the campuses and meet with admissions personnel. Campus tours are offered at the Colleges throughout the year.

A high school diploma or a state high school equivalency certificate is required for admission to an associate degree, diploma, or certificate program. Other admissions criteria vary according to the program. For information on admission requirements, prospective students should consult a catalog or contact the Admissions Office at one of the Technical Colleges.

## Continuing Education

Evening and weekend courses are offered at each of the Technical Colleges for those individuals who are unable to avail themselves of the regular daytime schedule or who wish to take advantage of the colleges' unique and innovative course offerings. Continuing Education programs help meet the training needs of working adults who may wish to upgrade their skills in their current profession or retrain for more challenging employment.

Each College also offers special seminars, workshops, and credit and non-credit courses. In addition, specifically tailored programs may be taught at



the work site in order to better serve the training needs of a particular business or industry.

Requests for information about Continuing Education courses, as well as requests for new courses, should be directed to the Continuing Education division at any of the Colleges.

## Job Placement Services

Each College provides placement assistance to students, with an emphasis on identifying positions consistent with the graduate's academic and career goals. Professional staff provide guidance with job search techniques, interviewing skills, and preparing resumes, as well as coordinating with prospective employers and hosting job fairs. Graduate placement or employer surveys are also conducted by each College, following the graduate's placement in a job. As a result of these efforts and the excellent reputation of the Colleges, at least 90 percent of Technical College students enter jobs following graduation.

## Financial Aid and Scholarships

Financial assistance is available to help qualified students finance their education. Students applying for financial aid must complete a Financial Aid Form (FAF) through the College Scholarship Service. For more information, contact the Financial Aid Office at any of the Technical Colleges.

**Scholarships and Grants** A variety of scholarships and grants are available to students, including the Pell Grant, a special scholarship available through private industry and by the Technical Colleges. Scholarship assistance may be available from local high schools, civic groups and business associations.

**Loans** Several loans are also available to help students finance their education, including Supplemental Loans for Students, Stafford Student Loan, PLUS (Parent Loan for Undergraduate Students), and loans provided through the Maine Educational Loan Authority.

**Work Study** In addition, each of the Colleges offers work study programs for eligible students who qualify and who wish to earn part of the cost of their education by working on campus.

*The Maine Technical College System provides equal education and employment opportunities for all, regardless of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, handicap, or veteran's status, pursuant to applicable state and federal laws. Questions and complaints about discrimination in any part of the System should be directed to the appropriate campus Equal Opportunity Officer or to the Human Resources Department of the Maine Technical College System, 323 State Street, Augusta, Maine 04330-7131, (207) 289-1010.*

# Programs Offered at Maine's Technical Colleges

## AUTOMOTIVE

	CMTC	EMTC	KVTC	NMTC	SMTC	WCTC
Auto Body Repair				A/D/C		
Automotive & Heavy Equipment		A/D				
Automotive Technology	A/D/C			A/D/C	A/D	C
Diesel Hydraulics				A/D/C		
Diesel Service	A/D/C			C		C
Heavy Equipment Maintenance						C
Heavy Equipment Operation						C

## BUSINESS

Accounting				A/D		
Administrative Assistant (Executive, Legal, Medical)				A		
Automated Office Management					A	
Automated Office Technology			A			
Business Administration/Mgmt.		A	A	A/D		
Bus. Admin. (Accounting)			A			
Bus. Admin. (Agri-Business)				A/D		
Bus. Admin. (Marketing)			A			
Bus. Admin. (Microcomputer)			A			
Computer Information Systems				A		
Hotel, Motel & Restaurant Mgmt					A	
Office Assistant				C		
Office Systems Technology				A/D		
Secretarial Studies						C
Supervision and Management	A/C					

## CONSTRUCTION

Architectural & Civil Engineering Technology	A/D/C					
Boatbuilding Technology						D
Building Construction Technology	A/D/C	A/D	D		A/D	C
Drafting Technology				A/D/C	C	
Masonry/Bricklaying				D/C	C	
Residential Construction				A/D/C		
(See Trade and Technical)						

## ELECTRICAL AND ELECTRONICS

Electrical Construction & Maint.				A/D/C		
Electrical Technology		D	D		A	
Electrical Power Technology		A				
Electronics	A/C					

## HEALTH FIELDS

	CMTC	EMTC	KVTC	NMTC	SMTC	WCTC
Associate Degree Nursing	A		A	A		
ADN (LPN Upgrade)	A	A	A		A	
Cardiovascular Technology						C
Dental Assistant			D			
Dietetic Technician					A	
Emergency Medical Services			A/D			
Medical Assistant			D			
Medical Laboratory Technology		A				
Nurse's Assistant						C
Physical Therapy Assistant			A			
Practical Nursing	D	D	D	D	D	
Radiation Therapy					A	
Radiologic Technology/ Medical Radiography		A			A	
Respiratory Therapy Technology			D		A	
Surgical Technology					A	

## HOSPITALITY

Culinary Arts	C				A/D	
Food Preparation/Service		D				C
Hotel, Motel & Restaurant Mgmt.					A	

## MARINE AND NATURAL RESOURCES

Boatbuilding Technology						D
Environmental Technology					A	
Maine Biology and Oceanography					A	
Maine Electronics						C
Maine Engineering					A/D	
Maine Mechanics					C	
Maine Painting						C
Nautical Science					A/D	
Plant & Soil Technology					A/C	
Pollution Abatement Technology					C	
Wood Harvesting						C

## PUBLIC/OCCUPATIONAL SAFETY

Fire Science Technology					A	
Law Enforcement Technology					A	
Occupational Safety & Health	A/C					

CS			
CS-Computer			
CS Technology	A		
Electrical/Electronics			A
Electricity			
Electronics			
er Technology			D
Electronics			
al & Commercial			
ity			

A/D/C			
	A		
A/D/C		D	
A/D/C		A	
			C
			C

Heating & Air Conditioning
Machine Tool Technology
Plumbing
Plumbing and Heating
Refrigeration & Air Conditioning
Sheet Metal/Metal Fabrication
Technical Studies
Trade & Technical Occupations
Welding
(See Construction)

				A/D	
A/D/C	A/D			A/D/C	
			D	C	C
			A/D/C		
	A/D				
A/D/C			A/D/C		
	C				
A	A	A	A	A	A
C	A/D				C

*more information, write to:*

**Director of Admissions**

Central Maine Technical College  
 100 Turner Street, Auburn, Maine 04210  
 784-2385

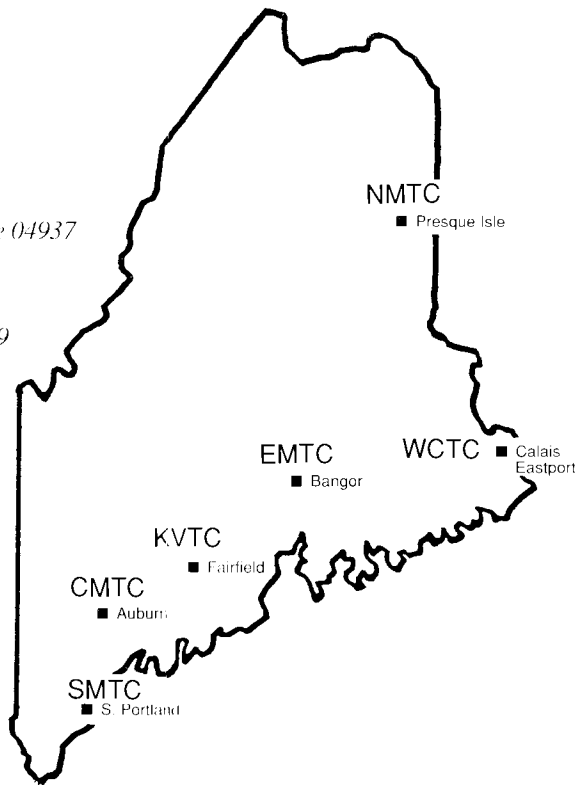
Central Maine Technical College  
 100 Logan Road, Bangor, Maine 04401  
 941-4600

Chebec Valley Technical College  
 Box 29, Western Avenue, Fairfield, Maine 04937  
 453-9762

Central Maine Technical College  
 100 Algemont Drive, Presque Isle, Maine 04769  
 769-2461

Central Maine Technical College  
 100 Road, South Portland, Maine 04106  
 799-7303

Washington County Technical College  
 100 Road, Calais, Maine 04619  
 454-2144 and  
 100 The Trades Center, Eastport, Maine 04631  
 853-2518

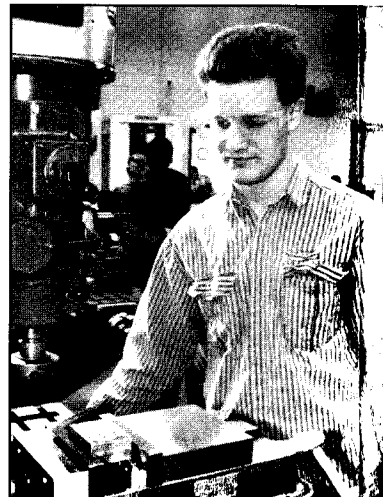


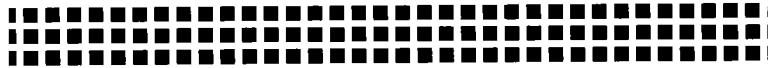
**OTHER**

Graphic Arts/Printing
Extended Studies
Education Technician

A/D/C					
				C	
		A			

A=Associate Degree  
 D=Diploma  
 C=Certificate





## *Education for Life*

The Technical Colleges offer students an opportunity to develop the skills and knowledge that will lead to productive employment, job satisfaction, and self-fulfillment. With a majority of all jobs in American industry requiring technical skills, graduation from one of the Technical Colleges can shorten the path to promotions, responsibility, and financial success. Because of our proven track record, employers have turned to Technical College graduates time and time again to meet their personnel needs.

The six Technical Colleges offer over 100 associate degree, diploma, and certificate programs in a variety of fields, including allied health, construction, business, the hospitality industry, electronics, marine and environmental resources, and others. Laboratory work and field trips are combined with intensive class schedules to help prepare students for the work environment of their chosen field.

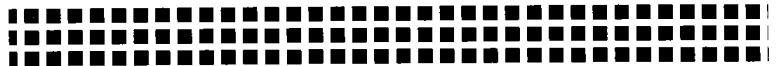
In addition, Technical College students receive general education in such subjects as math, science and communications, to ensure that each student is well-prepared to pursue a career upon graduation. The college experience is further enhanced by a wide variety of social activities and intercollegiate sports. Residential facilities and child care services are also available at most of the Colleges.

## *Annual Costs*

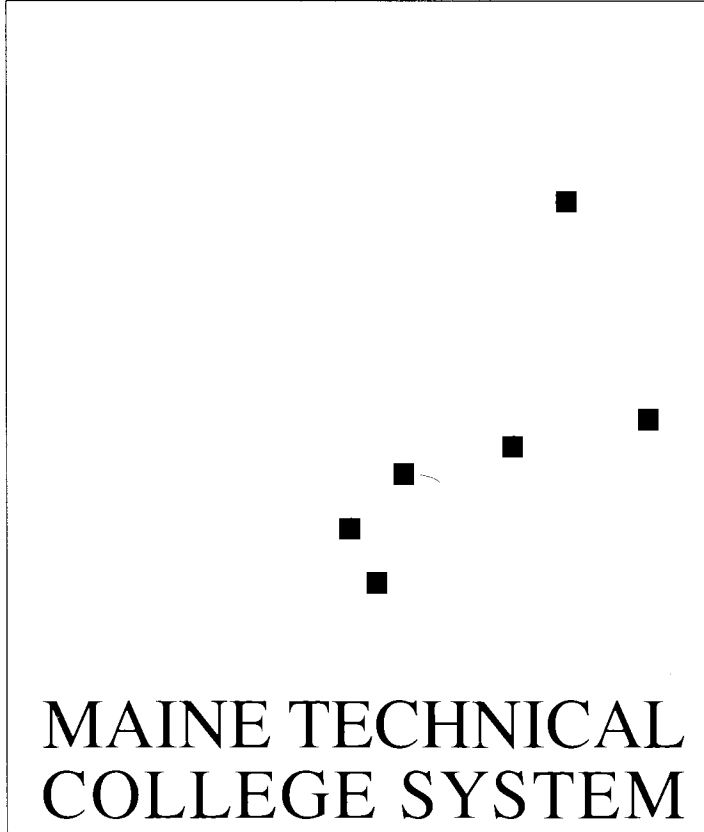
Tuition - Resident	\$44 per credit hour
(Tuition varies according to program requirements. Cost is \$1,320 per year for 30 credit hours.)	
Tuition - Non-resident	\$100 per credit hour
Residence and Board	\$2,800
Application Fee	\$15
Other Fees	\$225 (estimate)
Books and Supplies	\$500 (estimate)
Uniforms/tools	Required for certain programs

*Costs are subject to change without notice.  
No residence halls at Kennebec Valley Technical College.  
Residence at Washington County Technical College is \$1,250  
(no meals provided).*

# MAINE TECHNICAL COLLEGE SYSTEM



# *Education for Life*



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## Admission

Rolling admissions policies afford candidates the opportunity to apply and be considered for acceptance throughout the year, but early application (9-10 months prior to the beginning of a given academic year) is recommended because of competition and strict enrollment capacities established for each program. Application forms may be obtained from high school guidance counselors or from the Admissions Office at any of the Technical Colleges. Prospective students are encouraged to visit the campuses and meet with admissions personnel. Campus tours are offered at the Colleges throughout the year.

A high school diploma or a state high school equivalency certificate is required for admission to an associate degree, diploma, or certificate program. Other admissions criteria vary according to the program. For information on admission requirements, prospective students should consult a catalog or contact the Admissions Office at one of the Technical Colleges.

## Continuing Education

Evening and weekend courses are offered at each of the Technical Colleges for those individuals who are unable to avail themselves of the regular daytime schedule or who wish to take advantage of the colleges' unique and innovative course offerings. Continuing Education programs help meet the training needs of working adults who may wish to upgrade their skills in their current profession or retrain for more challenging employment.

Each College also offers special seminars, workshops, and credit and non-credit courses. In addition, specifically tailored programs may be taught at



the work site in order to better serve the training needs of a particular business or industry.

Requests for information about Continuing Education courses, as well as requests for new courses, should be directed to the Continuing Education division at any of the Colleges.

## Job Placement Services

Each College provides placement assistance to students, with an emphasis on identifying positions consistent with the graduate's academic and career goals. Professional staff provide guidance with job search techniques, interviewing skills, and preparing resumes, as well as coordinating with prospective employers and hosting job fairs. Graduate placement or employer surveys are also conducted by each College, following the graduate's placement in a job. As a result of these efforts and the excellent reputation of the Colleges, at least 90 percent of Technical College students enter jobs following graduation.

## Financial Aid and Scholarships

Financial assistance is available to help qualified students finance their education. Students applying for financial aid must complete a Financial Aid Form (FAF) through the College Scholarship Service. For more information, contact the Financial Aid Office at any of the Technical Colleges.

**Scholarships and Grants** A variety of scholarships and grants are available to students, including the Pell Grant, a special scholarship available through private industry and by the Technical Colleges. Scholarship assistance may be available from local high schools, civic groups and business associations.

**Loans** Several loans are also available to help students finance their education, including Supplemental Loans for Students, Stafford Student Loan, PLUS (Parent Loan for Undergraduate Students), and loans provided through the Maine Educational Loan Authority.

**Work Study** In addition, each of the Colleges offers work study programs for eligible students who qualify and who wish to earn part of the cost of their education by working on campus.

*The Maine Technical College System provides equal education and employment opportunities for all, regardless of race, color, religion, sex, sexual orientation, national origin or citizenship status, age, handicap, or veteran's status, pursuant to applicable state and federal laws. Questions and complaints about discrimination in any part of the System should be directed to the appropriate campus Equal Opportunity Officer or to the Human Resources Department of the Maine Technical College System, 323 State Street, Augusta, Maine 04330-7131, (207) 289-1010.*



# Programs Offered at Maine's Technical Colleges

## AUTOMOTIVE

	CMTC	EMTC	KVTC	NMTC	SMTC	WCTC
Auto Body Repair				A/D/C		
Automotive & Heavy Equipment		A/D				
Automotive Technology	A/D/C			A/D/C	A/D	C
Diesel Hydraulics				A/D/C		
Diesel Service	A/D/C			C		C
Heavy Equipment Maintenance						C
Heavy Equipment Operation						C

## BUSINESS

Accounting				A/D		
Administrative Assistant (Executive, Legal, Medical)				A		
Automated Office Management					A	
Automated Office Technology			A			
Business Administration/Mgmt.		A	A	A/D		
Bus. Admin. (Accounting)			A			
Bus. Admin. (Agri-Business)				A/D		
Bus. Admin. (Marketing)			A			
Bus. Admin. (Microcomputer)			A			
Computer Information Systems				A		
Hotel, Motel & Restaurant Mgmt					A	
Office Assistant				C		
Office Systems Technology				A/D		
Secretarial Studies						C
Supervision and Management	A/C					

## CONSTRUCTION

Architectural & Civil Engineering Technology	A/D/C					
Boatbuilding Technology						D
Building Construction Technology	A/D/C	A/D	D		A/D	C
Drafting Technology				A/D/C	C	
Masonry/Bricklaying				D/C	C	
Residential Construction				A/D/C		
(See Trade and Technical)						

## ELECTRICAL AND ELECTRONICS

Electrical Construction & Maint.				A/D/C		
Electrical Technology		D	D		A	
Electrical Power Technology		A				
Electronics	A/C					

## HEALTH FIELDS

	CMTC	EMTC	KVTC	NMTC	SMTC	WCTC
Associate Degree Nursing	A		A	A		
ADN (LPN Upgrade)	A	A	A		A	
Cardiovascular Technology						C
Dental Assistant			D			
Dietetic Technician					A	
Emergency Medical Services			A/D			
Medical Assistant			D			
Medical Laboratory Technology		A				
Nurse's Assistant						C
Physical Therapy Assistant			A			
Practical Nursing	D	D	D	D	D	
Radiation Therapy					A	
Radiologic Technology/ Medical Radiography		A			A	
Respiratory Therapy Technology			D		A	
Surgical Technology					A	

## HOSPITALITY

Culinary Arts	C				A/D	
Food Preparation/Service		D				C
Hotel, Motel & Restaurant Mgmt.					A	

## MARINE AND NATURAL RESOURCES

Boatbuilding Technology						D
Environmental Technology					A	
Maine Biology and Oceanography					A	
Maine Electronics						C
Maine Engineering					A/D	
Maine Mechanics					C	
Maine Painting						C
Nautical Science					A/D	
Plant & Soil Technology					A/C	
Pollution Abatement Technology					C	
Wood Harvesting						C

## PUBLIC/OCCUPATIONAL SAFETY

Fire Science Technology					A	
Law Enforcement Technology					A	
Occupational Safety & Health	A/C					

CS			
CS-Computer			
CS Technology	A		
Electrical/Electronics			A
Electricity			
Electronics			
er Technology			D
Electronics			
al & Commercial			
ity			

A/D/C			
	A		
A/D/C		D	
A/D/C	A		
			C
			C

Heating & Air Conditioning				A/D	
Machine Tool Technology	A/D/C	A/D			A/D/C
Plumbing				D	C
Plumbing and Heating				A/D/C	
Refrigeration & Air Conditioning		A/D			
Sheet Metal/Metal Fabrication	A/D/C			A/D/C	
Technical Studies		C			
Trade & Technical Occupations	A	A	A	A	A
Welding	C	A/D			C

(See Construction)

				A/D	
A/D/C	A/D			A/D/C	
			D	C	C
			A/D/C		
	A/D				
A/D/C			A/D/C		
	C				
A	A	A	A	A	A
C	A/D				C

*more information, write to:*

**Director of Admissions**

Central Maine Technical College  
 100 Turner Street, Auburn, Maine 04210  
 784-2385

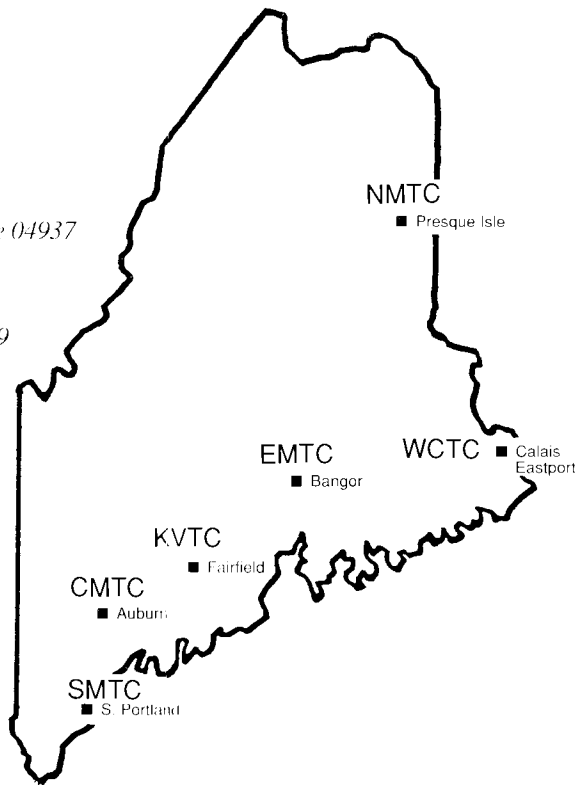
Central Maine Technical College  
 100 Logan Road, Bangor, Maine 04401  
 941-4600

Chebec Valley Technical College  
 Box 29, Western Avenue, Fairfield, Maine 04937  
 453-9762

Central Maine Technical College  
 100 Algemont Drive, Presque Isle, Maine 04769  
 769-2461

Central Maine Technical College  
 100 Road, South Portland, Maine 04106  
 799-7303

Washington County Technical College  
 100 Road, Calais, Maine 04619  
 454-2144 and  
 100 The Trades Center, Eastport, Maine 04631  
 853-2518

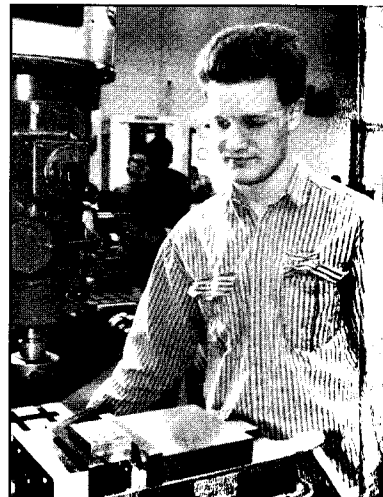


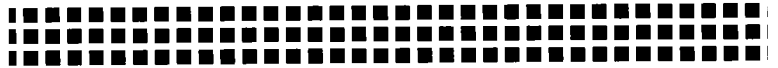
**OTHER**

Graphic Arts/Printing					
Extended Studies				C	
Education Technician			A		

A/D/C					
				C	
			A		

A=Associate Degree  
 D=Diploma  
 C=Certificate





## *Education for Life*

The Technical Colleges offer students an opportunity to develop the skills and knowledge that will lead to productive employment, job satisfaction, and self-fulfillment. With a majority of all jobs in American industry requiring technical skills, graduation from one of the Technical Colleges can shorten the path to promotions, responsibility, and financial success. Because of our proven track record, employers have turned to Technical College graduates time and time again to meet their personnel needs.

The six Technical Colleges offer over 100 associate degree, diploma, and certificate programs in a variety of fields, including allied health, construction, business, the hospitality industry, electronics, marine and environmental resources, and others. Laboratory work and field trips are combined with intensive class schedules to help prepare students for the work environment of their chosen field.

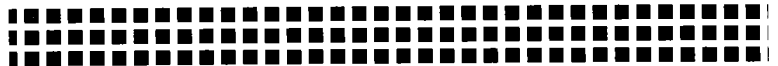
In addition, Technical College students receive general education in such subjects as math, science and communications, to ensure that each student is well-prepared to pursue a career upon graduation. The college experience is further enhanced by a wide variety of social activities and intercollegiate sports. Residential facilities and child care services are also available at most of the Colleges.

## *Annual Costs*

Tuition - Resident	\$44 per credit hour
(Tuition varies according to program requirements. Cost is \$1,320 per year for 30 credit hours.)	
Tuition - Non-resident	\$100 per credit hour
Residence and Board	\$2,800
Application Fee	\$15
Other Fees	\$225 (estimate)
Books and Supplies	\$500 (estimate)
Uniforms/tools	Required for certain programs

*Costs are subject to change without notice.  
No residence halls at Kennebec Valley Technical College.  
Residence at Washington County Technical College is \$1,250  
(no meals provided).*

# MAINE TECHNICAL COLLEGE SYSTEM



*Dist. 8/05*

**THE PLAN**

**FOR THE**

**MAINE VOCATIONAL-TECHNICAL INSTITUTE SYSTEM**

**Adopted by the MVTIS Board of Trustees on November 16, 1988**

**THE PLAN**  
**for the**  
**MAINE VOCATIONAL-TECHNICAL INSTITUTE SYSTEM**

Introduction

Postsecondary Technical Education and Training in Maine: A New Structure for a New Era

The United States is engaged in a challenging struggle to strengthen its competitive position in an international economy. Throughout the nation, state governments, business and industrial organizations, and educational institutions strive to configure new relationships which will promote economic development. In many cases, the creation of more effective economic development partnerships among private- and public-sector organizations requires new organizational structures. The organizations and agencies which will succeed in the new economy are those with a capacity for change, including structural change. Maine's new Vocational-Technical Institute System is a rather remarkable example of the use of structural change to promote economic development. In 1986, recognizing the State's need for an even stronger and more visible postsecondary technical education system, the legislature separated the State's six vocational-technical institutes (VTIs) from the Department of Educational and Cultural Services which has jurisdiction over Maine's elementary and secondary schools, and established a separate system for postsecondary education and training.

The new VTI System is governed by its own Board of Trustees which has complete authority for the System's administration, budget development, fiscal management, program planning, human resource management, purchasing, and property management. Advocates for the new System maintain that through the centralization of the VTIs administrative services, the institutes have met the following prerequisites for their more effective role in economic development: 1) more flexibility in fiscal management, purchasing and human resource management in order to respond to rapid shifts in the labor market and business needs; 2) higher visibility at the state level, to compete more effectively for state resources and become a more influential element in policy determination; and 3) the administrative structure and information base required for strategic planning and coordination. (Annual Report FY '86, p. 8.)

In the new VTI System, more flexibility and increased accountability in fiscal management, purchasing, and human resource management is achieved through a financial, administrative, and management system with the following characteristics:

#### Resource Allocation and Utilization

- o A set of systems and procedures which achieves results-oriented budgeting and financial planning.
- o A set of systems, procedures, guidelines, and standards in which budget development, allocations, and major changes begin with the Board of Trustees and are carried out by the System Office according to the Board's policies and priorities.
- o A system which achieves flexibility and responsiveness to program opportunities through rapid financial and administrative resource allocation without compromising management control or the Board of Trustee prerogatives.
- o Systems, procedures, guidelines, and standards which acquire, allocate and use resources in the most cost effective manner possible.

#### Financial Accounting and Reporting

- o A financial accounting and reporting system that allows the Board of Trustees, through the System Office, to monitor expenditure performance on a timely and ongoing basis.
- o A financial accounting and reporting system which provides timely and accurate budget and financial status information to all management levels having program and financial accountability.
- o A financial accounting and reporting system which provides complete and comprehensive budget and financial status information to facilitate timely and effective management action and performance measurement.

#### Administrative and Management Support

- o Financial and management information systems which can rapidly relate costs to program results or expected results.

- o A system which standardizes the treatment of budgeting, accounting, cash management, purchasing, payroll, banking, insurance, classification and pay, labor relations, employee benefits, student information and related administrative functions.
- o A system of control over positions, classification, pay, and terms and conditions of employment achieved through the direction of the Board of Trustees and the System Office in which management flexibility is provided through established financial and administrative constraints.

### Management Style

- o A system and procedure which limits expenditure authorization to the lowest management level having financial responsibility for program action.
- o A system of budgeting and financial accounting and reporting based on the principle that each manager knows best the specific details of his/her program and is in the best position to translate that knowledge into financial and administrative needs.
- o A system of decentralized financial and administrative decision-making in which managers are held accountable to higher authority for actions taken within specific procedures, standards, and guidelines.
- o A system which supports management participation and communication in financial and administrative decisions from first line managers through top management.

### **THE NEW SYSTEM'S ADMINISTRATIVE STRUCTURE**

As the chief executive officer of the Maine VTI System, the Executive Director reports to the Board of Trustees. System division heads reporting directly to the Executive Director are the Director of Finance and Administration, the Director of Human Resources, and the Director of Special Projects.

The chief executive officer at each institute is its Director. The six Institute Directors report directly to the System's Executive Director. Together, the Executive Director and the institute Directors comprise the Administrative Council of the new System. At the institute level, the local management teams include the Assistant Director and Academic Dean, Dean of Continuing Education, Dean of Students, and the Director of Finance or Business Manager.

## THE INSTITUTES

The System's six institutes are located throughout the state in South Portland, Auburn, Fairfield, Bangor, Calais/Eastport, and Presque Isle. All together, the institutes provided education and training for some 19,000 persons in 1987-88. Nearly 3,000 of these students were in traditional certificate, diploma, or degree programs; 16,000 students were enrolled on a part-time basis. The System's excellent track record in serving adults already in the labor force is evidence of the broad appeal of continuing technical education, training and retraining. Companies throughout the state rely on the VTIs to provide up-to-date training to meet specific skill needs. For example, Beth Reuthe, plant manager for Digital Equipment Corporation, observes that, "We've developed a very nice partnership with the Vocational-Technical Institute System. Without the VTI System here, we could never have built the business into what it is today." At General Electric in Bangor, the VTI System had a major role in the recent expansion of GE's Turbine Operation. Peter Van Loan, manager, Employee Relations, notes that "Of the 150-odd people we hired, 44 VTI graduates and an additional 50 were participants in a special VTI training program that was part of the expansion process. I think that is excellent." The particular quality of VTI graduates is recognized by William Smith, president, WS Enterprises: "We do precision machining to where we're holding tolerances of tenths of thousandths of an inch. So we need some pretty good expertise from our employees. I would say one-third of our work force originally came out of the VTI program. And they're excellent." (Maine, We're the Future for America's Business, p.213.) In describing the need for aquaculture training in Maine, Peter Pierce, senior vice president, Ocean Products, Inc., highlights the importance of the VTIs: "The Vocational Technical Institute put together a 12-week program, and we agreed to provide on-the-job training for all who successfully completed the 12-week program ... I think the significant thing is, there's an aquaculture industry developing in eastern Maine, not just one company. And it was the training that the VTI did, as much as anything, that made it possible." (Maine, We're the Future for America's Business, p.10.)

In South Portland, Southern Maine VTI is well known for its excellent response to the education and training needs of Maine Medical Center. Other prominent programs at SMVTI include: hospitality, building construction, electrical and electronics, public service programs such as Law Enforcement Technology, and Fire and Emergency Medical Services. Names such as the Sheridan Corporation, Rich Tool and Die, National Semiconductor, Marriott, Roki Construction, and municipal governments are found among the companies and organizations which benefit from SMVTI.



At Central Maine VTI in Auburn, a list of outstanding programs includes graphic arts technology, architectural/civil engineering technology, machine tool, automotive technology, electromechanical technology, and the Associate Degree Nursing program. Among the many companies served by CMVTI are Gates Formed Fibre, Philips Elmet, International Paper, Maine Machine Products, The Lee Group, and Geiger Brothers.

Located in Fairfield, Kennebec Valley VTI is recognized especially for its aggressive response to companies' needs for customized education and training programs. KVVTI's nursing program, its business technology program, and its electrical and electronics programs are highly regarded as well. The Institute's clients include Mid-Maine Medical Center, Digital Equipment Corporation, Central Maine Power Company, Scott Paper Company, and Keyes Fiber.

Eastern Maine VTI in Bangor includes welding technology, medical audiography, business management, and refrigeration and air conditioning technology among its programs which are cited frequently for their high quality. General Electric, Eastern Maine Medical Center, Cianbro Corporation, Cives Steel Company, and the James River Company are clients of EMVTI.

Washington County VTI in Calais and Eastport is noted especially for its programs in boatbuilding, woodharvesting, marine painting and food service. Among WCVTI's clients are Federal Marine Terminals, Georgia Pacific Corporation, Ocean Products, Bath Iron Works, and Doyle Communications.

In Presque Isle, Northern Maine VTI's courses in computer programming, programs in sheet metal, nursing, drafting, secretarial science, and industrial electronics are widely regarded as particularly outstanding programs. NMVTI's client portfolio contains such names as Great Northern Paper Company, Fraser Paper, McCain Foods, Ltd., Maine Mutual Insurance Company, and Maine Public Service.

The six institutes bring to the System an impressive collection of education and training offerings and a reputation for excellent service. The process used to develop the first systemwide plan capitalized on the institutes' already acknowledged strengths and sought to discover new potential.

## PART I THE PLANNING PROCESS

The first systemwide planning process began in December 1987 with the Trustees' approval of goal statements developed by the Administrative Council, with the involvement of each institute's management team. These initial Goal Statements appear as follows: 1) strengthen the quality of education and training offered by the six institutes, including certificate, diploma and associate degree programs; 2) improve the quality of life for faculty, administrators and staff; 3) enhance opportunities for all students to access programs and services; 4) increase the number and diversity of customized training programs implemented for business and industry; and 5) develop additional partnerships, including articulation agreements with secondary and postsecondary institutions.

### Trustees' Involvement

In February 1988, the Board of Trustees approved a set of assumptions as the foundation for the planning process. These assumptions are contained in Part II of this report. Throughout the planning process, the Board's Strategic Planning Committee provided direction for the Executive Director and the VTI Directors regarding the purpose, process, and outcomes of each phase of the planning process. Committee members reviewed the planning instructions, participated in the selection of advisory panel members, the review of the institutes' plans, and developed recommendations regarding the final System priorities.

On March 10, the Executive Director issued planning instructions to each Institute Director and planning committee. Emphasizing the process as a "grassroots effort," the planning instructions specified the importance of "thorough discussion and debate at each institute" and the ownership of the "advisory council, management team, faculty, administrators, and staff." A key component of each institute's plan is the Return On Investment (ROI) estimate required for each objective. Designed primarily to encourage accountability throughout the planning process, ROI estimates were limited to "the number of dollars returned annually to the State Treasury and/or the number of dollars saved annually by the State," if the objective were achieved.

## Advisory Panel's Involvement

A major purpose of the new System's Board of Trustees is to develop a long-range plan which will ensure that the System's resources are invested in those education and training programs which are most essential for Maine's economic competitiveness. To help them establish the direction of the new VTI System, the Trustees asked Governor John R. McKernan to approve the formation of a Strategic Planning Advisory Panel comprised of leaders in business, industry, government, and higher education. The Governor responded by naming Roy Hibyan, President, Maine Savings Bank, as Chair of the Panel and endorsing the selection of 13 panel members. (See Appendix 1.) The Panel met on May 11 and 12 to hear each institute's presentation of its plan. During that initial meeting, panel members identified and examined key issues affecting the VTI System's success. Further, in order to assist the Board in determining its priorities for action, the Advisory Panel identified and discussed the System's strengths and weaknesses. These observations--key issues, strengths, weaknesses--became the basis for the Strategic Planning Committee's recommendations regarding the revisions of each institute's priorities. These revised priorities were presented to the Advisory Panel and the Strategic Planning Committee at its second meeting on June 14. The final System Plan presented in Part III of this report reflects the aggregate outcomes of the discussions conducted by the Advisory Panel and the Board's Strategic Planning Committee in May and June of 1988.

## **PART II THE PLANNING ASSUMPTIONS**

To compete effectively in a world marketplace requires ever-expanding vision and imagination, energy, anticipation, and commitment--commitment especially to finding and exploring new opportunities. Globalization of the economy enables Maine and her competitors to seek and take advantage of economic development opportunities unknown even a few years ago. In its annual report, "Human Resources and the American Economy," the Committee for Economic Development identifies four key trends affecting the economy. First, the globalization of markets means that "selling across natural borders is becoming the norm for more and more producers of goods and services." Second, through the internationalization of production, home-office location is becoming less and less a factor in decisions on where companies will invest and where they will place processes and obtain components. Third, there is the internationalization of technology created by joint research efforts and the international transfer of technology. Finally, the integration of world financial markets means that "the dominant financial market today is the market that is open, and that the major issue in international finance is how to maximize the net benefits of

global integration." (p. 11.)

The globalization of markets, internationalization of production and technology, and integration of financial markets mean increasing competition for Maine's business and industry. For Maine's VTI System, the global marketplace provides a challenging context for education and training, a context requiring a global perspective and a continuing search for the best alternatives.

### Establishing Maine's Advantage In The Global Marketplace

According to "Establishing the Maine Advantage, An Economic Development Strategy for the State of Maine," "Maine's evolving economy, with its technological innovations and growing service sector, demands a better educated, more literate, and more adaptable work force." (p. 11.) The Maine VTI System is in many respects the State's key to the development of a "better educated, more literate, and more adaptable work force." The following Planning Assumptions contain the new VTI System's proposed responses to Maine's postsecondary education and training needs. The Plan in Part III was developed according to these Assumptions:

### Maine's Education and Training Needs

1. **ISSUE:** Technical information is doubling every five years. Because we are very quickly becoming an information society instead of an industrial society, the worker of the future must develop the skills of a broad technician as well as those of a high technician. Dale Parnell, President and Chief Executive Officer of the American Association of Community and Junior Colleges, describes the worker of the future as one who

understands the basic principles of technology in an information age saturated with the use of technology;  
connects practice and theory in the work world;  
works willingly and well with his/her hands as well as with the brain;  
has mastered a basic skills package that includes a core of competencies in math, science, computer science, and communications;  
is liberally educated to function competently as a citizen, a consumer, a family member, and a neighbor; and  
has developed the proficiencies to be a life-long learner.

1. **ASSUMPTION:** The MVTIS must develop the human and material resources required to educate the "broad technicians" who are and will be critical to Maine's success as a competitor in the global economy.

2. **ISSUE:** By the year 2000, 75 percent of all the new jobs will require some form of postsecondary education and training.

2. **ASSUMPTION:** The MVTIS must prepare to expand and modify its delivery mechanisms, facilities, and programs to meet Maine's accelerating need for postsecondary education and training.

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3. **ISSUE:** Maine needs to retrain its existing work force. Ninety percent of the work force for the year 2000 is already working, and yet 50 percent of those jobs will be phased out or restructured.

3. **ASSUMPTION:** The MVTIS must increase its capacity for retraining and upgrading workers through existing curricula and the development and implementation of customized training programs for business and industry.

\*\*\*\*\*

4. **ISSUE:** The creation of new businesses is essential to economic growth. However, Maine suffers a low rate of new business formation. The state must provide small and entrepreneurial enterprises with the support they need to realize their full potential and contribute to the economic vitality of the state.

4. **ASSUMPTION:** Through collaboration with business and industry, the MVTIS must develop courses and programs which provide ongoing assistance and support to entrepreneurs and owners of small businesses.

\*\*\*\*\*

5. **ISSUE:** The growth of Maine's export base industries is essential to the growth of the state's economy.

5. **ASSUMPTION:** The MVTIS must provide the education and training programs and services required to strengthen such export base industries as metals, electronics, retail trade, natural resource industries, and clothing manufacturing.

Enrollment Issues and Trends

6. **TREND:** The most important demographic trend affecting both the MVTIS enrollment and Maine's labor supply is the DECREASING NUMBER OF YOUNG, ENTRY-LEVEL WORKERS. By 1994, Maine will experience a significant decrease in the number of persons aged 15 to 24. For example, the number of persons aged 20 to 24 is expected to decrease by 22.6 percent.

6. **ASSUMPTION:** Given the declining number of persons in the traditional applicant pool, MVTIS will experience increasing competition in attracting applicants immediately out of high school. The MVTIS must strengthen and expand its marketing and recruitment functions in order to increase its enrollment of "traditional" students.

\*\*\*\*\*

7. **TREND:** Maine's labor force gains over the next ten years will come from those aged 25 and over, with much of this increase accounted for by FEMALES, OLDER WORKERS, AND OTHER GROUPS NOT PRESENTLY IN THE LABOR FORCE.

7. **ASSUMPTION:** The success of Maine's economy will depend in large measure upon the state's ability to educate and train "non-traditional" workers. The MVTIS must target its recruitment resources and strategies to non-traditional groups and implement programs and services to address the particular needs of women, older workers, the handicapped, and other groups.

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8. **ISSUE:** Many students enrolling in postsecondary education and training programs are underprepared in basic skills, including communication, mathematics, and science.

8. **ASSUMPTION:** The MVTIS must secure permanent funding to support its developmental studies programs and expand its services to academically underprepared students.

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9. **ISSUE:** Throughout the state, the six VTIs are subject to widespread confusion regarding their status as POSTSECONDARY institutions for education and training.

9. **ASSUMPTION:** The MVTIS must first clarify its identity internally and then engage in a statewide marketing effort to convey its identity clearly.

Financial Resources

- 10. **ISSUE:** Maine's vocational-technical institutes are faced with increasing demands for their services. In order to respond to the needs of their clientele, the institutes require additional financial resources.
- 10. **ASSUMPTION:** The MVTIS must develop an institutional capacity to generate funds from a variety of sources in order to meet the special requirements of a changing postsecondary technical education and training system.

\*\*\*\*\*

- 11. **ISSUE:** The effective management of its resources is essential for the success of the new Maine VTI System.
- 11. **ASSUMPTION:** The MVTIS must demonstrate its ability to be fiscally responsible in decisions regarding the initiation, continuation, or termination of courses and programs.

Data regarding the issues and trends were taken from the working papers developed for the Governor's Economic Development Strategy Task Force during the summer of 1987 and from two other documents: 1) The Maine Labor Force to the Year 2000 published by the Department of Labor's Division of Economic Analysis and Research; and 2) Employment and Training in Maine: Policies and Directions for Improvement published by the 15-County Private Industry Council.

**PART III  
THE PLAN**

The strength of the Maine VTI System is its ability to develop its niche for market-driven education and training. No other education or training system in Maine can fill that niche as well as Maine's VTIs. To attract qualified students and to satisfy the market requirements, the VTI System must resolve the problems associated with its image. First, Maine's six vocational-technical institutes must gain recognition as postsecondary, not secondary, institutions. Second, the VTI System must be recognized as a system of accredited postsecondary institutions which have legitimate admission standards, not as the "alternative" for students who cannot qualify for admission to four-year colleges. Third, because three-quarters of today's workers will have to be re-educated and retrained for jobs that will exist in the year 2000, the VTIs must be recognized for their value as Maine's primary providers of nondegree, short-term

customized training for business and industry. Finally, the

image of Maine's VTI System must accurately reflect the VTIs' significance as critical "access points" to postsecondary education. In this regard, Maine's VTIs are especially important to the success of the State's effort to raise the aspirations of her citizens.

In addition to changing its image in order to attract qualified students, the Maine VTI System must develop a much stronger connection to the marketplace. Market surveys must be conducted on an ongoing basis. The institutes' advisory councils and program advisory committees must be involved directly in determining the relevance of programs and services. The Board of Trustees must develop a network of advisors from a wide range of businesses and industries.

In order to respond to the market effectively, the VTI System must develop a quality of flexibility which exceeds that of any traditional educational organization. Obsolete programs must be rejuvenated or discontinued in favor of programs which clearly meet market demand. Rather than modeling itself after more traditional two-year college systems or university systems, the Maine VTI System must be a model for the delivery of education and training in many forms and in many settings. Maine and the Maine VTI System cannot afford provincialism. In order to ensure the most effective use of the State's resources, the Maine VTI System must aggressively pursue collaborative relationships for the delivery of education and training, including additional partnerships with the University of Maine System and the Department of Labor.

In addition to the VTIs' ability for collaboration, their use of up-to-date technology and equipment and state-of-the-art instruction are absolutely essential. For example, the "current surge of robots and computers represents the initial stages of a 30 to 40 year revolution in the structure and organization of manufacturing ... in the next decade, U.S. firms will spend 500 to 600 billion on automation." (The Strategic Context of Education in America, p. 12.) In both equipment and instruction, the Maine VTI System must meet the maximum level of technical sophistication desired in the marketplace.

Finally, one of the unique advantages of the Maine VTI System is its potential ability to generate revenue through the delivery of customized education and training services. While the System is yet too new to have established a track record in revenue generation, it is extremely important that the System develop such a capacity in order to diminish the size of requests made for general fund appropriations from the legislature. Other sources of funds must also be developed, including alumni funds and grant awards from private foundations as well as the federal government.



**PROPOSED MVTIS GOALS**

**MVTIS SYSTEMWIDE WORKSHEET SUMMARY**

To emphasize the requirement that the Maine VTI System develop a uniquely market-driven culture, with requisite flexibility, statewide impact, collaborative delivery mechanisms, and the increasing capacity for revenue generation, the Board of Trustees issues the following guidelines which should serve as the focus of all System activities:

1. Non-state appropriation revenues shall increase each year. Enter Total estimated non-appropriated revenues:

1989	\$ <u>9,027,036.98</u>
1990	\$ <u>9,812,930.00</u>
1991	\$ <u>10,422,742.00</u>
1992	\$ <u>10,921,480.00</u>
1993	\$ <u>11,515,202.00</u>

2. Student enrollment in both degree and non-degree programs shall increase systemwide. Enter the estimated enrollments for October 15 IPEDS reports for credit enrollments. For non-credit estimates, use unduplicated headcounts from July 1 to June 30.

Associate Degree,	<u>2761</u>	fulltime students (1988 IPEDS)
Diploma and,	<u>3590</u>	parttime students (1988 IPEDS)
Certificate		
Programs	<u>2910</u>	fulltime students (1989 IPEDS)
	<u>3808</u>	parttime students (1989 IPEDS)
	<u>3129</u>	fulltime students (1990 IPEDS)
	<u>4133</u>	parttime students (1990 IPEDS)
	<u>3255</u>	fulltime students (1991 IPEDS)
	<u>4400</u>	parttime students (1991 IPEDS)
	<u>3368</u>	fulltime students (1992 IPEDS)
	<u>4797</u>	parttime students (1992 IPEDS)

Non-credit		
Programs:	<u>11,177</u>	students (7/1/88 to 6/30/89)
	<u>12,254</u>	students (7/1/89 to 6/30/90)
	<u>13,109</u>	students (7/1/90 to 6/30/91)
	<u>14,098</u>	students (7/1/91 to 6/30/92)
	<u>15,235</u>	students (7/1/92 to 6/30/93)

3. Current programs shall be enhanced and new programs shall be defined and directed toward critical industries which meet the following criteria: High growth, major economic impact on state and regional economy, and skilled labor demand exceeds supply. To do this, each year at least THREE program offerings will be closely reviewed and modified according to the findings.
4. New partnerships and approaches shall be established to increase the System's capacity to deliver training using nontraditional methods.
5. Staff development initiatives shall be implemented to meet system goals.

7-12-89

## Goals

The first planning process conducted by the Maine VTI System produced four goals which are consistent with the Board's policy guidelines, specifically: 1) increase the number and diversity of unique programs and services for business and industry; 2) increase the relevance of programs and services for business and industry; 3) develop additional sources of revenue; and 4) implement collaborative arrangements for the delivery of education and training services.

Increase the number and diversity of unique programs and services for business and industry. Included among the Institutes' strategies for reaching this goal are three statewide centers . . . an Occupational Health and Safety Training Resource Center, a Welding Certification Testing Center, and a Center for Electrical Lineworker Training. In addition, Outreach Programs for underserved regions such as Washington and York counties and a major expansion of education and training programs for marine trades, manufacturing, health occupations, the construction industry, automotive and heavy equipment maintenance, and printing and publishing are also proposed.

Increase relevance of programs and services for business and industry. Institutes will evaluate their use of local advisory councils and program advisory committees in order to use these connections more effectively in the marketplace. The institutes will adopt a systemwide model for the delivery of competency-based education and training, the most highly accountable approach to occupational education and training. A standard process for program evaluation will be developed and implemented regularly systemwide.

Develop additional sources of revenue. First, potential revenue sources will be identified through statewide market research. Once it is clear which marketing strategies are most appropriate, a systemwide marketing plan will be developed and then, the marketing materials. A statewide business development function will be established to increase the number of clients served. In addition, resource development will become a designated function at the System level and within at least one institute.

Implement collaborative arrangements for the delivery of education and training services. New relationships will be designed to draw upon existing resources in both the private and public sector. For example, the institutes will use the services of other organizations and agencies to address the needs of underprepared learners. In order to prepare people who ordinarily would not have opportunities to enter the workforce, the institutes will develop mutually beneficial projects with Maine's Department of Labor. Capitalizing on the availability of

new technology to provide statewide access to the VTIs, the

institutes will offer courses through the University of Maine System's ITV System. Finally, so that Maine's VTIs can offer -- in a cost effective way -- liberal arts and science courses which would add important dimensions to its technical degree programs, the institutes will arrange to use the resources of the University of Maine System.

#### Toward the Twenty-first Century

The policy guidelines issued by the Maine VTI System's Board of Trustees and the first Plan for the Maine VTI System provide the coherent philosophical direction and practical strategies required for effective technical education and training in a global economy. The new Maine VTI System looks forward to preparing Maine's workforce for the twenty-first century.

**FUTURE BY DESIGN: A Strategic Planning Workshop for the Maine VTI System**

Ocean Gate Motor Inn  
Boothbay, Maine  
May 11 - 12, 1988

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# TECH PREP: AN INTRODUCTION

TECH PREP/MAINE

Title III, Part E of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990 establishes a new special program—**Tech-Prep Education**—designed to promote “the establishment of systematic technical education articulation agreements between secondary schools and postsecondary educational institutions.”

Broadly speaking, *Technical Preparation programs play the same role in relation to occupational education and the practical arts curriculum that College Preparation programs play in relation to academic education and the liberal arts curriculum.* Where College Prep programs prepare secondary school students to enter a four-year college or university program and pursue a professional career, Tech Prep programs prepare secondary school students to enter a two-year technical institute or technical college and pursue a technical career.

Although the new Title III(E) Carl D. Perkins Act program represents the first major Federal involvement in Tech Prep Education, many States and localities have already implemented Tech Prep programs using a variety of Federal, State, and local resources. In general, Tech Prep programs all combine one or two years of study at the secondary level with one or two years of postsecondary study.

Several different formats have been employed successfully around the country—“2+2”, “2+1”, “1+1”, and “1+2”. However, for the purposes of Title II, Part E of the new Carl D. Perkins Act, *only “2+2” programs are allowable:* programs combining two years of study at the secondary level immediately preceding graduation with two years of study at the postsecondary level, leading to a certificate, a diploma, or an associate degree.

The 1987 Commissioner’s Task Force to Study Secondary Vocational Education in Maine, the Maine Council on Vocational Education, the Bureau of Adult and Secondary Vocational Education, and many other vocational education organizations and individual educational leaders in Maine have endorsed the Tech Prep concept in recent years. In December of 1990, the Technical Preparation course of study was given official recognition by the State Board of Education (see *Maine State Criteria of Program Quality*, No. 1).

Nevertheless, although individual experiments have been conducted in certain Maine schools, and regional discussions about secondary/postsecondary articulation have been on-going in parts of the State over the last two years, very few high school students in Maine are currently aware that an alternative pathway exists toward a successful and productive career in the emerging world economy of the 1990’s.



*The basic goal of the new Perkins special program is to turn the potential of Tech Prep into reality—to establish Tech Prep as a viable alternative for high school students throughout the State. Potential candidates for enrollment in a Technical Preparation course of study may be found, for example, both among four-year College Prep students, not all of whom may be really interested in a professional career, and among students in the "General" course of study, which lacks an explicit articulation with the world of work.*

At the secondary level, the content of each Tech Prep course of study will be keyed to the unique demands of the corresponding postsecondary program and its target occupations. In general, however, Tech Prep programs should typically combine:

- a. ***rigorous preparation in mathematics, science, communications, and other basic academic and workplace skills;***
- b. ***a preparatory introduction to the world of work and the role of technical occupations and technology in the modern economy;*** and, wherever feasible and appropriate,
- c. ***preliminary training through a vocational region or center in the specific technology chosen for postsecondary study.***

*A second objective of the program is to review and reassess overlaps, duplications, linkages and divisions of labor between secondary vocational and postsecondary technical programs with the same occupational objectives.*

At least 25 of the 70 occupationally-specific skill training programs available in the State of Maine today are offered at both the secondary and the postsecondary levels. To meet the Perkins Act objective "to provide, in a systematic manner, strong, comprehensive links between secondary schools and postsecondary educational institutions," the relationships between secondary and postsecondary vocational and technical education programs should be clarified.

During the implementation of the Tech Prep course of study, decisions should be made—on a systematic and rationalized basis, using occupational and labor market information as well as program quality and performance data—about the most effective and beneficial division of labor between secondary and postsecondary occupational skill training:

- which programs are most appropriate at the secondary level;
- which programs are most appropriate at the postsecondary level;
- which should properly be offered at *both* levels; and,
- which should be articulated within a Tech Prep framework.

For the 1991-1992 program year, Congress has appropriated \$63.4 M to support Tech Prep education planning, development, demonstration, and operation projects. Of that amount, \$338,336 has been allotted to the State of Maine.

Section 343 of the new Perkins Act requires that all Title III(E) funds be awarded to consortia of eligible secondary and postsecondary educational institutions. Under Maine law, *the most appropriate format for Tech Prep development is the formation of a single statewide consortium—made up of the Maine Technical College System (MTCS), the 26 secondary vocational regions and centers, and their respective sending schools.*

A six-member **consortium board** will be convened to make awards of Tech Prep program funds to individual tech prep projects. Three members will be selected by the Board of Trustees of the MTCS and three by the Maine School Boards Association. Representatives of the Bureau of Adult and Secondary Vocational Education, the MTCS System Office, the Maine Council on Vocational Education, the Technology Education Association of Maine, and the Maine Association for Public School Adult Education will serve *ex officio*, with voice but no vote.

The MTCS Office will serve as the fiscal agent for the consortium, and will submit a formal application for a Title III, Part E Special Project to the State Board of Education on behalf of the consortium.

Certain articulation issues by their very nature are statewide in scope. No two institutions have identical program rosters and students who enroll in the first two years of Tech Prep program in one part of the State may well complete the program in an entirely different area. But at the same time, the majority of project activities will be carried out on a local or regional basis.

The State Board anticipates that \$38,366 of Maine's Title III(E) allotment will be dedicated to state-level Tech Prep project activities carried out under the supervision of the Director of Special Projects of the Maine Technical College System Office. Included among these state-level activities may be: staff support to the consortium board with review and rating of individual project proposals as necessary; technical assistance to local and regional project activities; and compliance with Carl D. Perkins Act monitoring, reporting, evaluation, and audit requirements.

The remaining \$300,000 will be allocated among individual tech prep projects on a competitive basis.

No title III(E) funds may be used for administrative or indirect costs. However, a variety of expenditures directly related to program development and implementation are allowable.

Tech Prep development project funds can support local project coordinators on a regional basis. *In-service training of teachers and counselors* is specifically referenced in Sections 334(b)(4) and (5). Also, instructional personnel can be reimbursed for extra-contractual participation in curriculum articulation and development.

Vocational teachers and career counselors, MTCS faculty, and liberal arts faculty and guidance counselors from the academic high schools will all have significant roles to play in the development of the new course of study.

In addition, *at least \$30,000 will be dedicated by the consortium for projects involving the participation of technology educators.*

Each project proposal must be counter-signed by at least one technical college president, at least one secondary vocational director, and at least one sending school principal. (The required signatures of the appropriate authorized officials, as specified in the Department of Education publication *Uniform Guidelines for Local Applications for Assistance to Eligible Recipients Under the Carl D. Perkins Vocational and Applied Technology Education Act of 1990*, page 8, must also be included.)

On Thursday, June 27, a statewide "bidders conference" will be held to inaugurate the Maine Tech Prep Project, introduce the consortium board, and inform interested parties about the process and the criteria that will be used by the board to review and rank project proposals on a competitive basis and make final funding decisions.

A consortium agreement and the formal application for a tech prep grant will be initiated by board members prior to the statewide conference.

A request for proposals prepared on behalf of the consortium by the MTCS Office and the Bureau of Adult and Secondary Vocational Education will be distributed to all attendees during the June 27 meeting.

Providing that the Title III, Part E plan submitted by the State Board of Education is approved by the U.S. Office of Vocational and Adult Education by July 1, 1991, the following timetable for the local and regional project approval will be followed:

- Project proposals will be due for submission to the MTCS Office on or before Friday, August 16;
- Letters of award or denial will be issued by the MTCS Office on behalf of the consortium board on Friday, August 30;
- Project activities should commence no later than October 1, 1991, and conclude by June 30, 1992.

The immediate outcome of the first project year is expected to be *a series of program-specific, local, regional, and statewide articulation agreements, combined with an educational campaign to introduce the new course of study to educators, guidance counselors, administrators, students, and parents throughout the State.*

# INVESTING IN MAINE'S WORKFORCE



**A REPORT  
BY THE COMMISSION  
TO REVIEW THE  
CAPACITY OF  
THE MAINE TECHNICAL  
COLLEGE SYSTEM**



MAY 1991  
EXECUTIVE SUMMARY

INVESTING IN MAINE'S WORKFORCE

**A Report by the  
Commission to Review the Capacity of the  
Maine Technical College System**

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President, Central Maine Power Company

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President, American Association of Community & Junior Colleges

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Sister Mary Norberta  
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Ann Sossong  
Executive Director, Maine State Nurses Association

Gary Willey  
Vice President, Jasper Wyman & Sons

May 1991

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## PREFACE

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*Traditionally our state and the nation have focused on preparing students for 4-year college degrees. But that's not enough anymore. With most jobs now requiring technical skills, it's time we took a serious look at how well we're preparing the backbone of our workforce—the technicians who work in our offices, our hospitals, our shipyards, our airports, our paper companies—the people who keep Maine running.*

Governor John R. McKernan, Jr.

*The Commission To Review the Capacity of the Maine Technical College System* was formed by Governor McKernan in September, 1990, to analyze the capacity of the Maine Technical College System (MTCS) to meet the demand for technically-skilled workers in Maine. The study was motivated by concern that the demand for post-secondary technical education in today's rapidly advancing technological world may be outstripping the state's current capacity to prepare students.

The Commission's charge was to assess the demand over the next ten years for post-secondary technical education—from Maine employers seeking skilled workers and from Maine citizens seeking one- and two-year degrees in technical fields—and to develop recommendations for how Maine can meet that demand. The Commission was not charged with the responsibility for analyzing demands for specific MTCS programs, assessing regional demands, nor analyzing the capacities of individual campuses within the Technical College System.

The Commission was made up of fourteen leaders from the business community, membership organizations, education, and labor throughout Maine, as well as the Chair of the MTCS Board of Trustees.

## THE MAINE TECHNICAL COLLEGE SYSTEM

The enabling legislation that created the Maine Technical College System defined its mission clearly:

*The basic mission of the Maine Technical College System is to provide associate degree, diploma, and certificate programs directed at the educational, occupational and technical needs of the State's citizens and the workforce needs of the State's employers. The primary goals of the post-secondary vocational-technical education and the MTCS are to create an educated,*

*skilled, and adaptable labor force which is responsive to the changing needs of the economy of the state and to promote local, regional and statewide economic development. (Title 20A: SS12703).*

Today, the System includes six technical colleges: Central Maine Technical College in Auburn; Eastern Maine Technical College in Bangor; Kennebec Valley Technical College in Fairfield; Northern Maine Technical College in Presque Isle; Southern Maine Technical College in South Portland; and Washington County Technical College in Calais.

The six campuses offer 106 associate degree, certificate and diploma programs in business, automotive, construction, electrical and electronics, health fields, the hospitality industry, trade and technical fields, marine and natural resources, public and occupational safety, and graphic arts and printing. In addition, each college offers a wide variety of seminars, workshops, and credit and noncredit courses through the Continuing Education Divisions, some of which are specifically tailored for a particular business or industry. In 1989/1990, the MTCS enrolled 3,699 full and part-time students and graduated 1,287 students with degrees, certificates and diplomas. Over 11,000 adults participated in Continuing Education programs.

Total revenues for the System in fiscal year 1990 were \$24 million, of which 58.2 percent was from state appropriations, 13.6 percent from tuition and fees, 14.9 percent from government grants, and the remainder from other sources that include gifts and auxiliary enterprises. The budget was spent in the following ways: 42.4 percent for instruction; 10.3 percent for plant operation and maintenance; 12.7 percent for student services and scholarships; 13.2 percent for institutional support; and the remainder for auxiliary enterprises and public service.

## **HOW THE COMMISSION UNDERTOOK ITS MISSION**

From the outset, Commission Chairman, Joe Collier directed members to focus on the long-term needs for technical education despite the current state budget crisis. The Commission's responsibility was to assess real, long-term needs rather than to develop expedient, short-term recommendations.

The Commission retained a nationally-recognized economist specializing in technical education, Dr. Roger Vaughan, to prepare the demand analysis and draft the final report. The demand analysis compared estimates of Maine's growing demand for technically-educated people with comparable information from national sources. Maine's demand analysis relied principally on three sources: 1) the economic forecast model used by the Maine State Planning Office; 2) occupational projections prepared by the Maine Department of Labor; and 3) estimates made by the Maine Occupational Information Coordinating Committee (MOICC).

The Commission gathered information from many organizations involved with technical education in Maine. To augment the existing data, the Commission solicited input from 122 business, education, and labor organizations. This information was correlated with the demand analysis developed by the MOICC and by Dr. Vaughan.

The Commission conducted six public meetings throughout the study process. One meeting, a day-long public hearing, was conducted simultaneously in Bangor and Auburn to be as accessible as possible to participants throughout the state. Verbal and written testimony was received from MTCS administrators, faculty, and students, community and business leaders, vocational education providers, union leaders, and members of the general public.

## WHAT THE COMMISSION LEARNED

While Commission members were familiar with the growing need for technically-educated employees, they did not anticipate either the magnitude or the urgency of the needs they uncovered. The Commission concluded that it could not overstate the importance of a flexible and modern technical education system to the economic future of Maine.

The Commission found that the present capacity of the MTCS is far below workforce needs. Without additional state commitment and greater involvement by private employers, healthy economic development in the state will be jeopardized. Time and time again, the Commission was told that, despite the current recession, the major barrier confronting employers is a growing shortage of technically-educated employees. Like the national economy, Maine's economy has been plunged into a global marketplace in which economic success depends on the education and skills of its workforce.

In addition, the Commission found that opportunities are quickly disappearing for people currently in the workforce who lack the skills that employers demand. Unless Maine's Technical Colleges can offer existing workers the chance to retrain or to upgrade their skills, many of them will not be able to find well-paid work, or any work at all. With a majority of the workforce of the year 2000 already working, the Commission concludes that it is critical that upgrading and retraining opportunities must be expanded for the economic future of Maine citizens and the success of business and industry in Maine.

The Commission concluded that unless the Technical Colleges can serve more people, Maine faces an ever-widening gap between the skills possessed by workers and the skills demanded by employers. If not addressed, this gap will discourage companies from moving into the state, will slow the creation and expansion of businesses, and, most important, will weaken the competitive position of all sectors of our economy.

The Commission believes that by the end of the century Maine's technical education system must have the capacity to serve a much greater segment of our population. An expanded technical education system will enable more Mainers to acquire skills needed for well-paid work, to strengthen those skills as the demands of the workplace increase, and to learn new skills as the old ones become obsolete.

The Commission also believes that, to meet this critical need for technical skills in Maine, the Maine Technical College System must be an equal player in Maine's educational arena.

Like the nation as a whole, Maine has responded to the growing demands for educated people by expanding enrollment in four-year university programs. In 1986, the Visiting Committee of the University of Maine System recommended, and the Legislature approved, a \$15 million increase in state funds toward the University System's expansion. That investment has been of great benefit to Maine and Maine citizens. The Commission believes that, with the unprecedented changes that have taken place in our economy and at our worksites, it is time for a similar investment in the Technical College System.

During the course of its study, the Commission continually encountered strong support for the Technical Colleges. The Commission heard repeatedly from community and business leaders, legislators, educators, labor groups, as well as Maine citizens, of the need for a stronger and larger Technical College System. This support has been reflected by the passage of bond issues, including the \$20,210,600 Bond approved by Maine voters in November 1989. The Commission feels that this level of public support will ensure that the additional state investment that the Commission urgently recommends will be spent wisely and effectively.



The Commission also heard repeatedly, from employees, students, and from business and industry groups, of the extreme need for updated training equipment for MTCS programs. The Commission feels it is vital to train Technical College students on equipment embodying up-to-date technology. It strongly supports the recommendation of the Maine Legislature's Joint Standing Committee on Audit and Program Review to authorize a general obligation bond issue for \$10,045,000 to update technical training equipment for the MTCS.

The Commission wishes to share the enthusiasm and excitement we gained through our study. The deep and broad support we heard for the Technical College System and for technical education in general, combined with the urgency of the needs we uncovered, left each of us deeply committed to a strong and vital Technical College System for the State of Maine.

The Commission would like to thank all of the people of Maine who took the time to provide valuable information and insight into the technical education needs of the state.

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## RECOMMENDATIONS FOR A STATE STRATEGY TO EXPAND THE CAPACITY OF THE MAINE TECHNICAL COLLEGE SYSTEM

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*Businesses must clearly tell schools what skills they need. They should view the education community as their most important supplier—providing the essential human capital they need to survive and thrive. Through these relationships, schools can better prepare to adapt to changing needs and new technologies. Colleges have good track records of working with businesses. But we must build more partnerships between businesses and community colleges. Many medium and small firms, with little ability to support human resource programs, could easily go to local community colleges for the training their workers need.*

William Brock, former Secretary of Labor, 1991

In a world of growing economic complexity and international competitiveness, Maine needs a world class technical education system. This is our challenge. To meet it, the Commission is making six recommendations.

### RECOMMENDATION 1

#### *Findings*

The Commission's study revealed a significant gap between the technical skills currently possessed by Maine workers and the skill needs of Maine employers. The Commission also found, from analyses conducted at the state level and reinforced by national data, that the demand for technical skills will continue to increase throughout the 1990s. The Commission projects that Maine will need a minimum of 60,000 additional technicians to meet projected employment growth during the 1990s.

The Commission notes that the programs presently offered by the Technical Colleges cover 36 occupational areas, which represent one third of all Maine jobs. Furthermore, the Technical Colleges are the sole providers of post-secondary education for 29 of those 36 occupational areas. Because the Technical Colleges are the primary deliverers of post-secondary technical education in the state, the Commission concludes that, if the Technical Colleges remain at their current capacity graduating only 1,300 students each year, the state's workforce will be short at least 47,000 technicians in the 1990s. The Commission fears that the skills shortage will lead employers either to look outside the state for skilled workers—slowing their growth—or, worse, to move to a state with a larger skilled labor force.

The Commission also found that the demand by students for technical programs far exceeds the capacity of the Technical Colleges. During the Fall of 1990, 3,000 more students applied than could be served at the Technical Colleges.

The Commission expects this demand to increase during the 1990s as a result of greater understanding of the career opportunities and higher earning potential associated with technical training. The Commission also believes that interest in one- and two-year technical programs will increase as a result of the attention and resources currently directed toward raising the aspirations of noncollege bound students. The Commission notes that the slowing economy is also placing greater demands on the Technical Colleges, demonstrated by the 50 percent increase in applications since the Fall of 1990. The Commission believes that the ability of laid-off workers to enroll in Technical College programs and prepare for new careers will be vital to the State's economic recovery.

***RECOMMENDATION 1: The Commission recommends that the State of Maine invest in an eight-year Growth Plan for the Maine Technical College System, beginning in fiscal year 1993. This Growth Plan would increase enrollment from its current enrollment of 4,100 to 10,000 students by the year 2000. It would cost the State, on average, an additional \$3.7 million each year for the next eight years, for a total increase of \$29,363,000.***

The Growth Plan is projected to increase the number of Technical College graduates entering the marketplace from 1,300 in 1990 to 3,300 by the year 2000, representing a 250 percent increase over the System's current capacity. This investment, which would double the System's state-financed budget by the year 2000, would result in approximately 127 new or expanded programs being added to the System's current offerings of 106 programs. While the Commission recognizes that this investment will not meet the entire demand for technicians in Maine, it expects the System's current market penetration to double, from 27 to 54 percent, by the year 2000.

The Growth Plan reflects the Maine Technical College System's assessment of the level of growth that can be accomplished over the eight-year period without compromising educational quality. Based on a comprehensive budget, it includes the addition of new and expanded programs; expansion of student services, such as library, laboratory, and counseling services; and the necessary upgrading of technical training equipment.

The investment plan is intended to build on the facility improvements provided for in the \$20.2 million bond issue approved by Maine voters in November 1989. While the Commission recognizes the impossibility of predicting specific training demands, and hence facility needs, in the late 1990s, it appears based on current demand analyses that additional facilities are unnecessary. The Commission recommends that the investment plan be implemented through:

- a. increased utilization of existing facilities, particularly during off-peak times, such as evenings and summers; and
- b. development of cooperative agreements with the regional secondary vocational centers as satellite facilities.

Construction of new facilities should be considered only as a last resort if other options are insufficient to meet the needs of new program development. The Growth Plan does not include any funding for new facilities.

The Growth Plan also does not provide for campus residential facilities, which, if needed, will be developed on an enterprise funding basis with the facilities being self-supporting through room and board fees.

## RECOMMENDATION 2

### *Findings*

The American Society for Training and Development recently reported that 42 percent of the nation's workforce will need additional training over the next decade. In Maine, that translates into approximately 243,600 workers. The Technical Colleges have been experiencing a steady increase in the number of nontraditional students returning to school either to upgrade their skills or to prepare for a new career. This demand is expected to increase throughout the decade. The Commission is concerned that if current programming cannot meet the needs of these nontraditional students, many will not be able to obtain the education they desire or may need to continue as productive members of the workforce.

The Commission has also found that the current recession has in fact heightened the demand by nontraditional students for retraining. Since January of 1990, 72 Maine plants have closed or had mass layoffs, leaving 8,300 Maine people out of work. Many of these people will never find work in the same occupation and will have to become retrained for a new career.

The demand for nontraditional programming is equally vital to Maine employers. The Commission heard testimony from business and industry organizations throughout Maine on the critical demand for their current workers to be upgraded in order to keep pace with technological changes. With 90 percent of Maine businesses employing 25 or fewer employees, it is vital that our businesses have access to customized training programs for their employees, such as those provided by the Technical Colleges.

***RECOMMENDATION 2: As part of the Maine Technical College System Growth Plan, the Commission recommends an expansion of the Technical Colleges' Continuing Education Divisions from the current enrollment of 11,000 students to 20,000 by the year 2000. The cost of CED expansion has been incorporated into the \$29,363,000 Growth Plan.***

In addition to providing credit courses for part-time students that lead to degrees, Continuing Education provides short-term customized training programs for business and industry. The CED component offers specialized workshops, courses and seminars that are flexible and responsive to employer and employee needs. While the Commission acknowledges that the Technical Colleges are not the sole providers of continuing education and customized training, it does believe the Technical Colleges offer a vital service that, if expanded, could help meet the increasing need for retraining and upgrading, and the demand from business and industry for customized training.

## RECOMMENDATION 3

### *Findings*

An expansion plan of the magnitude proposed by the Commission requires careful planning that ensures that quality of educational services is maintained throughout the expansion process. The Commission, therefore, believes it is essential that a comprehensive implementation strategy be developed, to ensure that growth is implemented responsibly. The Commission recognizes that the MTCS Board of Trustees has governing authority over the Technical College System and as such is the most appropriate body to plan and oversee implementation of the Growth Plan.

During the course of its study, the Commission identified broad industries which are expected to experience high growth throughout the decade, and industries which are experiencing rapid technological change. The Commission did not assess regional demands, specific program needs, or the capacity needs of each campus. The broad industry and occupational analyses are intended to serve as a guide to the MTCS in their program planning and implementation of the Growth Plan.

***RECOMMENDATION 3: The Commission recommends that the MTCS Board of Trustees develop an implementation strategy by April 1992 to achieve the goals of the Growth Plan. This strategy should include the process for selection of new and expanded programs. The Commission further recommends that the Board of Trustees allow for annual reviews of the implementation strategy, to ensure that the System remains flexible to changing economic conditions and changing student needs.***

The Commission recommends that special emphasis be placed on:

- a. Responding to sectors of the Maine economy with documented shortages of technically-skilled employees, such as the health care industry.
- b. Supporting Maine businesses and industry where rapid technological advances will continue to raise skill demands; and
- c. Fulfilling the training needs for technical occupations with substantial public benefit served exclusively by the MTCS, such as the technical education program for waste water treatment operators.

#### **RECOMMENDATION 4**

##### *Findings*

The Commission believes strongly that education must be viewed as a lifetime commitment—continuing throughout our working lives—for personal fulfillment and out of economic necessity. With people changing jobs and even careers many more times than in the past, and technological changes accelerating, it is vital that we are able to move in and out of the education system with as few barriers as possible.

The Commission found that students could greatly benefit from a smoother transition from secondary schools to the Technical Colleges without the need to repeat courses once enrolled in the College. The Commission supports the concepts of Two + Two or Tech Prep programs as a means of facilitating the transition from secondary school to a Technical College, and encourages the MTCS to develop such programs wherever possible.

The Commission found that the MTCS and the University of Maine System have recently developed articulation agreements that have greatly benefitted students wishing to enroll in bachelors degree programs after obtaining an associate degree from a Technical College program, or vice versa. The Commission commends these actions and encourages the MTCS and the University of Maine System to continue these efforts, as a means of encouraging students to continue their education as efficiently as possible.

***Recommendation 4: The Commission recommends that the Maine Technical College System continue to work closely with the secondary schools and the University of Maine System with the primary goal of increasing the number of articulation agreements so that students will be better able to transfer credits into and out of the MTCS.***

The Commission anticipates that the efforts to provide a smoother transition among educational systems will result in cost savings, as well as eliminate unnecessary duplication.

## RECOMMENDATION 5

### *Findings*

The Commission is concerned about the apparent lack of understanding by parents and students of the excellent career opportunities and earning potential that technical positions offer. Despite the many changes that have taken place in the nature of technical occupations, the public retains outdated impressions of what technicians do. Too often, Technical Colleges are erroneously seen as a less desirable alternative, instead of colleges of choice, for students not pursuing a four-year baccalaureate degree. As a result of these outmoded perceptions, the Commission believes that a large segment of Maine students is missing out on excellent educational and career opportunities.

The Commission believes that the MTCS has a responsibility to communicate to the public its role and status among the state's education providers. While the change in name from the Vocational-Technical Institutes to Technical Colleges reflects their status and mission more accurately, the MTCS needs to be more proactive in communicating the career opportunities and earning potential associated with technical education to the public and, in particular, to high school guidance counsellors and to parent-teacher organizations. While the Commission is aware of the many excellent recruitment and public awareness efforts undertaken by College professionals, changes in technical education fields have occurred so quickly that an aggressive, focused campaign is needed. In addition, the MTCS needs to communicate more clearly to middle and high-school students the educational requirements needed for matriculation to Technical Colleges so that they can better prepare for their post-secondary technical education.

***Recommendation 5: The Commission recommends that the Maine Technical College System strengthen its alliances with secondary school guidance departments and parent/teacher organizations with the goal of increasing awareness of the excellent career opportunities and higher earning potential associated with technical jobs.***

## RECOMMENDATION 6

### *Findings*

During its analysis, the Commission learned much about the technical education needs of the Maine workforce and about the capacity of the Maine Technical College System to meet those needs. In addition, the Commission gained insights into many issues that go beyond the scope of its charge. Because of the importance of these issues the Commission has included recommendations in these areas in the hope that they will prove useful to the MTCS Board of Trustees as they carry out the Growth Plan, and in their continuing efforts to meet the needs for technical education among Maine's citizens and businesses.

***RECOMMENDATION 6: The Commission recommends that the MTCS Board of Trustees, in implementing the Growth Plan, consider a number of issues that the Commission believes are essential to the System's mission, which include (1) the changing role of technical education in the lives of Maine workers; (2) the role of technical education in Maine's economic development strategy; and (3) issues relating to the internal operations of the System.***

***THE CHANGING ROLE OF TECHNICAL EDUCATION IN THE LIVES OF MAINE WORKERS***

1. The people of Maine must rethink the role that post-secondary technical education plays in their lives. They must elevate technical education to the level demanded by the rapidly evolving marketplace in which technical competence and innovation are our foundations of economic prosperity.
2. The people of Maine must become aware that education is a lifelong endeavor and that their careers depend on their ability to continuously update their knowledge and skills.
3. Core educational and specific technical skills are only part of the skills package required in today's workplace. People must be able to work in teams, be familiar with statistical process control, be flexible as production techniques change, be able to assume a greater variety of responsibilities, be more involved in decision-making, and be more entrepreneurial.
4. To ensure that the Technical Colleges remain an affordable and accessible option for Maine's citizens, the MTCS must continue to seek additional sources of financial aid and scholarships for its students.

***TECHNICAL EDUCATION MUST PLAY A GROWING ROLE IN MAINE'S ECONOMIC DEVELOPMENT STRATEGY***

5. Education of today's and tomorrow's employees is one of the most pressing problems that employers face. Workforce preparation—finding people for the growing number of skilled jobs—must be the core of the state's economic development strategy, in attracting businesses to the state, in helping current businesses retain their competitiveness, and in fostering the birth and expansion of businesses.
6. Traditionally, Technical Colleges have served the market rather than led the market in new skills programs. The Commission believes that the MTCS can support the growth of expanding industries by taking the lead in helping businesses incorporate the latest skills innovations in their operations.
7. The MTCS could expand its role in economic development by creating "programs of excellence" in technical specialty areas important to Maine industry with large employment bases and excellent growth potential. Potential targets include allied health, machining/metal-working, wood products manufacturing, and electronics. These programs could generate new jobs, or could save jobs by increasing the competitiveness of businesses.
8. The Commission found that many MTCS graduates at some time in their careers start and own businesses. Many programs would benefit from the inclusion of business management courses to complement the technical training.

9. Applied research and development is an important component of Technical College programs in other states. Maine industries could benefit greatly through partnerships with the Technical Colleges, enabling them to innovate fast enough to remain competitive internationally.

***IMPORTANT ISSUES AFFECTING THE INTERNAL OPERATIONS OF THE MTCS***

10. The MTCS must continue to provide general education and basic skills courses as they provide an essential base from which their graduates can continuously update their technical skills throughout their working lives.

11. Recognizing the growing demands for technical competence, MTCS must continue to expand its investment in faculty development. Faculty must maintain high standards in their respective disciplines.

12. Various state agencies, including the Maine Department of Labor, Division of Economic Analysis and Research, the Maine Occupational Information Coordinating Committee, and the State Planning Office, manage important economic and occupational data. However, this information is not available in a form that is compatible with the planning needs of the MTCS. The MTCS needs to work with these agencies to develop a means of forecasting and reporting that can be used for regular planning and evaluation.

13. The MTCS should develop a standardized method of tracking the placement and earnings of its program graduates to identify current demands in different skills and to be able to demonstrate the value of career prospects through technical education.



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## ACKNOWLEDGEMENTS

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The Commission wishes to thank several organizations and individuals for their contributions to this study. Our special thanks go to Dr. Roger J. Vaughan, the principal author of the report, for his insights into Maine, his ranging national perspective on technical education, and his ability to describe the needs in Maine in relationship to the national and world economies.

We also thank the Maine Development Foundation for its organization, administrative, and research support which was so vital to accomplishing our task in a timely manner. Both Laurie Winsor and Gore Flynn, special consultants to the project, were especially helpful in providing the background information required, scheduling meetings and hearings, and drafting findings and recommendations.

We also thank Steve Adams, State Economist; Dana Evans, Department of Labor Economist; and Denis Fortier, Analyst for the Maine Occupational Information Coordinating Committee, for their valuable research and analyses. We also thank the Maine Technical College System for its cooperation and support. John Fitzsimmons, MTCS President, and staff members Alice Kirkpatrick, Lynn Olson, and Marcia Schools provided the Commission with information in a timely manner and were very supportive in helping the Commission understand the Maine Technical College System. We wish to offer the Board of Trustees our thanks in advance for accepting the responsibility of implementing this Growth Plan.

People from many parts of the Maine economy made valuable contributions during the course of the Commission's review process.

From the Legislature:

**Senator Stephen Estes**, Chair, Joint Standing Committee on Education  
**Representative Nathaniel J. Crowley, Sr.**, Chair, Joint Standing Committee  
 on Education

**Lock Kiermaier**, Legislative Analyst, Office of Fiscal and Program Review,  
 on behalf of the Joint Standing Committee on Audit and Program  
 Review

the Presidents from the MTCS:

**Nathaniel Crowley, Jr.**, Acting President, Eastern Maine Technical College  
**William Hierstein**, President, Central Maine Technical College  
**Durward Huffman**, President, Northern Maine Technical College  
**Ronald Renaud**, President, Washington County Technical College  
**Wayne Ross**, President, Southern Maine Technical College  
**Barbara Woodlee**, President, Kennebec Valley Technical College

from the business community:

**Marilyn Ardito-Stafford**, Director of Training, Georgia Pacific Corporation  
**Roy Daigle**, Manager, Bangor Mall Offices  
**James Evers**, Safety and Security Manager, S.D. Warren Company  
**Margaret Hodgkins**, President, Knowlton-McLeary Company  
**Thomas Howard**, Assistant Executive Director, Associated General Contractors of  
Maine  
**Paul Kelley**, Vice President of Diagnostic and Support Services, Eastern Maine  
Medical Center  
**Robert King**, President, Maine Metal Products Association  
**Costas Lambrew**, M.D., Director, Division of Cardiology, Maine Medical Center  
**Joseph Moran**, Vice President, Quality Assurance & Planning, Central Maine Power  
Company  
**Douglass Nason**, Director of Facility Engineering, Sprague Electric  
**William Nugent**, President, Greater Portland Regional Chamber of Commerce  
**David Peterson**, Chief Executive Officer, Aroostook Medical Center;  
**Gordon Platt**, President, Curry Printing & Graphics  
**James Saunders**, Executive Director, Lewiston/Auburn Chamber of Commerce  
**Bob Wallace**, Manager, Federal Marine Terminals, Inc.

from organized labor:

**Andrew Clark**, Representative, Brewer Millwrights Union  
**Laura Fortin**, President, Maine State Nurses' Association, Local Unit 1  
**Roger Hare**, Retired Regional & Local Representative, Machinist Union/UAW  
**D. Bruce King**, President, Carpenter, Millinocket Local 621  
**Ed King**, Training Coordinator, United Brotherhood of Carpenters & Joiners,  
Local 320  
**Gerry Langlais**, Member, Plumbers and Pipefitters, Local 783  
**Charles O'Leary**, President, Maine AFL-CIO

from economic development organizations:

**Ed Collins**, Director, Quoddy Job Opportunity Zone  
**William Spolyar**, Chairman, Mid-State Economic Development Corporation

from the education and training community:

**Daniel Bridgham**, Chair, NMTC General Advisory Council  
**Peter Burns**, Director of Admissions, Eastern Maine Technical College  
**Tina Carter**, Student Senate Representative, Washington County Technical College  
**Alan Campbell**, General Manager, Cole Training Institute  
**Richard Fifield**, Employment & Training Specialist, Bureau of Employment and  
Training Programs

from the business community:

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**James Evers**, Safety and Security Manager, S.D. Warren Company

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**Paul Kelley**, Vice President of Diagnostic and Support Services, Eastern Maine  
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Company

**Douglass Nason**, Director of Facility Engineering, Sprague Electric

**William Nugent**, President, Greater Portland Regional Chamber of Commerce

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**Tina Carter**, Student Senate Representative, Washington County Technical College

**Alan Campbell**, General Manager, Cole Training Institute

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**Ronald Fitzgerald**, Department Chair, Northern Maine Technical College  
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**Karl Kelley**, Student Senate President, Eastern Maine Technical College  
**Gerald Libby, Jr.**, Student Senate Vice President, Central Maine Technical College  
**Karen Marston**, Student Senate Representative, Southern Maine Technical College  
**James McKinney, Jr.**, Director, Oxford Hills Technical School  
**Lori McPherson**, Student Representative, Northern Maine Technical College  
**Richard Mooers**, Student Senate President, Kennebec Valley Technical College  
**Patrick O'Neill**, Director, Southern Penobscot Vocational School-Region 4  
**Suzanne Raeside**, Director, Adult Education, MSAD #35-Marshwood  
**James Rowe**, Faculty Association President, Kennebec Valley Technical College  
**Reginald Roy**, Faculty, Welding Technology, Eastern Maine Technical College  
**Kevin Sweeney**, Faculty Association President, Southern Maine Technical College  
**Gregory Swett**, Dean of Students, Eastern Maine Technical College  
**James Ugone**, Principal, Caribou High School  
**Marilyn Vail**, Nursing Faculty, Eastern Maine Technical College  
**John Wilson**, Faculty Association President, Central Maine Technical College

**MISSION AND GOALS  
OF THE  
MAINE TECHNICAL COLLEGE SYSTEM**

The basic mission of the Maine Technical College System is to provide associate degree, diploma and certificate programs directed at the educational, occupational and technical needs of the State's citizens and the work force needs of the State's employers.

The primary goals of postsecondary vocational-technical education and the Maine Technical College System are to create an educated, skilled and adaptable labor force which is responsive to the changing needs of the economy of the State and to promote local, regional and statewide economic development.

# Maine Technical College System



1989-1990  
ANNUAL REPORT

# Administration

## **SYSTEM OFFICE**

John Fitzsimmons, President  
Lynn D. Olson, Director of Finance and Administration  
J. R. Lundquist, Director of Human Resources  
Gary F. Crocker, Director of Special Projects  
Alice B. Kirkpatrick, Director of Public Affairs

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# From the President

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The Technical Colleges represent the best of Maine: a history built on hard work; pride of accomplishment; and a firm commitment to quality. Since the establishment of the first vocational-technical institute in 1946, we have maintained a tradition of high quality education and close ties to the citizens and employers of Maine.

During the past six years, over 90 percent of our students have been placed in jobs following graduation, with over 85 percent finding employment in their field of study. This extraordinary record demonstrates the respect the business community has for our graduates. Further, it is a reflection of the talent and commitment of the administrators, faculty, and staff who make it possible.

I believe that the challenges of the 1990s will be to build upon our past success; adapt to the dramatic changes taking place in the economy and in the workplace; and always maintain a commitment to quality. The 1990s, I believe, must be a decade of commitment to technical education.

Between 1950 and the year 2000, the number of jobs requiring little or no skills will have dropped from 50 to 15 percent, resulting in a growing gap between the level of skills workers have and those required by business and industry. Because of these economic changes, each year in Maine over 6,300 technically-skilled jobs in the occupational areas covered by Technical College programs either go unfilled or are filled by out-of-state workers.

Despite the great demand for technically-skilled workers, the six Technical Colleges, which are Maine's primary deliverers of postsecondary technical education, have the capacity to graduate only 1,300 students each year. Meanwhile, nearly 3,000 applicants were placed on waiting lists last year. If Maine people are to have an opportunity to obtain the skills needed for today's and tomorrow's jobs, and if businesses are to have access to the technical skills needed to compete, we must revisit the value we place on technical skills...the very skills that are needed to care for the sick in our hospitals, repair our cars, build our houses...the skills that keep Maine running.

In addition to expanding the number of students we serve and programs we offer, our goals are to make greater headway in maintaining state-of-the-art training equipment; strengthen our ties with business and labor communities; enhance relations with the Governor and Legislature; strengthen ties with secondary schools and the University of Maine System; invest in professional development for our employees; maintain an environment of trust and open communication within the Technical College System; increase the number of scholarships available to students; increase non-General Fund revenues through alumni associations and other sources; and actively promote the accessibility of all programs to the men and women we serve.

I invite you to read this report and view the accomplishments of the past year. In particular, I hope you will take a look at the pictures and profiles of six Technical College students. They are only a few of the thousands of talented, energetic students we serve each year, and they, more than any words, tell what the Technical Colleges are all about.



John Fitzsimmons  
President





# Board of Trustees



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President and Chief Executive Officer, Eastern Maine Development Corporation



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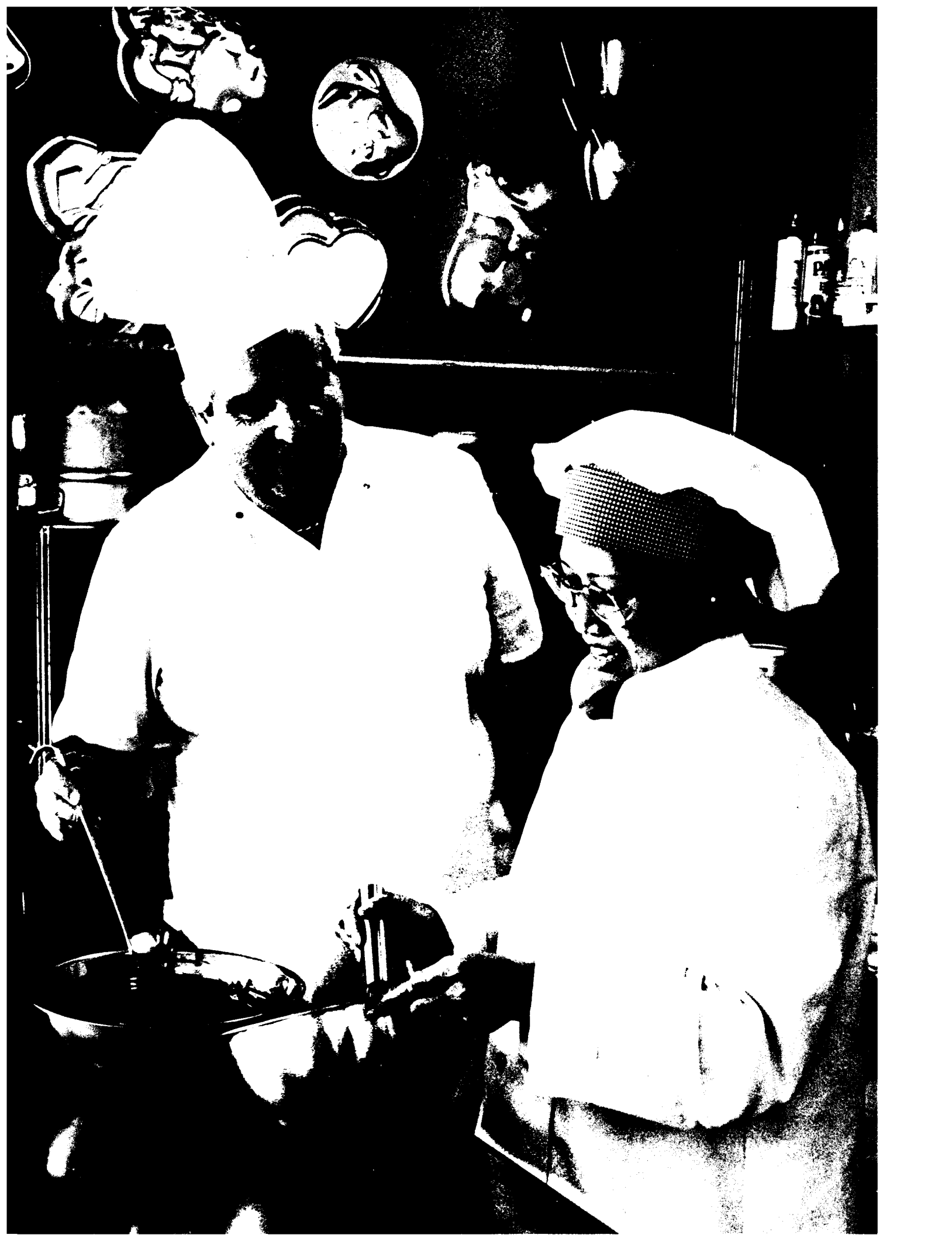
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# The Year in Review

1989 - 1990

The past year was marked by several significant events, including the official change in name from Vocational-Technical Institutes to Technical Colleges. The name change, which was brought about by legislation passed by the 114th Maine Legislature, was welcomed by the entire Technical College System community as a more accurate reflection of the mission and status of the two-year public colleges.

A second event was the passage of a \$20.2 million bond referendum in November of 1989. In addition to much-needed renovations and repairs of facilities, the bond includes funds for new buildings to meet new and expanding programming needs. The bond also provides funds for Comprehensive Land Use Plans for each of the six college campuses. These plans will be very important in the years ahead, ensuring that the colleges continue to meet the changing needs of the students and local communities they serve.

Additionally, enrollment in the fall of 1989 hit another all-time high, as the number of students increased to 3,609 full-and part-time degree-seeking students. There was a significant increase in students attending programs on a part-time basis, continuing trends begun in past years. The colleges' Continuing Education divisions also served a record number of students, many in programs specifically designed to assist Maine businesses with their training needs.

Several new programs were implemented during the year, with additional degree, diploma or certificate options developed for others. Kennebec Valley Technical College began operation of its new Electrical Lineworker Technology Program. The program is the only one offered in New England and helps meet the need for electrical lineworkers in Maine. Eastern Maine Technical College began a certificate program in Structural Welding, designed to provide currently employed welders with the skills required for state certification.

Southern Maine Technical College began operation of an associate degree option in Environmental Technology in response to the heightened concern for ecological trends and the critical shortage of technicians in the field. SMTC also established a new associate degree program in Local Government Administration, and extended its Masonry Program to include a one-year certificate option.

Central Maine Technical College expanded its unique Occupational Health and Safety Program to provide both an associate degree and a certificate option. The college also expanded its Supervision and Management Program, now providing both an associate degree and certificate option.

During 1989, a major grant was received by Northern Maine Technical College. The \$2.5 million Title III Strengthening Institutions grant from the U.S. Department of Education will allow the college to invest during the next five years in staff development, equipment acquisition, program improvement, and student services.

In the Spring of 1990, administrators and faculty presidents across the System joined in a planning process which culminated in an aggressive Work Plan for 1990/91. The intent of the Work Plan is to ensure that the System is meeting the goals set forth in the Board of Trustees' Strategic Plan by focusing on clearly defined objectives, strategies and timetables.





Also, a systemwide committee consisting of administrators and bargaining unit representatives from each of the colleges was appointed to develop a System Health and Safety Plan. The goal of the plan is to help ensure that the safety and health of students and employees is always a top priority throughout the Technical College System.

In an effort to help more Mainers gain access to the Technical Colleges, three new scholarship programs were developed. Operation Opportunity, which was developed through a partnership with Maine Education Services, the University of Maine System, and the Maine Department of Education, allows GED and adult diploma recipients who have never taken a college course, to take courses at any of the six Technical Colleges or seven Universities.

The PIC/TECH (Private Industry Council/Technical College System) Scholarship Program provides disabled Mainers with full scholarships to the Technical Colleges. The Rural Hospital Program helps hospitals in rural Maine recruit nurses and allied health workers by providing scholarships to Technical College students who agree to work at least one year at a participating rural hospital.

The academic year drew to a close with 1,287 Technical College graduates receiving associate degrees, diplomas or certificates. Administrators, faculty, and staff of the Maine Technical College System should be very proud of a year full of accomplishments.

# Central Maine Technical College

A U B U R N

## 1989 FALL

### ENROLLMENT

405 full-time students

78 part-time students

222 nonmatriculated/undeclared

Central Maine Technical College was established in 1964 and is situated on 110 acres overlooking Lake Auburn. In addition to the main building, the Jalbert Industrial Center, CMTC consists of a new Culinary Arts building, as well as three residence halls.

At present, the college offers educational programs with multiple career options in fourteen occupational areas, including graphic arts/printing, culinary arts, building construction, architectural and civil engineering, automotive, machine tool, mechanical drafting, metal fabrication, nursing, occupational safety and health, welding, and supervision and management.

During the 1989/1990 academic year, CMTC's unique Occupational Health and Safety Program was expanded to provide associate degree and certificate options. The college also expanded its Supervision and Management Program, which now provides an associate degree option and a one-year certificate option.

### ACADEMIC PROGRAMS

Architectural & Civil  
Engineering Technology  
Trade & Technical Occupations  
Welding Technology  
Electromechanical Technology  
Graphic Arts/Printing Technology  
Mechanical Drafting Technology  
Practical Nursing  
Automotive Technology  
Associate Degree Nursing  
Building Construction Technology  
Culinary Arts  
Machine Tool Technology  
Metal Fabrication Technology

### CONTINUING EDUCATION

During the 1989/1990 academic year, 119 courses and seminars were offered through the college's Continuing Education division, reaching 2,270 students. Specialized training and education programs were developed for the following organizations:

General Electric  
General Motors  
Boise Cascade  
Propane Association of Maine  
Philips Elmet  
J. Weston Walsh  
Geiger Brothers

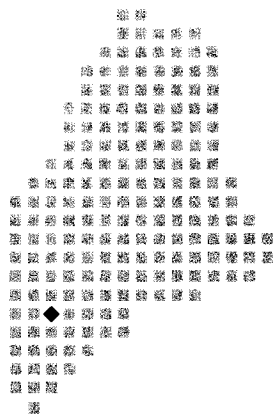
Becon Construction  
Gates Formed-Fibre Products  
Country Kitchen  
Central Maine Power Company

### CREDENTIALS AWARDED IN 1989/1990

Associate Degrees: 71  
Diplomas: 89  
Certificates: 22

### PLACEMENT OF 1988/1989 GRADUATES

Eighty-nine percent of CMTC's 1988/1989 graduating class were placed in jobs following graduation, with 69 percent finding employment in their field of study. Five percent of the graduating class is pursuing additional education.





**Y**vonne Dauzuk graduated last year from Jay High School and enrolled in the fall in the Machine Tool Technology Program at Central Maine Technical College after hearing about the school from friends. In November of 1990, Yvonne was nominated "Student of the Month" by faculty of the Machine Tool Program.

In addition to commuting 50 miles each day, Yvonne holds a part-time job in sales at a nearby shopping center. When time is available, she enjoys outdoor sports. After graduation this spring, Yvonne hopes to find a job in her field in the southern/central Maine area.

# Eastern Maine Technical College

**B A N G O R**

## 1989 FALL ENROLLMENT

551 full-time students  
81 part-time students  
797 nonmatriculated/undeclared

**E**astern Maine Technical College's 72-acre campus is located on Hogan Road off Interstate 95 in Bangor, Maine. The college currently offers 24 full-time associate degree, diploma and certificate programs which prepare students for employment as skilled technicians in the engineering, mechanics, construction, allied health, and business fields. Courses are provided via satellite to seven remote locations throughout eastern Maine.

During the 1989/1990 academic year, EMTC established a new Structural Welding Certificate Program, which is designed as an evening course to allow students already employed in the field to learn the skills required for state certification. In addition, a Practical Nursing program was provided via satellite to 18 students in Washington County, to help meet that area's demand for nurses.

## ACADEMIC PROGRAMS

Automotive and Heavy Equipment  
Building Construction  
Business Management  
Electrical Power  
Electronics  
Foods Technology  
Machine Tool  
Medical Laboratory  
Medical Radiography  
Associate Degree Nursing  
Practical Nursing  
Refrigeration and Air Conditioning  
Welding Technology

## CONTINUING EDUCATION

During the 1989-1990 academic year, 260 courses and workshops were offered through the college's Continuing Education division, reaching 3,562 students. Specialized training and education programs were developed for the following organizations:

Champion Paper Company  
Georgia Pacific Corp.  
Maine Air National Guard  
U.S. Naval Reserve  
BEW Local 1253

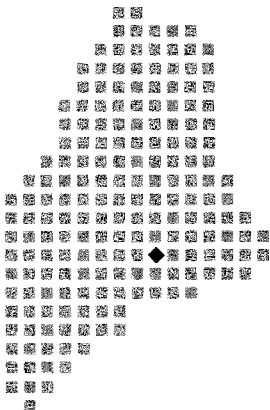
Maine Plumbing Association  
Eastern Maine Medical Center  
Lincoln Pulp & Paper Company  
St. Joseph's Hospital  
Maine Oil Dealers Association  
James River Corporation

## CREDENTIALS AWARDED IN 1989-1990

Associate Degrees: 126  
Diplomas: 99  
Certificates: 17

## PLACEMENT OF 1988/1989 GRADUATES

Eighty percent of EMTC's 1988/1989 graduating class were placed in jobs following graduation, with 73 percent finding employment in their field of study. Sixteen percent of the graduating class is pursuing additional education.





Sandy Guerrette began pursuing her lifelong dream of becoming a nurse 18 years after high school and after raising two sons with her husband, Maynard. Starting in 1981, Sandy successfully completed Eastern Maine Technical College's Certified Nurses Assistant course, the highly-competitive Practical Nursing Program, and an upgrade program for Practical Nurses in Associate Degree Nursing.

Last year, Sandy received a Fuld Fellowship to attend the 6th International Conference on Cancer Nursing in Amsterdam, Holland, and the 15th International Union Against Cancer in Hamburg, West Germany. Sandy is now employed in the pediatrics and oncology departments at Eastern Maine Medical Center. She plans to take her Registered Nurse registry in February.



# Northern Maine Technical College

## PRESQUE ISLE

### 1989 FALL

### ENROLLMENT

624 full-time students

141 part-time students

540 nonmatriculated/undeclared

### ACADEMIC PROGRAMS

Accounting  
Business Administration  
Computer Information Systems  
Office Systems Technology  
Secretarial Sciences  
Practical Nursing  
Associate Degree Nursing  
Automotive Body Repair  
Automotive Technology  
Carpentry  
Computer Electronics  
Diesel Hydraulic Technology  
Drafting Technology  
Electrical Construction and  
Maintenance  
Industrial Electrical Technology  
Masonry  
Plumbing and Heating  
Sheet Metal Technology



Northern Maine Technical College, which was founded in 1961, is the northernmost campus in the Technical College System. The 87-acre campus is situated on the former Presque Isle Air Force Base in Presque Isle. The campus now consists of 11 facilities, including the new Christie Building. Northern Maine Technical College offers programs and courses at the NMTC campus, Loring Air Force Base, and seven satellite sites.

In 1989, NMTC received a \$2.5 million Title III Strengthening Institutions grant from the U.S. Department of Education. The grant will allow the college to invest over the next five years in staff development, equipment acquisition, program improvement, and student services.

### CONTINUING EDUCATION

During the 1989/1990 academic year, 15 courses and workshops were offered through the college's Continuing Education division, reaching approximately 250 students. Specialized training and education programs were developed for the following organizations:

First Citizens Bank  
Maine Oil Dealers Association  
Maine Public Service Company  
Boyd Plumbing and Heating  
Soucy's Sheet Metal  
Maine Dept. of Environmental  
Protection  
Great Northern Paper Company

### CREDENTIALS AWARDED IN

#### 1989/1990

Associate Degrees: 117

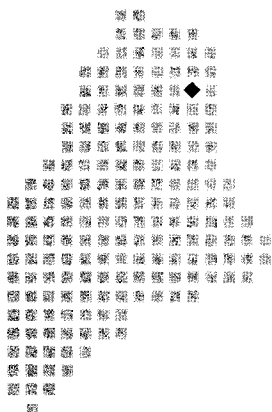
Diplomas: 123

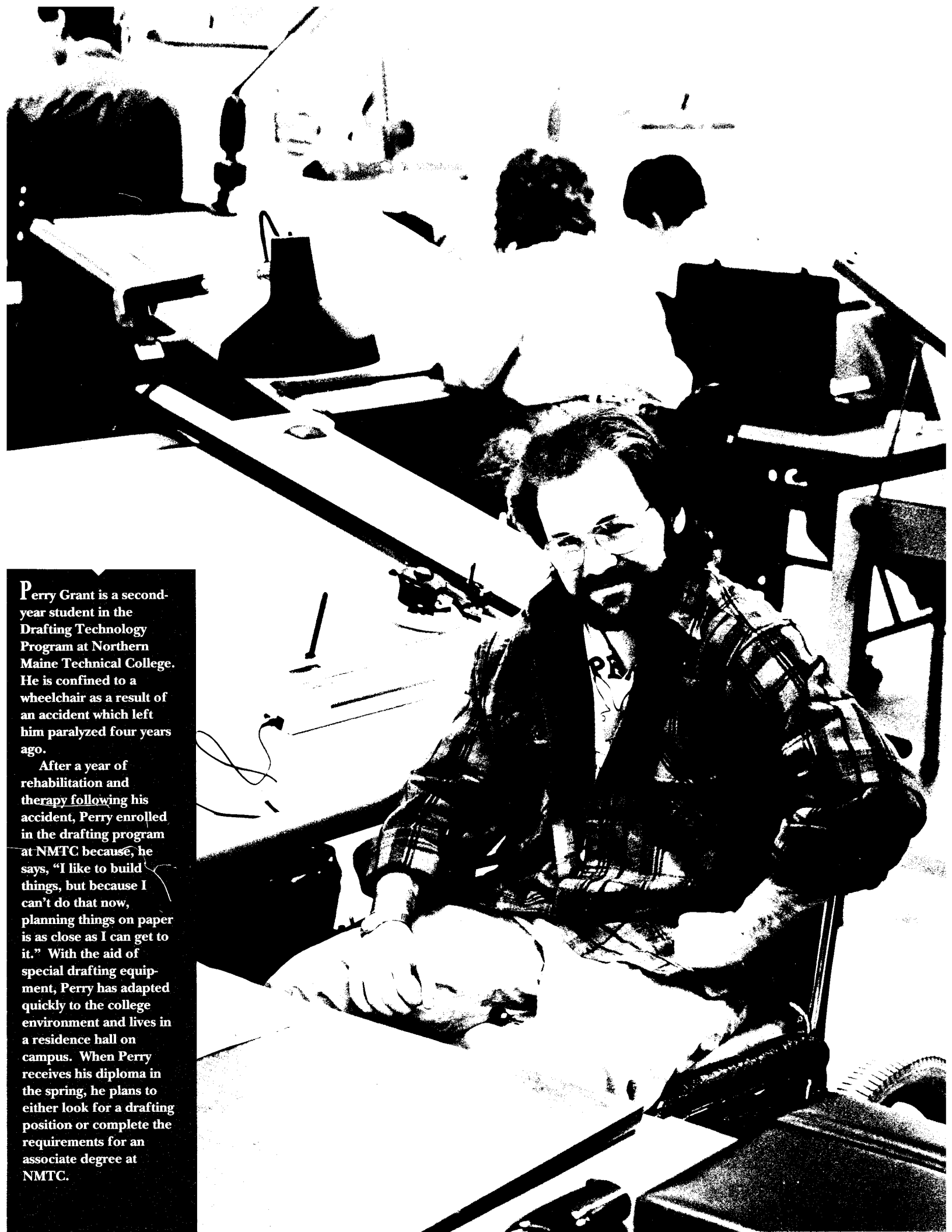
Certificates: 22

### PLACEMENT OF 1988/1989

#### GRADUATES

Eighty-nine percent of NMTC's 1988/1989 graduating class were placed in jobs following graduation, with 80 percent finding employment in their field of study. Nine percent of the graduating class is pursuing additional education.





**P**erry Grant is a second-year student in the Drafting Technology Program at Northern Maine Technical College. He is confined to a wheelchair as a result of an accident which left him paralyzed four years ago.

After a year of rehabilitation and therapy following his accident, Perry enrolled in the drafting program at NMTC because, he says, "I like to build things, but because I can't do that now, planning things on paper is as close as I can get to it." With the aid of special drafting equipment, Perry has adapted quickly to the college environment and lives in a residence hall on campus. When Perry receives his diploma in the spring, he plans to either look for a drafting position or complete the requirements for an associate degree at NMTC.

# Kennebec Valley Technical College

FAIRFIELD

## 1989 FALL ENROLLMENT

342 full-time students

151 part-time students

559 nonmatriculated/undeclared

1989 FALL ENROLLMENT  
 342 full-time students  
 151 part-time students  
 559 nonmatriculated/undeclared

Founded in 1970, Kennebec Valley Technical College is situated on 60 acres of land in Fairfield, Maine. The college currently offers five full-time associate degree programs and seven full-time diploma programs, as well as a wide variety of credit and non-credit Continuing Education courses.

KVTC is a commuter college, offering on-site child care services for students with young children. KVTC and nearby Thomas College offer cross registration to increase the number of courses available to full-time students enrolled at either college.

During the 1989-1990 academic year, KVTC was reviewed and reaccredited by the New England Association of Schools and Colleges. The Respiratory Therapy Technician Program received five-year reaccreditation by the American Medical Association's Joint Review Committee on Respiratory Therapy Education. Also during the year, KVTC became the first site in Maine to be designated an Aviation Education Resource Center by the Federal Aviation Administration.

### PROGRAMS OFFERED

Associate Degree Nursing  
 Building Construction Technology  
 Emergency Medical Technology  
 Electrical Construction Technology  
 Electrical Lineworker Technology  
 Industrial Electrical/  
     Electronic Technology  
 Practical Nursing  
 Automated Office Technology  
 Business Administration  
 Trade and Technical Occupations  
 Medical/Dental Assistant  
 Respiratory Therapy Technician

The new *Electrical Lineworker Technology Program* began operation in the Fall of 1989. KVTC is the only site offering such training in New England.

### CONTINUING EDUCATION

During the 1989-1990 academic year, 274 courses and workshops were offered through the college's Continuing Education division, reaching over 3,700 students. Specialized training and education

programs were developed for the following organizations:

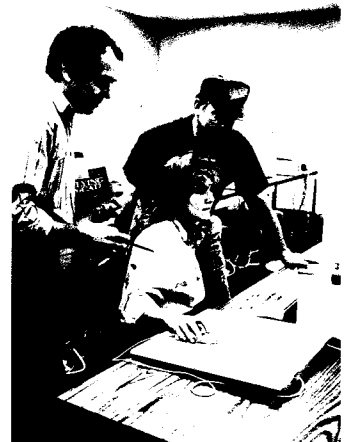
Central Maine Power  
 Digital Equipment Corporation  
 Mid State Machine Products  
 Sheridan Corporation  
 Keyes Fibre Company  
 Scott Paper Company  
 Bath Iron Works Corporation  
 Somerset Telephone Company  
 Madison Paper Company  
 Graybar, Incorporated  
 S.D. Warren Paper Company  
 CM Builders  
 IBEW 1253  
 Heritage House Manor  
 Strong Nursing Home

### CREDENTIALS AWARDED IN 1989/1990

Associate Degrees: 72  
 Diplomas: 96

### PLACEMENT OF 1988/1989 GRADUATES

Eighty-eight percent of KVTC's 1988/1989 graduating class were placed in jobs following graduation, with 82 percent finding employment in their field of study. Nine percent of the graduating class is pursuing additional education.





**R**ichard Fowles worked as a logger for 20 years before deciding to change careers. While he has always had an interest in medicine, it was after visiting a family member in a hospital that he made the decision to become a respiratory therapist, a field which has a high demand for skilled technicians in Maine. Now, at the age of 43, Richard is enrolled in the Respiratory Therapy Program at Kennebec Valley Technical College.

Richard commutes 65 miles daily from his home in Monson to KVTC in order to attend the program. Despite his busy schedule, he still finds time on the weekends to operate his wood equipment and spend time with his wife and three children.

# Southern Maine Technical College

## SOUTH PORTLAND

### 1989 FALL

### ENROLLMENT

836 full-time students

212 part-time students

872 nonmatriculated/undeclared

Small text block containing a list of names or identifiers, possibly a directory or contact list, arranged in a grid-like pattern.

**E**stablished in 1946, Southern Maine

Technical College is the largest of the six colleges. The 55-acre campus, which consists of forty buildings and a docking facility, is situated at the Old Fort Preble facility in South Portland. SMTC currently offers forty full-time associate degree, diploma, and certificate programs, as well as a wide range of credit and non-credit courses through its Continuing Education division. The college also provides courses via satellite to five sites in southern Maine, including Sanford, York, North Berwick, Wells, and Eliot.

During the 1989/1990 academic year, three new programs began operation at SMTC: an associate degree in Environmental Technology, a one-year certificate option for the Masonry Program; and a customized associate degree program in Local Government Administration.

### ACADEMIC PROGRAMS

- Applied Marine Biology & Oceanog.
- LPN Upward Mobility
- Automotive Technology
- Culinary Arts
- Electrical Technology
- Environmental Technology
- Heating, Air Conditioning & Refrigeration
- Industrial Electronics
- Local Government Administration
- Marine Engineering
- Radiology Technology
- Respiratory Therapy
- Industrial Electricity
- Masonry
- Cardiovascular Technology
- Extended Studies
- Plumbing
- Environmental Technology
- Associate Degree Nursing
- Automated Office Management
- Building Construction Technology
- Dietetic Technician
- Electronics Technology
- Fire Science Technology
- Hotel, Motel & Restaurant Management
- Law Enforcement Technology
- Machine Tool Technology
- Nautical Science
- Radiation Therapy
- Surgical Technology
- Marina Mechanics
- Practical Nursing
- Drafting Technology
- Plant and Soil Technology
- Pollution Abatement Technology

### CONTINUING EDUCATION

During the 1989/1990 academic year, 301 workshops and courses were offered through the college's Continuing Education division, reaching 7,782 students. Specialized training and education programs were developed for the following organizations:

- Friends of Casco Bay
- Hollingsworth Center
- Biosonics, Inc.
- Successful Money Management of Maine
- Southern Maine Librarians
- National Assoc. of Remodeling Industry
- Maine Office of Energy Resources
- Elderhostel
- Maine Oil Dealers Association
- Bath Nursing Home
- St. Andrews Hospital
- Maine Office of Comprehensive Planning

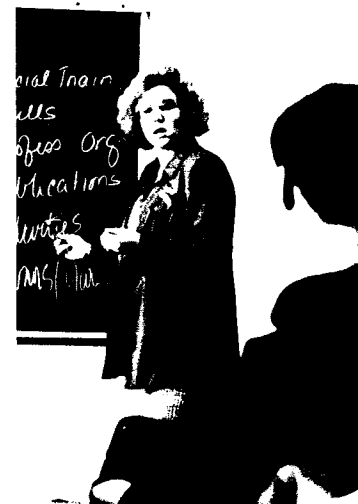
### CREDENTIALS AWARDED


- Associate Degrees: 165
- Diplomas: 84
- Certificates: 37

### PLACEMENT OF 1988/1989

#### GRADUATES

Ninety-six percent of SMTC's 1988/1989 graduating class were placed in jobs following graduation, with 87 percent finding employment in their field of study. Nineteen percent of the graduating class is pursuing additional education (some are working while enrolled in educational programs).





**T**om N. Clukey is a second-year student in the Electrical and Electronics Technology programs at Southern Maine Technical College. Since graduating from Georges Valley High School in Thomaston, Tom worked for two years at the Farnsworth Art Museum in Rockland, preparing exhibition partitions and lighting. He then spent four years in the U.S. Air Force as a radar technician.

Tom enrolled at SMTC in the fall of 1988 because he wanted a "hands on" learning experience. Tom will graduate with an Associate Degree in Electrical Technology this spring and, by fall, should complete the requirements for a degree in Electronics Technology, thus completing a double major. In addition to being a "straight A" student, Tom finds time to enjoy other interests, including computers, jogging, tennis, and hunting.

# Washington County Technical College

**CALAIS & EASTPORT**

## 1989 FALL

### ENROLLMENT

188 full-time students

187 nonmatriculated/undeclared

Washington County Technical College was established in 1968 and today occupies two separate campuses, in Calais and Eastport. The Calais campus provides a variety of full-time diploma and certificate programs, as well as evening courses through its Continuing Education division. The Marine Trades Center in Eastport provides programs in wooden boatbuilding and other marine trades. Washington County Technical College works closely with local business and industry to assist in economic development activities through long- and short-term customized training programs.

During the 1989/1990 academic year, grants from the University of Maine's SeaGrant program and Eastern Maine Development Corporation enabled the college to deliver short-term training in aquaculture marketing for people currently employed in the local aquaculture industry. In addition, a Practical Nursing program was provided via satellite from Eastern Maine Technical College to help meet the critical shortage of health care workers in the region.

### ACADEMIC PROGRAMS

Automotive Technology  
Boatbuilding  
Building Construction  
Diesel Service  
Food Service  
Electronic Communications  
Wood Harvesting  
Heavy Equipment Operation  
Marine Painting  
Plumbing  
Residential/Commercial Electricity  
Secretarial Studies  
Welding

### CONTINUING EDUCATION

During the 1989/1990 academic year, 108 courses and workshops were offered through the college's Continuing Education division, reaching about 1,360 students. Specialized training and education programs were developed for the following organizations:

Women Kind Inc.  
Georgia Pacific Corp.  
Barnard's Nursing Home  
Thomas Di Cenzo Inc.  
Concerned Parents of Calais  
Head Start  
Cutler Naval Air Station  
Ocean Products, Incorporated  
Cobscook Bay Finfish Assoc.  
Indian Township Tribal Govt.

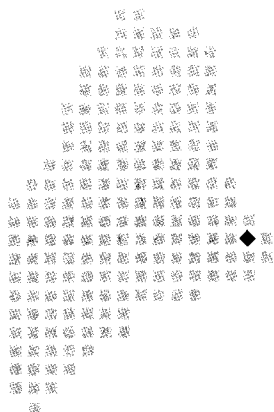
### CREDENTIALS AWARDED IN 1989/1990


Diplomas: 5

Certificates: 142

### PLACEMENT OF 1988/1989 GRADUATES

Ninety-one percent of WCTC's 1988/1989 graduating class were placed in jobs following graduation, with 69 percent finding employment in their field of study. Three percent of the graduating class is pursuing additional education.





**K**erry Tobias, 27, is a first-year student in Washington County Technical College's Boatbuilding Program at the Marine Trades Center in Eastport. Kerry had received her bachelors degree in Theatre from Denison University and was enrolled in a graduate program when she decided to bike from Boston to Eastport in the summer of 1987. During her stay in Eastport, she became interested in WCTC's Boatbuilding Program because of its excellent reputation. Viewing it as an opportunity to learn a marketable skill, Kerry enrolled in the program in the fall.

Kerry helps support herself by working as a computer keyboard operator from her home. She is active in local theatre groups and enjoys biking, playing the piano, and renovating her home in Eastport.



# Enrollment & Degrees Conferred

## 1989 FALL ENROLLMENT (Degree-seeking students)

	Full-time	Part-time	Total
CMTC	405	78	483
EMTC	551	81	632
KVTC	342	151	493
NMTC	624	141	765
SMTC	836	212	1,048
WCTC	188	-	188
<b>TOTAL</b>	<b>2,946</b>	<b>663</b>	<b>3,609</b>

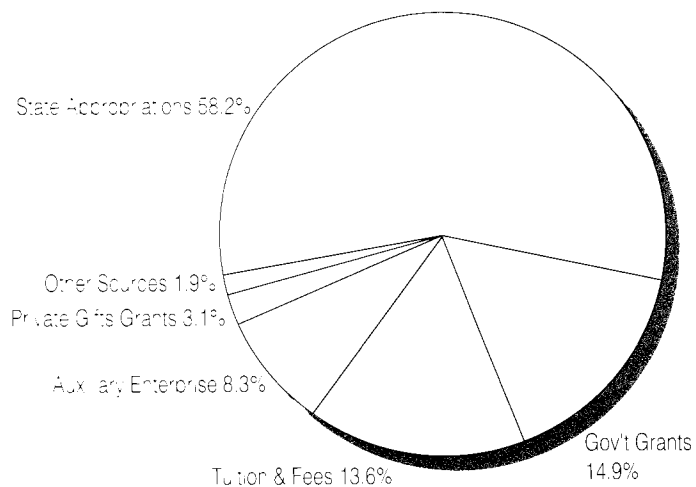
## DEGREES CONFERRED IN 1989/1990

	Associate Degrees	Diplomas	Certificates	Total
CMTC	71	89	22	182
EMTC	126	99	17	242
KVTC	72	96		168
NMTC	117	123	22	262
SMTC	165	84	37	286
WCTC	-	5	142	147
<b>TOTAL</b>	<b>551</b>	<b>496</b>	<b>240</b>	<b>1,287</b>

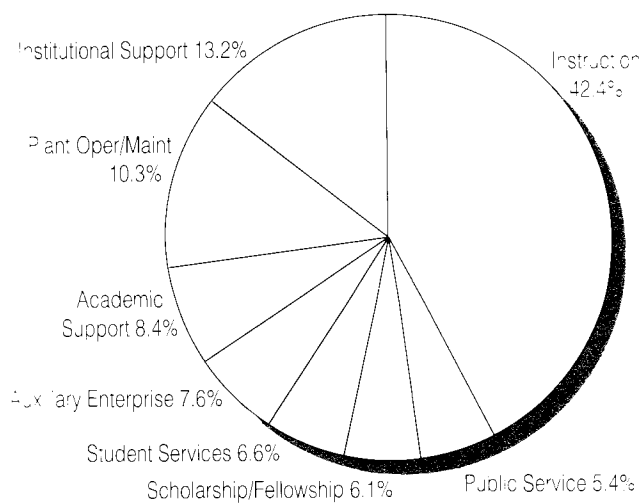


# 1990 Funds Sources & Uses

SOURCES OF FUNDS FY 1990



USES OF FUNDS FY 1990





J.C. Penney  
 J.D. Thomas  
 J.N. L'Heureux, Inc.  
 K & C Quint Memorial Health Center  
 K & M Motors  
 Kebo Valley Gold Club  
 Keley Engineering  
 Kennebec Long Term Care  
 Kennebec Tool & Die  
 Kennebec Valley Medical Center  
 Kennebec Valley Technical College  
 Kinney Office Systems  
 Klearview Manor  
 Kris-Way Trucking  
 LaFleur & Newell Landscapers  
 Lakewood Manor Nursing Home  
 Lane Construction Corporation  
 Larrabee Bros. Plumbing and Heating  
 Larry Ham Construction  
 LaVale Lumber  
 LaVerdiere's Super Drug Stores  
 Law Offices of Doyle & Nelson  
 Leageview Nursing Home  
 Leagewood Manor  
 Lee Olds-Cadillac-GMC  
 Leighton Business Systems  
 Leites Electric  
 Letter Systems Printing  
 Lewiston Police Department  
 Lewiston-Auburn Internal Medicine Association  
 Limerick Machine  
 Lincoln Pulp & Paper  
 Loba 321  
 Loba 621  
 Lucerne Inn  
 Lyons Towing & Auto Sales  
 L.D. Gross  
 Lavolette Contractors  
 L.P. Mallar & Sons  
 Maas Brothers Distribution  
 MacLeod Small Lot Harvesting  
 Madison Paper Industries  
 Main Stay Nursing Home  
 Maine Biologicala  
 Maine Cardology Associates  
 Maine Fabricators  
 Maine Forest Service  
 Maine Heritage Realty  
 Maine Machine  
 Maine Mack  
 Maine Medical Center  
 Maine Mobile X-Ray  
 Maine Mutual Fire Insurance Company  
 Maine Printing Business Forms  
 Maine Public Service  
 Maine Roofing Co.  
 Maine Savings Bank  
 Maine Veteran's Home  
 Maine Yankee  
 Mainecrest Nursing Home  
 Marden, Dubord, Bernier & Stevens  
 Market Square Health Care  
 Marriott Corp. - Sanford  
 Massachusetts Ferry Service  
 Maynard Cushman, Electrician  
 Mayo Regional Hospital  
 McBernie Construction  
 McCain Foods, Inc.  
 Mechanical Systems  
 MedNow  
 Memory Makers Photography  
 Mepsco  
 Mercy Hospital  
 Merton Richards Inc.  
 Michael W. Snow  
 Mid-Maine Dental Center  
 Mid-Maine Electric  
 Mid-Maine Medical Center  
 Mid-State Machine  
 Mike Fowler - Davenport  
 Miles Health Care  
 Miller Machine & Tool Inc.  
 Millinocket Public Works  
 Mobil Boat Services  
 Mobil Oil Gas Station  
 Mohlin & Co.  
 Montello Manor  
 Moreau Refrigeration  
 Morrison Chevrolet  
 Mount St. Joseph Nursing Home  
 MSC  
 Mt. Blue Electric  
 Mystic Color Lab  
 M.G.A. Insurance, Inc.  
 National Semiconductor  
 Netherland Typewriter  
 New England Rehabilitation Hospital  
 New England Telephone Co.  
 Nichols - Portland Div. of Parker Hannifin Corp.  
 Nickerson Buick  
 Normandeau Associates  
 North Country Educational Services  
 Northeast Investigations Services  
 Northeast Log Homes  
 Northeast Mechanical Corp.  
 Northeastern Industrial  
 Northeastern Refrigeration  
 Northern Cumberland Memorial Hospital  
 Northern Maine Medical Center  
 Northwoods Store  
 Nurse Finders Agency  
 Nutrisystem - Augusta  
 Nutrisystem - Waterville  
 Oakland Family Practice  
 Ocean Products  
 Orono Nursing Home  
 Ouellette Construction  
 Our House  
 Outward Bound School  
 Oxford County Sheriff's Dept.  
 O'Clairs Garage  
 O'Donals Nurseries  
 Patent Scaffolding  
 Patrick St. Peter Plumbing and Heating  
 Peck's Fabricator & Welding  
 Pen Bay Medical Center  
 Penobscot Otolaryngology  
 Penobscot Valley Hospital  
 Perry Elementary School  
 Pete The Plumber  
 Person's Nursery  
 Pioneer Builders  
 Plourde Plumbing and Heating  
 Portland Air Conditioning  
 Portland Marriott  
 Portland Press Herald  
 Portsmouth Naval Shipyard  
 Power Products  
 Pratt and Whitney  
 Presque Isle Police Department  
 Pride Manufacturing  
 Print Works  
 Progressive Distributors  
 Promco  
 R & R Carpentry  
 R & R Services  
 Radio Shack  
 Radsson Hotel  
 Ranger's Market and Catering Services  
 Ravon Corporation  
 Reading-Fairview General Hospital  
 Regional Memorial Hospital  
 Reliable Electric  
 Rich Tool & Die  
 Roux's Electric  
 Riverside Woodcrafters  
 Robert Michael Douglas Brothers  
 Robert Perry Electric  
 Rumford Community Hospital  
 Russett Park Manor  
 Salt Bay Service  
 Saulter Chiropractic Center  
 Scarborough Police Department  
 Scott Paper Co.  
 Sears, Roebuck & Company  
 Seaward Nursery  
 Sebasticook Valley Hospital  
 Sedleigh House  
 Seilers of Hebron  
 Selmore Fixture Mfg Co Inc.  
 Senator Inn  
 Shaws  
 Sheraton Tara Hotel  
 Shop & Save  
 Sid Porter Pontiac  
 Sizzler  
 Skillin's Greenhouses  
 Smallwood Transport, Inc.  
 Smokey's Pizza  
 South Portland Nursing Home  
 Southern Maine Medical Center  
 Southern Maine Technical College  
 Southridge Living Center  
 Spartan Constructions  
 Spaulding Rehabilitation Hospital  
 Springer Building Center  
 Springfield Terminal  
 Stable Inn  
 State of Maine/Motor Transport  
 State of Maine/S.E.L.U.  
 State of Maine/Department of Human Services  
 State of Maine/Department of Transportation  
 Stinson's Canning Factory  
 Stone & Webster Engineering  
 St. Andrews Hospital  
 St. Joseph's Hospital  
 St. Joseph's Manor  
 St. Mary's General Hospital  
 St. Peter's Cemetery  
 S.D. Warren (Northeast Timberlands)  
 S.F. Prentice and Son  
 S.N. Foster Company  
 S.S.A.C. Co.  
 Thayer Corp.  
 The 3E Company, Inc.  
 The Aroostook Medical Center  
 The Fitco Company  
 The Galley Restaurant  
 The Nonantum Resort  
 The Times Record  
 Thermal Properties Inc.  
 Thomas Tilton, D.O.  
 Thurston Carver & Son Contractors  
 Timberlands, Inc.  
 Togs V.A. Hospital  
 Town of Bar Harbor  
 Town of Mapleton  
 Training & Development Corp.  
 Travers Electric Inc.  
 Trull Nursing Home  
 Twin City Dental Health Center  
 Twin City Electric  
 United Pipefitters Association  
 Unity College  
 Unity Financial  
 University of Maine  
 VIP Auto Center  
 Visiting Nurses of Aroostook  
 Volmer Nursing Home  
 V.A. Hospital  
 Waldo County General Hospital  
 Ward Farms  
 Washburn-Doudy Associates  
 Washington-Hancock Community Agency  
 Wastewater Institute of New England  
 Waterville Country Club  
 Waterville Osteopathic Hospital  
 Wayfarer Marine Corp.  
 Waynflete School  
 Weeks, Hutchins, Frye, Welch & O'Donnell  
 Weeks Memorial Hospital  
 Wentworth Douglas Hospital  
 White Construction  
 Whitten's 2-Way Service  
 William Webber Land Surveying  
 Williams Health Care  
 Winthrop School Dept.  
 Woodlawn Nursing Home  
 Worcester Brothers Plumbing & Heating  
 Yarmouth Family Physicians  
 Zimba Corporation

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323 State Street  
Augusta, Maine 04330

# National Goals for Education



**U.S. Department of Education**  
**Washington, D. C.**

*July 1990*

***A Message from the Secretary:***

Not long ago, on the historic campus of the University of Virginia in Charlottesville, President Bush and the nation's governors met and rededicated themselves to excellence in education for all Americans. A call was made to establish national education goals that focused on results, accountability, and flexibility in the use of federal education resources.

On January 31, 1990, in an address before a joint session of the Congress on the state of the union, President Bush unveiled the national performance goals for education. The goals do not represent an attempt to mandate a national curriculum or to force specific reforms on states and local districts. They are designed to inspire school reform efforts at the federal, state, and local levels and by everyone involved in the education of our children. Only through such reforms can the United States retain its leadership in the global economy.

These goals are ambitious, but I am confident that with hard work, dedication, and cooperation on the part of parents, students, teachers, administrators, and business and community leaders, we will achieve them. The challenges of the 21st century are already on the horizon, and we must ensure that our young people are equipped with the knowledge and skills necessary for active and successful participation in the economic, political, cultural, and community life of our nation.

Lauro F. Cavazos

## INTRODUCTION

At the historic education summit in Charlottesville five months ago, the president and the governors declared that “the time has come, for the first time in United States history, to establish clear national performance goals, goals that will make us internationally competitive.” The six national education goals contained here are the first step in carrying out that commitment.

America’s educational performance must be second to none in the 21st century. Education is central to our quality of life. It is at the heart of our economic strength and security, our creativity in the arts and letters, our invention in the sciences, and the perpetuation of our cultural values. Education is the key to America’s international competitiveness.

Today, a new standard for an educated citizenry is required, one suitable for the next century. Our people must be as knowledgeable, as well-trained, as competent, and as inventive as those in any other nation. All of our people, not just a few, must be able to think for a living, adapt to changing environments, and to understand the world around them. They must understand and accept the responsibilities and obligations of citizenship. They must continually learn and develop new skills throughout their lives.

America can meet this challenge if our society is dedicated to a renaissance in education. We must become a nation that values education and learning. We must recognize that every child can learn, regardless of background or disability. We must recognize that education is a lifelong pursuit, not just an endeavor for our children.



Sweeping, fundamental changes in our education system must be made. Educators must be given greater flexibility to devise challenging and inspiring strategies to serve the needs of a diverse body of students. This is especially important for students who are at risk of academic failure — for the failure of these students will become the failure of our nation. Achieving these changes depends, in large part, on the commitment of professional educators. Their daily work must be dedicated to creating a new educational order in which success for all students is the first priority, and they must be held accountable for the results.

This is not the responsibility of educators alone, however. All Americans have an important stake in the success of our education system, and every part of our society must be involved in meeting that challenge. Parents must be more interested and involved in their children's education, and students must accept the challenge of higher expectations for achievement and greater responsibility for their future. In addition, communities, business and civic groups, and state, local, and federal government each has a vital role to play throughout this decade to ensure our success.

The first step is to establish ambitious national education goals — performance goals that must be achieved if the United States is to remain competitive in the world marketplace and our citizens are to reach their fullest potential. These goals are about excellence. Meeting them will require that the performance of our highest achievers be boosted to levels that equal or exceed the performance of the best students anywhere. The performance of our lowest achievers

must be substantially increased far beyond their current performance. What our best students can achieve now, our average students must be able to achieve by the turn of the century. We must work to ensure that a significant number of students from all races, ethnic groups, and income levels are among our top performers.

If the United States is to maintain a strong and responsible democracy and a prosperous and growing economy into the next century, all of our citizens must be involved in achieving these goals. Every citizen will benefit as a result. When challenged, the American people have always shown their determination to succeed. The challenge before us calls on each American to help ensure our nation's future.

## NATIONAL EDUCATION GOALS

### GOAL 1

#### *Readiness for School*

**By the year 2000, all children in America will start school ready to learn.**

Objectives:

- All disadvantaged and disabled children will have access to high quality and developmentally appropriate preschool programs that help prepare children for school.
- Every parent in America will be a child's first teacher and devote time each day helping his or her preschool child learn; parents will have access to the training and support they need.
- Children will receive the nutrition and health care needed to arrive at school with healthy minds and bodies, and the number of low birthweight babies will be significantly reduced through enhanced prenatal health systems.

### GOAL 2

#### *High School Completion*

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

Objectives:

- The nation must dramatically reduce its dropout rate, and 75

percent of those students who do drop out will successfully complete a high school degree or its equivalent.

- The gap in high school graduation rates between American students from minority backgrounds and their nonminority counterparts will be eliminated.

### GOAL 3

#### *Student Achievement and Citizenship*

**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.**

Objectives:

- The academic performance of elementary and secondary students will increase significantly in every quartile, and the distribution of minority students in each level will more closely reflect the student population as a whole.
- The percentage of students who demonstrate the ability to reason, solve problems, apply knowledge, and write and communicate effectively will increase substantially.
- All students will be involved in activities that promote and

demonstrate good citizenship, community service, and personal responsibility.

- ❑ The percentage of students who are competent in more than one language will substantially increase.
- ❑ All students will be knowledgeable about the diverse cultural heritage of this nation and about the world community.

#### GOAL 4

##### *Science and Mathematics*

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

Objectives:

- ❑ Math and science education will be strengthened throughout the system, especially in the early grades.
- ❑ The number of teachers with a substantive background in mathematics and science will increase by 50 percent.
- ❑ The number of United States undergraduate and graduate students, especially women and minorities, who complete degrees in mathematics, science, and engineering will increase significantly.

#### GOAL 5

##### *Adult Literacy and Lifelong Learning*

**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.**

Objectives:

- ❑ Every major American business will be involved in strengthening the connection between education and work.
- ❑ All workers will have the opportunity to acquire the knowledge and skills, from basic to highly technical, needed to adapt to emerging new technologies, work methods, and markets through public and private educational, vocational, technical, workplace, or other programs.
- ❑ The number of quality programs, including those at libraries, that are designed to serve more effectively the needs of the growing number of part-time and mid-career students will increase substantially.
- ❑ The proportion of those qualified students, especially minorities, who enter college; who complete at least two years; and who complete their degree programs will increase substantially.
- ❑ The proportion of college graduates who demonstrate an advanced ability to think critically, communicate effectively, and solve problems will increase substantially.

## GOAL 6

### *Safe, Disciplined, and Drug-Free Schools*

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

Objectives:

- Every school will implement a firm and fair policy on use, possession, and distribution of drugs and alcohol.
- Parents, businesses, and community organizations will work together to ensure that the schools are a safe haven for all children.
- Every school district will develop a comprehensive K-12 drug and alcohol prevention education program. Drug and alcohol curriculum should be taught as an integral part of health education. In addition, community-based teams should be organized to provide students and teachers with needed support.

### **NECESSARY CHANGES AND RESTRUCTURING**

These goals are ambitious, yet they can and must be achieved. However, they cannot be achieved by our education system as it is presently constituted. Substantial, even radical changes will have to be made.

Without a strong commitment and concerted effort on the part of every sector and every citizen to improve dramatically the performance of the nation's education system and

each and every student, these goals will remain nothing more than a distant, unattainable vision. For their part, governors will work within their own states to develop strategies for restructuring their education systems in order to achieve the goals. Because states differ from one another, each state will approach this in a different manner. The president and the governors will work to support these state efforts and to recommend steps that the federal government, business, and community groups should take to help achieve these national goals. The nature of many of these steps is already clear.

### **THE PRESCHOOL YEARS**

American homes must be places of learning. Parents should play an active role in their children's early learning, particularly by reading to them on a daily basis. Parents should have access to the support and training required to fulfill this role, especially in poor, undereducated families.

In preparing young people to start school, both the federal and state governments have important roles to play, especially with regard to health, nutrition, and early childhood development. Congress and the administration have increased maternal and child health coverage for all families with incomes up to 133 percent of the federal poverty line. Many states go beyond this level of coverage, and more are moving in this direction. In addition, states continue to develop more effective delivery systems or prenatal and postnatal care. However, we still need more prevention, testing, and screening, and early identification and treatment of learning disorders and disabilities.

The federal government should work with the states to develop and fully fund early intervention strategies for children. All eligible children should have access to Head Start, Chapter 1, or some other successful preschool program with strong parental involvement. Our first priority must be to provide at least one year of preschool for all disadvantaged children.

### THE SCHOOL YEARS

As steps are taken to better prepare children for schools, we must also better prepare schools for children. This is especially important for young children. Schools must be able to educate effectively all children when they arrive at the schoolhouse door, regardless of variations in students' interest, capacities, or learning styles.

Next, our public education system must be fundamentally restructured in order to ensure that all students can meet higher standards. This means reorienting schools so they focus on results, not on procedures; giving each school's principal and teachers the discretion to make more decisions and the flexibility to use federal, state, and local resources in more productive, innovative ways that improve learning; providing a way for gifted professionals who want to teach to do so through alternative certification avenues; and giving parents more responsibility for their children's education through magnet schools, public school choice, and other strategies. Most important, restructuring requires creating powerful incentives for performance and improvement, and real consequences for persistent failure. It is only by maintaining this balance of flexibility and accountability that we can truly improve our schools.

The federal government must sustain its vital role of promoting educational equity by ensuring access to quality education programs for all students regardless of race, national origin, sex, or handicapping conditions. Federal funds should target those students most in need of assistance due to economic disadvantage or risk of academic failure.

Finally, efforts to restructure education must work toward guaranteeing that all students are engaged in rigorous programs of instruction designed to ensure that every child, regardless of background or disability, acquires the knowledge and skills necessary to succeed in a changing economy. In recent years, there has been an increased commitment to mathematics and science improvement programs. The federal government should continue to enhance financial assistance to state and local governments for effective programs in these areas. Likewise, there has been a greater federal emphasis on programs that target youth at risk of school failure and dropping out. The federal government should continue to enhance funding and seek strategies to help states in their efforts to seek solutions to these problems.

Improving elementary and secondary student achievement will not require a national curriculum, but it will require that the nation invest in developing the skills and knowledge of our educators and equipping our schools with up-to-date technology. The quality of teachers and teaching is essential to meeting our goals. We must have well-prepared teachers, and we must increase the number of qualified teachers in critical shortage areas, including rural and urban schools, specialized fields such as foreign

languages, mathematics and science, and from minority groups.

Policies must attract and keep able teachers who reflect the cultural diversity of our nation. Policies that shape how our educators are prepared, certified, rewarded, developed, and supported on the job must be consistent with efforts to restructure the education system and ensure that every school is capable of teaching all of our children to think and reason. Teachers and other school leaders must not only be outstanding, the schools in which they work must also be restructured to utilize both professional talent and technology to improve student learning and teacher- and system-productivity.

### THE AFTER-SCHOOL YEARS

Comprehensive, well-integrated lifelong learning opportunities must be created for a world in which three of four new jobs will require more than a high school education; workers with only high school diplomas may face the prospect of declining incomes; and most workers will change their jobs ten or eleven times over their lifetime.

In most states, the present system for delivering adult literacy services is fractured and inadequate. Because the United States has far higher rates of adult functional illiteracy than other advanced countries, a first step is to establish in each state a public-private partnership to create a functionally literate work force.

In some other countries, government policies and programs are carefully coordinated with private sector activities to create

effective apprenticeship and job training activities. By contrast, the United States has a multilayered system of vocational and technical schools, community colleges, and specific training programs funded from multiple sources and subject to little coordination. These institutions need to be restructured so they fit together more sensibly and effectively to give all adults access to flexible and comprehensive programs that meet their needs. Every major business must work to provide appropriate training and education opportunities to prepare employees for the 21st century.

Finally, a larger share of our population, especially those from working class, poor, and minority backgrounds, must be helped to attend and remain in college. The cost of a college education, as a percentage of median family income, has approximately tripled in a generation. That means more loans, scholarships, and work-study opportunities are needed. The federal government's role in ensuring access for qualified students is critical. At the same time, the higher education system must use existing resources far more productively than it does at present and must be held more accountable for what students do or do not learn. The federal government will continue to examine ways to reduce students' increasing debt burden and to address the proper balance between grant and loan programs.

### ASSESSMENT

National education goals will be meaningless unless progress toward meeting them is measured accurately and adequately, and reported to the American people. Doing a good job of assessment and reporting requires the resolution of three issues.

First, what students need to know must be defined. In some cases, there is a solid foundation on which to build. For example, the National Council of Teachers of Mathematics and the Mathematical Sciences Education Board have done important work in defining what all students must know and be able to do in order to be mathematically competent. A major effort for science has been initiated by the American Association for the Advancement of Science. These efforts must be expanded and extended to other subject areas.

Second, when it is clear what students need to know, it must be determined whether they know it. There have been a number of important efforts to improve our ability to measure student learning at the state and national levels. This year for the first time, the National Assessment of Educational Progress (NAEP) will collect data on student performance on a state-by-state basis for thirty-eight states. Work is under way to develop a national assessment of adult literacy. These and other efforts must be supported and strengthened.

The governors urge the National Assessment Governing Board to begin work to set national performance goals in the subject areas in which NAEP will be administered. This does not mean establishing standards for individual competence; rather, it requires determining how to set targets for increases in the percentage of students performing at the higher levels of the NAEP scales.

Third, measurements must be accurate, comparable, appropriate, and constructive. Placement decisions for young children should not be made on the basis of standardized tests. Achievement tests must not

simply measure minimum competencies, but also higher levels of reading, writing, speaking, reasoning, and problem-solving skills. And in comparing America's achievement with that of other countries, it is essential that international comparisons are reliable. In addition, appropriate, nationally directed research, demonstration, data collection, and innovation should be maintained and recognized as a set of core responsibilities of the federal government in education. That role needs to be strengthened in cooperation with the states.

The president and the governors agree that while we do not need a new data-gathering agency, we do need a bipartisan group to oversee the process of determining and developing appropriate measurements and reporting on the progress toward meeting the goals. This process should stay in existence until at least the year 2000 so that we assure ten full years of effort toward meeting the goals.

#### A CHALLENGE

These national education goals are not the president's goals or the governors' goals; they are the nation's goals.

These education goals are the beginning, not the end, of the process. Governors are committed to working within their own states to review state education goals and performance levels in light of these national goals. States are encouraged to adjust state goals according to this review and to expand upon national goals where appropriate. The president and the governors challenge every family, school, school district, and community to adopt these national goals as their

own, and establish other goals that reflect the particular circumstances and challenges they face as America approaches the 21st century.

EDOS 91/1



## HISTORY

Public post secondary technical education in Maine was a direct consequence of the vocational training needs of the nation during World War II. As a continuance of that effort, and to meet the career aspirations of many returning veterans, in 1944 Congress enacted the Serviceman's Readjustment Act, popularly referred to as the "G.I. Bill". The purposes of this bill were to retrain veterans for civilian occupations and to encourage a more gradual reentry into the work place of this massive influx of new workers.

Many veterans used the funding provided by the G.I. Bill to attend 4 year baccalaureate colleges and universities. Other veterans had different kinds of goals and ambitions which were not appropriate to the traditional 4-year college degree, yet required a formal post secondary educational experience. To fill this need, post-secondary vocational institutions were developed across the country which offered a variety of 2 year associate degree programs, as well as less exacting certificate and diploma programs.

In Maine, the development of post-secondary vocational education, which is now more frequently referred to as **technical education**, was first manifested in the establishment of the Maine Vocational-Technical Institute in 1946. The specifics of this event and a chronology of significant events in the development of the Maine Technical College System are as follows:

•1946 - Governor Horace A. Hildreth provided a start-up grant of \$125,000 to establish, as a part of the Department of Education, the Maine Vocational-Technical Institute (MVTI) in Augusta. In its early years, MVTI had substandard facilities and had to use surplus equipment. The first four programs; Automotive, Electrical, Machine, and Radio, were offered by a faculty and staff consisting of 10 people to a student body of 80 veterans;

•1952 - To provide more adequate space for the expanding MVTI program, the Legislature purchased the 55 acre Fort Preble facility in South Portland from the Federal Government. MVTI was moved to that location during that same year;

•1961-62 - In response to the growth and success

of MVTI and the emerging technological needs of the space age, policy makers in Maine began to lay the groundwork for a significant expansion of the public post-secondary vocational programming effort in Maine. First, in 1961, the Legislature responded to this emerging need by authorizing the establishment of an additional VTI in Presque Isle. Second, in 1962, the Bureau of Vocational Education in the Department of Education issued a master plan entitled, "Vocational-Technical Education for the Space Age". In brief, this plan advocated the establishment of 2 additional VTI's and proposed the development of the secondary vocational centers and regions which now serve Maine's secondary school population;

●1963 - The second VTI, then known as the Northeastern Maine Vocational Institute, opened in Presque Isle with an entering class of 78 students. During that same year, the Legislature established a VTI for the Androscoggin Valley Region. This VTI, the "Androscoggin State Vocational Institute" was located in Lewiston and opened in 1963 to an inaugural class of 48 students;

●1964 - The Legislature authorized the establishment of the Eastern Maine Vocational Technical Institute in Bangor. (However, this campus did not open until 1966);

●1965 - Each of the existing campuses were renamed to reflect the broad geographic regions served by each campus:

<u>Former Name</u>	<u>New Name</u>	<u>Region Served</u>	<u>Location</u>
●Maine Vocational-Technical Institute	Southern Maine Vocational-Technical Institute	Southern Maine and Midcoast	South Portland
●Androscoggin State Vocational Institute	Central Maine Vocational-Technical Institute	Androscoggin and Kennebec Valleys	Lewiston
●Northeastern Maine Vocational Institute	Northern Maine Vocational-Technical Institute	Northern Maine	Presque Isle
●Eastern Maine Vocational Technical Institute	Same	Penobscot Valley and Down-East Region	Bangor

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- 1966 - CMVTI moved to its current 110 acre campus in Auburn;
  - 1968 - EMVTI moved to its current 95 acre campus in Bangor. In addition, a bond issue was approved by Maine voters to establish the Washington County Vocational-Technical Institute in Calais;
  - 1969 - WCVTI opened for classes by using the Calais Armory as a temporary facility;
  - 1970 - WCVTI moved to its current 400 acre campus in Calais;
  - 1971 - The sixth and final VTI campus, Kennebec Valley Vocational-Technical Institute, was established and opened in Waterville. KVVTI was first located in facilities owned by the Waterville Regional Vocational Center;
  - 1977 - WCVTI opened an additional facility known as the Marine Trades Center in Eastport;
  - 1978 - KVVTI moved to a new facility, the Gilman Street Junior High School in Waterville;
  - 1983 - KVVTI moved to its current 60 acre campus in Fairfield;
  - 1986 - The VTIs were separated from the Department of Educational and Cultural Services. The Legislature reorganized the VTIs into an autonomous post secondary system to provide technical education. In doing so, the Legislature created the Board of Trustees as the sole policy making authority for the Technical College System;
  - 1988 - The System Office began offering system wide finance and personnel services. Prior to this date, these services were still being provided by the Department of Educational and Cultural Services as part of the transition to an autonomous agency;
  - 1988 - In November of 1988, the Board of Trustees adopted a strategic plan for the system which establishes the following goals:

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- Increase the proportion of non-general fund monies to General fund monies;
  - increase enrollment levels;
  - enhance current programs;
  - establish new programs;
  - establish new partnerships/approaches to increase capacity; and
  - implementing staff development efforts as a means of achieving system goals.

•1989 - Several significant events occurred for the Maine Technical College System. First, the System's first Executive Director, Dr. Audni Miller-Beach resigned. Dr. Miller-Beach was replaced by the former Commissioner of Labor, Mr. John Fitzsimmons. Second, the Legislature renamed the VTI System as the "Maine Technical College System" to reflect a more clearly defined role in post-secondary education. In addition, each of the VTIs were named as Technical Colleges with appropriate title changes for upper level administrators. Third, Maine citizens approved a general fund bond issue referendum in the amount of \$20,210,600 to provide funding for capital improvements to take place on each of the six campuses; and

•1990 - The System was successful in advocating for a significantly less severe budget reduction than had been originally proposed by the Governor. In addition, the Legislature enacted a law which changed the title of "Executive Director" to "System President". The purpose of this change was to properly reflect the role and status of this position as the chief executive officer for the Maine Technical College System.