Title: Assisting a College's Service Area in the Transition to the New Technology Society through Strategic Planning and Management.

Abstract:
North Central Technical College's (NCTC's) strategic planning and human resource development model is described in this paper in terms of its role in assisting the college's service area in adapting to new technologies. First, background information is presented on NCTC's planning process with respect to the strategic goal areas of: (1) information processing, including the goals of computer literacy and the "paperless" office; (2) electronic delivery of educational goals and services; and (3) high technology education (i.e., advanced machine tool design, microelectronics, robotics, lightwave circuit technology). In addition, the impact of these goals on shaping equipment decisions is examined. Following a look at the transformation to a high technology, information society, the implications of this transformation for postsecondary education are explored, emphasizing institutional commitment to computer literacy and the use of new technologies in public service functions. Next, NCTC's role in community renewal is described, focusing on the college's involvement in such projects as the Community Education Service's continuing education program, and the Ohio Technology Transfer Organization, a statewide network providing small businesses with access to information and services needed for economic development. The final section summarizes the role of postsecondary education in a computer literate, high technology, information society. (LL)
ASSISTING A COLLEGE'S SERVICE AREA
IN THE TRANSITION TO THE NEW TECHNOLOGY SOCIETY
THROUGH STRATEGIC PLANNING AND MANAGEMENT

by

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submitted to
Practitioner's Hall of Fame
Nova University
Summer Institute 1983
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ABSTRACT

The history of the development of human society can be traced from the hunting society through the agricultural society to the industrial society. During recent years we have experienced the onset of a transformation to a new type of society. Masuda indicates:

Mankind is now entering a period of transformation from an industrial society to an information society.... Man is now standing at the threshold of a period of innovation in a new societal technology based on the combination of computer and communications technology, quite unlike any of the past. Its substance is information, which is invisible. This new societal technology will bring about societal transformation which, in a double sense, is unprecedented.

This transformation to the information society is concerned with the shift from physical productivity of material goods to information productivity and can be expected to bring about fundamental changes in human values, in trends of thought, and in the political and economic structures of society.

The onset of the computer literate, high technology, information society has profound implications for our two-year colleges. Gollattscheck and others express the implications in terms of a community renewal role. They state:

We believe the time has come for a fourth major development in American postsecondary education: the creation of the community renewal college. The deterioration of our communities, the increasing inability of individuals to cope with rapid change the obsolescence of individuals and social organizations, and the increasing number of citizens with educational needs who are beyond the purview of existing colleges demand a new kind of postsecondary institution. This new college must be committed to the improvement of all aspects of community life....

This paper will describe a small, two-year college's strategic planning and human resource development model and the way it is assisting the college's service area in the adaptation to the new technology of the information society.
Background on the College's Planning Process

Over the past six years, North Central Technical College has developed a strategic planning and human resource development model in order to remain viable in the years ahead. The College examined numerous planning models from private and public regional universities and two-year colleges. The best models specified assumptions on which to base subsequent planning and then stated goals and objectives. The College specified assumptions under ten categories and goals under seven categories at the institutional and departmental levels. These categories are as follows:

<table>
<thead>
<tr>
<th>Assumptions Categories</th>
<th>Goals and Objectives Categories</th>
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</thead>
<tbody>
<tr>
<td>2. External Agencies</td>
<td>2. Functional Relationships</td>
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<td>3. Institutional Management</td>
<td>3. Qualitative Improvement</td>
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<td>4. Programs</td>
<td>4. Program Development</td>
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<td>5. Students and Enrollment</td>
<td>5. Professional Development</td>
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<td>7. Professional Development</td>
<td>7. Funding Sources</td>
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<td>8. Physical Plant</td>
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<td>9. Equipment</td>
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<tr>
<td>10. Fiscal resources</td>
<td></td>
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</tbody>
</table>

Dollars are linked directly to stated goals and objectives and reviewed by a College Budget Committee comprised of twelve persons representative of the various groups within the college community.

In August 1979, the President's Cabinet established a Data Processing Task Force to study the data processing/word processing needs of the College for the next several years. The DPTF surveyed all departments in an effort to develop a description of the future data processing environment. This description was sent to six vendors with an invitation to obtain additional information personally from all departments, submit a written proposal, and make a presentation. The DPTF analyzed critically the six proposals based on dimensions of the data processing environment including conversion, state of the art technology, software capability, growth potential, terminal
acceptability, hardware and software support, maintenance, security, word or text processing, space requirements, reliability, and other variables. Site visits and inquiries were made to colleges and corporations using various equipment configurations. A matrix evaluation form, using the above-stated criteria and vendor, was used to make the analysis as objective as possible. The two finalists were asked to make an additional presentation to an expanded group including persons from the Data Processing Program Advisory Committee and to complete a questionnaire developed by the group. After considerable analysis, the DPTF recommended unanimously that the College select the Hewlett Packard 3000-44. The Board of Trustees approved the recommendation on October 1, 1981. The College began the conversion to the new system almost immediately.

A capital appropriations bill contained $210,000 in technical education equipment funds and $1.8 m for equipment linked to a $3.5 m building renovation project. In order to make wise use of these funds, the President's Cabinet, Academic Council, and other key persons, held a discussion on strategic goal areas on January 26, 1982. These strategic goal areas were as follows:

I. Information Processing
   A. Computer Literacy
   B. The Office of the Future or the Paperless Office

II. Electronic Delivery of Educational Programs and Services
   A. Interactive Diagnostic and Instructional Systems
   B. Telecommunications and Teleconferencing Systems

III. High Technology
   A. Advanced Machine Tool Design
   B. Microelectronics
   C. Robotics
   D. Lightwave Circuit Technology

Computer literacy can range from the ability to read a printout through systems analysis and design. Between these two ends of the computer literacy continuum, would be such competencies as (1) the use of word processing equipment as input; (2) use of optical mark sensing equipment in test grading and upgrading the student data base; (3) computer assisted or managed instruction,
either using a "canned" program or writing a program; (4) conducting longitudinal studies of student progress; (5) a broad range of applications in business and industry such as statistical quality control, inventory control, computer assisted design (CAD) and computer assisted manufacturing (CAM); and (6) language proficiency in a broad range of data processing engineering contexts. (See FIGURE 1) Equipment decisions were then made to purchase selected items from the $210,000 authorization and other items from the $1.8 m authorization, including a HP 3000-64 for the Data Processing Program.

The College went through a similar experience with word processing. The strategic goal area of the office of the future or the paperless office includes (1) word processing, (2) personal computers, (3) electronic mail (4) computer assisted retrieval, (5) computer output microfilm, (6) facsimile devices, (7) teleconferencing, and reprographics. (See FIGURE 2) Specification sheets were designed by a Word Processing Task Force and mailed to vendors. The WPTF listened to presentations from nine vendors the first two weeks of June. Selected vendors were asked to demonstrate, on-site, the interaction of their equipment with the HP 3000. The Philips Micom system was purchased including 3 terminals for administrative support and 16 terminals for the Secretarial Science Technology. In addition to interaction with the HP 3000-44 and -64 systems, the Philips Micom system can interact with the computer systems that were installed in the Engineering Division.

Computers were first used in the electronics laboratory beginning in the 1980-81 year. By the start of the fall quarter in 1982, the electronics laboratories had a total of 26 smart terminals and programmable logic controllers and computer aided design (CAD) was introduced in the Drafting and Design Technology with 4 Autotrol design units and a VAX 750 computer. The manufacturing processes laboratory acquired 2 new 15" lathes, 1 Bridgeport mill with digital readout, and 2 computer numerical control (CNC) lathes. The hydraulics laboratory was equipped with 8 Sperry-Vickers training units.
ELEMENTS OF THE STRATEGIC GOAL OF COMPUTER LITERACY

Systems Analysis and Design

Language Proficiency

Data Processing

Engineering

Application

Computer Aided Design (CAD)

Computer Aided Manufacturing (CAM)

Inventory Control

Statistical Quality Control

Conducting Longitudinal Studies of Student Progress

Computer Assisted/Managed Instruction

Writing a Program

Using a Program

Use of Optical Mark Sensing Equipment

Upgrading Student Data Base

Test Grading

Use of Word Processing Equipment As Input

Reading a Printout
FIGURE 2
ELEMENTS OF THE STRATEGIC GOAL OF
THE OFFICE OF THE FUTURE OR THE PAPERLESS OFFICE*

WORD PROCESSING

development, revision, and production of documents such as letters, reports, labels, and directories.

PERSONAL COMPUTERS

small but powerful computers that can provide groups of users with capabilities such as filing, retrieval, sorting, word processing and report creation without the need for extensive programming or reliance on a large central processor.

ELECTRONIC MAIL

electronic work stations and message systems to send messages to one or more addresses where the communications can be read on their electronic equipment and respond at their convenience.

COMPUTER ASSISTED RETRIEVAL (CAR)

a combination of a computer system and a microfilm storage and retrieval device to get information from massive files that are stored on roll microfilm or microfiche.

COMPUTER OUTPUT MICROFILM (COM)

a computer process which produces information on microfilm instead of on paper.

FACSIMILE DEVICES

a way of transmitting pages of copy, such as correspondence or contracts, over long distances.

TELECONFERENCING

a method of simultaneous remote communication involving many people that may be as simple as a speakerphone conference call or as elaborate as a live video conference with terminals or facsimile devices for transmitting images, whether graphic or narrative.

REPROGRAPHICS

the use of electronics in the preparation of documents that can include input of original text through word processors linked directly to electronically controlled equipment that can set type in a multitude of type styles and sizes as well as automatically generate logos, form outlines, and charts and graphs.

Thus, the comprehensive planning process that produced the strategic goal areas of information processing and high technology had an impact on shaping equipment decisions tied to educational objectives. Personnel began to attend vendor schools and other training programs in order to develop competencies necessary to operate the equipment and teach in the programs. The strategic goal area of electronic delivery of educational programs and services was discussed at a meeting on February 9, 1982. An "Electronics Communications Renovation Project" was developed and submitted to The Ohio Board of Regents. The project is scheduled for 1985–86.

The Transformation To A High Technology, Information Society

The history of the development of human society can be traced from the hunting society through the agricultural society to the industrial society. In the hunting society, mankind was concerned primarily with extracting things from nature. The transformation to the agricultural society was slow and based on rather simple technological innovation. The hunting and agriculture societies can be characterized as interactions between people and nature. In comparison, the transformation from the agricultural society to the industrial society occurred more quickly and was the result of technological advances in energy, transportation, communications, raw materials, and research and development networks. The industrial society can be characterized as interactions between people and goods or fabricated nature. More recently, advances in the industrial society have been the result of the integration of macro technological systems, the aggregation of complex technological developments in each of the above mentioned networks.

During recent years we have experienced the onset of a transformation to a new type of society. Masuda indicates:
Mankind is now entering a period of transformation from an industrial society to an information society.... Man is now standing at the threshold of a period of innovation in a new societal technology based on the combination of computer and communications technology, quite unlike any of the past. Its substance is information, which is invisible. This new societal technology will bring about societal transformation which, in a double sense, is unprecedented.2

This transformation to the information society is concerned with the shift from physical productivity of material goods to information productivity and can be expected to bring about fundamental changes in human values, in trends of thought, and in the political and economic structures of society. This learning and information society will be characterized as interactions between people and ideas and knowledge.

Implications for Postsecondary Education

The onset of a transformation to a new type of society is occurring at a time when illiteracy is a major problem in this nation. Numerous articles have been written in recent years about the growing number of functionally incompetent,3 scientific illiterate,4 and the growing illiteracy problem for business when employees lack reading and writing skills necessary for their work.5 An article in the Boston Sunday Globe indicated that it is scandalous that Johnny and Janie cannot write when they enter college "but it is perhaps less scandalous than the possibility that, when they emerge as bachelors of arts or science, they may be unable to describe either discipline in acceptable written English."6 The problem is compounded when to these forms of illiteracy are added (1) occupational illiteracy, (2) economic illiteracy, (3) research illiteracy, (4) management systems illiteracy, (5) information processing illiteracy, and (6) technologic illiteracy. Human resource development, the prevention of human obsolescence, is the biggest challenge to postsecondary education in the years ahead.
The onset of the high technology, information society has profound implications for an institutional commitment to computer literacy, use of new technology, and the public service function. Gollattscheck and others express the implications in terms of a new role for American postsecondary education. They state:

We believe the time has come for a fourth major development in American postsecondary education: the creation of the community renewal college. The deterioration of our communities, the increasing inability of individuals to cope with rapid change, the obsolescence of individuals and social organizations, and the increasing number of citizens with educational needs who are beyond the purview of existing colleges demand a new kind of postsecondary institution. This new college must be committed to the improvement of all aspects of community life....

The institutional commitment to computer literacy carries with it a mandate for human resource development. In the field of engineering, for example, increasing competition in world markets has made manufacturers realize that they must do more with less, and do it better. Many manufacturers feel that an investment in technology will help them become more effective and efficient in what they do. Technological advances have been made in the design, engineering and manufacturing processes through Computer Aided Design (CAD), Computer Aided Engineering (CAE), and Computer Aided Manufacturing (CAM). Other terms used to describe technological advances include Group Technology, Manufacturing Planning and Control Systems, Automated Materials Handling, Materials Handling, Materials Requirements Planning (MRP), scheduling approaches such as Automated Time Standards (ATS), Computer Assisted Process Planning, and Manufacturing Resources Planning (MRPII). When these technological advances are combined in an effort to move toward the "Factory of the Future," the combination is referred to as Computer Integrated Manufacturing or Integrated Computer Aided Manufacturing.
Similar changes are occurring in business extending from market research through analysis of consumer satisfaction and in health care extending from health promotion through tertiary, long-term, extended care. Such changes mandate that postsecondary education take a proactive leadership stance in assisting the college's service area understand and adjust to the new technology.

Becoming a Community Renewal College

Between August 1978 and December 1979, North Central Technical College was involved in a project to retrain the unemployed in Richland County. Laudable and necessary as the project was, it represented a tertiary rehabilitation model as opposed to a primary or secondary prevention model. The intervention strategy was the result of a crisis as opposed to a process designed to diagnose a potential problem and prevent the development of the malady. Nor was it a secondary prevention model, that of identification of an illness at an early stage in order to prevent its complication. The intervention occurred only after the crisis struck the fatal blow even though early warning signals had been transmitted over the past several years. Since then the College has become proactive to the needs of its service area through strategic planning and management.

One of the first decisions by the College to take a proactive role in community renewal was the creation of Community Educational Services. CES was designed by NCTC and The Ohio State University - Mansfield in 1980 to provide campus out-reach in the areas of (1) personal growth, (2) career advancement, and (3) community development. (See FIGURE 3).

Research data suggest that our future is, for the most part, dependent upon the preservation, expansion, and creation of small businesses. In Ohio, the 189,000 small firms created 66 percent of all new jobs in the private
COMMUNITY EDUCATIONAL SERVICES

Mission Priorities
1) Professional/career/occupational advancement
2) Community development/citizen involvement
3) Personal and family development/security
4) Cultural/technical awareness
5) Energy education/environmental awareness
6) Creative uses of leisure/recreation
sector between 1969 and 1976; 80 percent of new jobs came from businesses less than five years old. Fifty percent of the state's workforce is classified as employed by small business; these firms generate 51 percent of the gross state product. Small businesses, however, have demonstrated they are unable to afford the type of assistance which is usually available to large corporations.

Part of Ohio's response to the plight of small businesses was the creation of the Ohio Technology Transfer Organization and the Ohio Job Training Consortium. OTTO is a statewide network consisting of The Ohio State University and two-year institutions working with state and federal agencies to provide small business and industry access to information, advice, and services that are essential to economic development and job growth. OTTO agents have access to computerized data bases which include the National Technical Information Service and more than 200 Federal R & D laboratories and centers representing 11 Federal agencies in the Federal Laboratory Consortium. OJTC is intended to help business and industry diagnose training needs and develop programs in response to diagnosed needs. College credit programs are run through the academic programs and continuing education programs are run by CES. OTTO and OJTC representatives at NCTC assist/help establishments in the College's service area. (See APPENDIX A)

The comprehensive institutional planning process, the purchase of new technology, and the commitment to become a community renewal college led to the designation of three top priorities (1) human resource development, (2) computer literacy, and (3) college marketing. (See APPENDIX B). These top priorities provide the impetus for a broad range of initiatives such as seminars, workshops, and articulation meetings. For example, on September 24, 1982, the College conducted a seminar on the topic "Advancing Productivity Through Systems Automation" for corporate personnel. On December 9, 1982, twenty faculty from NCTC visited Mansfield Senior High to discuss standards...
and articulation. (See APPENDIX C for both programs).

During recent years the College has assisted agencies with developing a more sophisticated approach to planning and management. On February 15, 1983, the OTTO Advisory Committee hosted the Executive Director of the Richland Economic Development Corporation and members of Leadership Unlimited, a program to prepare community leaders for the decade ahead. The program for that meeting was to (1) discuss the information society and NCTC's niche, (2) review the progress being made by RE-DeC, and (3) discuss methods for collaboration. During that meeting the author distributed an analysis of strengths, weaknesses, opportunities, and threats derived from several studies completed in the past. The College, including OTTO, is committed to assisting RE-DeC in its economic development plan. (See APPENDIX D)

As a part of its continuing commitment to inform residents of the service area about state-of-the-art technology, the College conducted a "High Technology Seminar" on March 17, 1983. In preparation for that seminar, the monthly College publication Challenge contained an article entitled "High Technology. What Is It?" The article reviews a number of terms used to describe advances in technology such as "high," "new," "appropriate" and "levels of development" as an attempt at adding clarity to this concept. (See APPENDIX E for the March issue of Challenge and APPENDIX F for materials about the High Technology Seminar).

Other activities which are already scheduled include an Open House on May 15, 1983, a Strategic Planning Seminar for the Mohican Valley Chapter of the American Society for Training and Development on May 19, 1983, and a School-College Articulation program on October 7, 1983. Through these activities, the College is attempting to assist the service area in the adaptation to the new technology of the information society.
Summary and Conclusion

The transformation to a computer literate, high technology, information society has numerous implications for a new role for postsecondary education. These implications hold for primary programs in business, engineering, and health care as well as support programs such as institutional strategic planning, management, and evaluation. Institutions must develop strategic planning and management processes which help keep them viable in the years ahead. Such processes will mandate computer literacy competencies for all personnel. Masat has expressed the need for computer technology and literacy as follows:

Computer technology and literacy are two of our nation's most important resources. With about half the labor force holding information and computer-related jobs and earning more than half the labor income, information has become our major national commodity. Moreover, our society has become irreversibly dependent on computers, particularly in the areas of business, energy, space exploration, research, and national security. Our ability to use computer technology thus contributes significantly to our nation's present and future intellectual and economic strengths. For colleges and universities, computer literacy is increasingly needed for research and development, for efficient and effective management, and for the use of sophisticated technological equipment.11

Numerous issues will be important in the 1980's. No issue, however, will be as important as the relationship of postsecondary occupational education to the economy. Foreign competition, technological advances, changes in productivity, high cost, plant and human obsolescence, and infrastructure deterioration have resulted in massive dislocations in our economy. In the past, postsecondary education has seen its relationship to the economy primarily in terms of providing an educated workforce. In the future, this focus will continue to be important but not sufficient. New, expanded relationships will be required between postsecondary education and the economy in the computer literate, high technology, information society. Postsecondary education must take a proactive role with regard to computer literacy in the transformation to the high technology, information society.
FOOTNOTES


A FEW EXAMPLES OF THE PROBLEM AREAS OTTO HAS WORKED ON DURING 1982....

Abrasions
Absenteism
Adhesives
Anodizing
Architecture
Automotive
Aviation
Bearings
Bonus
Business management

Cad/Cam
Calibration
Carbon black
Cash flow
Casting
Cardiology
Chemistry
Coal
Compensation
Computer chips
Computer hardware
Computer software
Conservation
Consultants
Corrosion
Cost analysis

Data bases
Data processing

Economic development
Electronics
Employee ownership
Energy
Energy conservation
Energy from waste
Entrepreneurship
Environment
Equipment
Export

Fastening techniques
Fiber optics
Fiberglas
Financial management
Fire protection
Flextime
Forecasting
Franchising
Gasohol
Galvanizing

Hazardous waste
Heating
Human factors
Hydraulic systems
Hydropower

Incorporation
Innovations
Interior design
Inventions
Inventory control
Lasers
Lighting
Loans
Lubrication

Machine tools
Marketing
Materials handling
Mental health
Merit pay
Metal finishing
Metal powder
Microwave
Motors, electric

New product development
Nuclear energy
Noise control
Office management
Order processing
Patents
Personnel management
Photochemical machining
Plating
Productivity
Products liability
Profit sharing
Public relations
Quality circle

Real estate
Research & development
Robotics

Small business
Soldering
Standards & specifications
Surface finishing

Telecommunications
Toxicology
Trademark
Traffic control
Transportation

Urban development
Vehicle fleet management
Vibration

Wages
Warehouses
Weights and measures
Welding
Wire

Workmen's compensation
Zinc

REECE T. CLEMENS, COORDINATOR
OHIO TECHNOLOGY TRANSFER ORGANIZATION (OTTO)
2441 KENWOOD CIRCLE P.O. BOX 698
MANSFIELD, OHIO 44901
TELEPHONE: (419) 747-4999
### NUMBER OF EMPLOYEES & ESTABLISHMENTS BY EMPLOYMENT SIZE

<table>
<thead>
<tr>
<th>Number of Employees</th>
<th>Number of Establishments by Employment Size</th>
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<tr>
<td></td>
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</tr>
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<tr>
<td>Services</td>
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<td><strong>Crawford - Total</strong></td>
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<tr>
<td>Total</td>
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<tr>
<td>Manufacturing</td>
<td>10,222</td>
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<tr>
<td>Retail Trade</td>
<td>2,843</td>
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<tr>
<td>Finance</td>
<td>484</td>
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<tr>
<td>Services</td>
<td>2,509</td>
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<td><strong>Ashland - Total</strong></td>
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<td>14,801</td>
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<td>Manufacturing</td>
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<td>Retail Trade</td>
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<td>Finance</td>
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<td>Services</td>
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<td><strong>3-County Total</strong></td>
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<tr>
<td>Total</td>
<td>4,263</td>
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</table>
Numerous issues will be important in the 1980s. Foreign competition, technological advances, changes in productivity, high costs, plant obsolescence, and infrastructure deterioration are causing major dislocations in our economy. It is in that context that North Central College must chart a course of action via strategic planning and management. Through strategic planning and management the College can strive to maintain institutional quality through the allocation of scarce resources in a cost effective manner. At the same time the College can move in the direction of new program development consistent with the commitment of becoming a "high technology training center." In keeping with these directions, the college planning process has yielded three top priorities:

1. Human Resource Development
2. Computer Literacy
3. College Marketing

A more detailed explanation of these priorities is as follows:

Human Resource Development

Students

A. Development of students who have a goal-oriented perspective on life — contact with the present or an "eye" to the future. Satisfied with present skills or developing new skills for the future.

B. Take students where they are in terms of basic skills and move them to meet the standards of NCTC.

C. Development of living skills oriented toward productive work and productive leisure time.

D. Provide an adequate learning environment which allows students to develop the motivation to "reach".
College Personnel

A. Provide an environment which is conducive to trial and error. The stimulation of experimentation.

B. Provide an environment which is conducive to personal and professional growth.

C. Provide an environment which stimulates the motivation for learning state-of-the-art.

D. Provide an enabling environment for personal and professional gratification.

Computer Literacy

College Personnel

Provide an environment which enables each faculty and staff member to effectively use the information processing capabilities of computers.

Curriculum

To provide all students with the opportunity of using the information processing capabilities of computers.

College Marketing

The term marketing is used in its broadest context. Often, we refer to the 4 P’s – Product, Place, Price and Promotion.

A. **Product** - This is the NCTC curriculum and service offerings such as career planning, extra-curricular activities, counseling, placement, etc. Characteristics such as quality and quantity are involved.

B. **Place** - This refers to the location where the product is delivered — on campus and/or off campus

C. **Price** - Is the product or service offered at the right price? (Instructional and general fee or other charge of some kind)

D. **Promotion** - Are the curricula and services being effectively communicated so as to attract the desired student body?
APPENDIX C
ADVANCING PRODUCTIVITY THROUGH SYSTEMS AUTOMATION

SEPTEMBER 24, 1982

-MORNING-

All morning presentations will be in room 212 -- Bromfield Hall.

-AGENDA-

I. Dr. Henry R. Fallerius President
   North Central Technical College

II. Terry Breinich Assistant Professor, Data Processing
    North Central Technical College
    "Data Processing Curriculum"

III. Karen Stansbery Manager of Applications Programming
     Interstate Business Services, Inc.
     "Job Performance of NCTC Data Processing Graduates"

IV. Coffee Break

V. Donald M. Vicchiarelli Division Systems Manager
   General Tire and Rubber Co.
   "Re-industrialization: Social Adjustment"

VI. Robert A. Slapnik Sales Representative
    Hewlett-Packard Co.
    "Hewlett-Packard's Information Productivity Network"

-LUNCH-

Lunch will be served in the cafeteria, Dwight D. Eisenhower Memorial Center, courtesy of Hewlett-Packard Company.

-AFTERNOON-

All afternoon presentations and hardware exhibits will be scheduled in the Technical Education Center.

Sessions #1-3 are scheduled from 1-2 p.m. and are repeated from 2:15-3:15.

Sessions #3-6 will display hardware/software at your convenience after 12:30.

<table>
<thead>
<tr>
<th>SESSION</th>
<th>TIMES</th>
<th>ROOM</th>
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<tbody>
<tr>
<td>1 Manufacturing Software Systems</td>
<td>1:00 and 2:15</td>
<td>111</td>
</tr>
<tr>
<td>2 Data Base Management</td>
<td>1:00 and 2:15</td>
<td>114</td>
</tr>
<tr>
<td>3 HP 3000 System Overview</td>
<td>1:00 and 2:15</td>
<td>158</td>
</tr>
<tr>
<td>4 Electronic Mail &amp; Word Processing</td>
<td>Open after 12:30</td>
<td>179</td>
</tr>
<tr>
<td>5 Manufacturing &amp; Business Graphics</td>
<td>Open after 12:30</td>
<td>181</td>
</tr>
<tr>
<td>6 Personal Business &amp; Desktop Computer</td>
<td>Open after 12:30</td>
<td>181</td>
</tr>
</tbody>
</table>
ARTICULATION MEETING
MANSFIELD SENIOR HIGH SCHOOL
DECEMBER 9, 1982

AGENDA
1. NCTC Requirements and Standards
2. MSHS Requirements and Standards
3. Articulation
4. Charting a Course of Action
5. The Next Meeting (NCTC Hosting)

NCTC Participants

<table>
<thead>
<tr>
<th>Department</th>
<th>Persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>English</td>
<td>Paul Sukys, Dan Richards, Joan Robertson</td>
</tr>
<tr>
<td>Math</td>
<td>Phil Marcus</td>
</tr>
<tr>
<td>Science</td>
<td>Joe Noser</td>
</tr>
<tr>
<td>Social Sciences</td>
<td>John Brent, Dick Goetz, Ben Oswald</td>
</tr>
<tr>
<td>Administration</td>
<td>Gary Rustad, Peter Grant</td>
</tr>
<tr>
<td>Home Ec/Nursing</td>
<td>Hazel Parsons</td>
</tr>
<tr>
<td>Handicapped</td>
<td>Bruce Sliney</td>
</tr>
<tr>
<td>Electronics</td>
<td>Joe Wagner</td>
</tr>
<tr>
<td>Physical Education</td>
<td>Sue Paynter</td>
</tr>
<tr>
<td>Machine Trades,</td>
<td>Harold Goldenberg</td>
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<tr>
<td>Auto Mechanics,</td>
<td></td>
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<tr>
<td>Welding, and Wood</td>
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<td>Drafting</td>
<td>Robert Davies</td>
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<td>Business:</td>
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<td>Accounting</td>
<td>Jay Jacquet, David Taylor</td>
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<td>Secretarial</td>
<td>Eola Snyder, James Donnelly</td>
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<td>Dist. Education</td>
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RICHLAND ECONOMIC DEVELOPMENT CORPORATION ORGANIZATIONAL CHART

VICE PRESIDENT
AND
CHIEF EXECUTIVE OFFICER

RICHLAND ECONOMIC DEVELOPMENT CORPORATION
BOARD OF TRUSTEES

EXECUTIVE COMMITTEE
(Policy Making Body)

VICE PRESIDENT
VICE CHAIRMAN
EXECUTIVE COMMITTEE

PRESIDENT
AND
CHAIRMAN OF EXECUTIVE COMMITTEE

EXECUTIVE DIRECTOR
AND
SECRETARY OF CORPORATION

TREASURER
OF
CORPORATION

EXECUTIVE
ASSISTANT
SECRETARY

SUPPORT TEAMS

EDUCATION SUPPORT TEAM - K. JACK BARGAISER, CHAIRMAN
GOVERNMENTAL AFFAIRS - CURTIS FIELDS, CHAIRMAN
INTERNATIONAL TRADE - LOU FRITZ, TEMPORARY CHAIRMAN
LABOR MANAGEMENT COMMITTEE - MALCOLM CASH, CHAIRMAN
QUALITY OF LIFE - REV. CLIFFORD D. SCHUTJER, CHAIRMAN
LONG RANGE PLANNING - RE-DEC EXECUTIVE COMMITTEE
TRAVEL AND TOURISM - MARY JANE SAYLOR, CHAIRMAN

PUBLIC RELATION AND ADVERTISING - GUNTHER MEISSE, CHAIRMAN
FINANCE AND BANKING - BILL JILEK, CHAIRMAN
RETENTION AND EXPANSION - WARREN RUPP, CHAIRMAN
REAL ESTATE AND SITE CONTROL - CHARLIE SWAIN, CHAIRMAN
TRANSPORTATION - JAMES C. GORMAN, CHAIRMAN
CONFIDENTIAL CLIENT SALES - LOU FRITZ, CHAIRMAN
COMMUNICATIONS - LYNN ECKARDT, CHAIRMAN
## SWOT ANALYSIS

<table>
<thead>
<tr>
<th>STRENGTHS</th>
<th>WEAKNESSES</th>
<th>OPPORTUNITIES</th>
<th>THREATS</th>
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<tbody>
<tr>
<td>Diversity of Business Establishments</td>
<td>Intramural Strategic Planning</td>
<td>Telecommunications</td>
<td></td>
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<tr>
<td>Land Availability</td>
<td>Intramural Strategic Planning</td>
<td>United Telephone Co.</td>
<td></td>
</tr>
<tr>
<td>Transportation - Rail, Highway, Airport</td>
<td>Intellectual Capital Formation</td>
<td>NASA Lewis Research Center</td>
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<tr>
<td>Water</td>
<td>Apprenticeship Training</td>
<td>Robotics Center for Robotics - Michigan</td>
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<tr>
<td>Utilities</td>
<td></td>
<td>Robotics Institute - Pittsburgh</td>
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<tr>
<td>Leadership/Organizations</td>
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<td>Just-In-Time Manufacturing Design</td>
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<tr>
<td>Medical Facilities</td>
<td></td>
<td>Manufacturing</td>
<td></td>
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<tr>
<td>Geographic Location</td>
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<tr>
<td>Diversity/Quality of Life Elements</td>
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<tr>
<td>Fine Arts Center</td>
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<tr>
<td>Renaissance Theatre</td>
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<tr>
<td>Symphony (Adult/Youth)</td>
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<tr>
<td>Little Theatre</td>
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<td></td>
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</tr>
<tr>
<td>Sports (Skiing, Auto Racing)</td>
<td></td>
<td></td>
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<tr>
<td>Secondary Schools</td>
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<tr>
<td>Madison School District (CSM-LS)</td>
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<tr>
<td>The Mansfield University Foundation</td>
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<td>Postsecondary Education Institutions</td>
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<tr>
<td>Ashland College</td>
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<td>North Central Technical College</td>
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<tr>
<td>The Ohio State University- Mansfield</td>
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<tr>
<td>Mohican Valley Chapter ASTD</td>
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<tr>
<td>Mid-Ohio Council of Teachers of Math</td>
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<tr>
<td>Ohio Technology Transfer Organization</td>
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<tr>
<td>Leadership Unlimited Class #1</td>
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<td>RE-DeC</td>
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<tr>
<td>Ohio Board of Regents Ohio Business, Ed., and Govt. Alliance</td>
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<tr>
<td>The Battelle Institute</td>
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</tbody>
</table>
APPENDIX D

HIGH TECHNOLOGY. WHAT IS IT?

An article in the Wall Street Journal stated that "'high tech' is looking more and more like the latest development fad to hit the streets of America." The author goes on to state that "the concept of high technology or advanced technology is too vague to be useful. Some 'most advanced' technology exists for producing almost every good or service traded in the economy."

In some instances it seems more appropriate to refer to advances in science and technology as "new" technology. When speaking of the transfer of technology, the phase "appropriate technology" is more in keeping with the idea that is being communicated. Watcke attempted to display stages of technology development and relate that concept to curriculum development and point to the need to develop partnerships within a college's service area. A modified display of "levels of Technology Development" is displayed in FIGURE 1.

FIGURE 1

LEVELS OF TECHNOLOGY DEVELOPMENT

<table>
<thead>
<tr>
<th>LOW TECHNOLOGY</th>
<th>MEDIUM TECHNOLOGY</th>
<th>HIGH TECHNOLOGY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drafting</td>
<td>Manually Operated</td>
<td>Computer Aided</td>
</tr>
<tr>
<td>T-Square and Drawing</td>
<td>Drafting Machine</td>
<td>Design</td>
</tr>
<tr>
<td>Board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calculating</td>
<td>Electronic Calculators</td>
<td>Microcomputers</td>
</tr>
<tr>
<td>Manual Calculators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typewriters</td>
<td>Electronic Typewriters</td>
<td>Electric Typewriter with Storage</td>
</tr>
<tr>
<td>Manual Typewriters</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tools</td>
<td>Machine Tools</td>
<td>Computer Numerical Control</td>
</tr>
<tr>
<td>Hand Tools</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biology</td>
<td>Genetic Engineering</td>
<td>Cloning</td>
</tr>
<tr>
<td>Basic Laboratory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analysis Equipment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>Digital Electronics</td>
<td>Laser/Electro-Optics</td>
</tr>
<tr>
<td>Vacuum Tubes</td>
<td></td>
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</tr>
</tbody>
</table>

"High Technology" could be defined as any influence of the computer on (1) engineering and design, (2) planning and scheduling, (3) fabrication and assembly, and (4) marketing and distribution. Such a definition seems most appropriate to the manufacturing of durable goods. With this definition the Task Force on High Technology should be interested in concepts related to the automated factory (AF) or the "factory of the future." Terms associated with these concepts are as follows:

- Computer Aided Technology (CAT)
- Computer Aided Design (CAD)
- Computer Aided Engineering (CAE)
- Computer Aided Manufacturing (CAM)
- Group Technology (GT)
- Manufacturing Planning and Control Systems (MPCS)
- Automated Materials Handling (AMH)
- Materials Requirements Planning (MRP)
- Automated Time Standards (ATS)
- Computer Assisted Process Planning (CAPP)
- Manufacturing Resources Planning (MRP II)
- Computer Integrated Manufacturing (CIM)
- Integrated Computer Aided Manufacturing (ICAM)
- Data Based Management Systems (DBMS)
- Computer-Aided Inspection Test and Control (CAITC)
- Finite Elements Analysis (FEA)

Business and industry, however, is not the only establishment experiencing the impact of the computer. Computer aided transcriptions are becoming a practice in reporting in the courts. In the education industry, computer-aided instruction and computer-managed instruction are appropriate to include in the definition. Other terms are also appropriate. Telematics, for example, is a collective term including computer, information, and telecommunication technologies.

Several lists of advances in technology have appeared in various journals. High Technology lists the following fields experiencing rapid growth:

- Genetic engineering. The technology associated with putting biological knowledge to work. Applications in the chemical industry, pharmaceuticals, agriculture.

- The electronic office. Multifunction work stations. Word-speech recognizers and simplified programming that will humanize the interface between people and machines. The costs, the benefits, the potential savings.
Automotive technology. Improvements in auto engines that will save money and reduce emissions. Research to overcome the limitations of potential competitors to the internal combustion engine.


Space technology. The Space Shuttle: how it will boost our capability to orbit satellites and even build space stations. New uses for orbiters -- including navigation, geophysical exploration, crop studies, weather prediction.

Energy. Thin-film photovoltaic cells and the promise of low-cost solar-generated electricity. Improved batteries and storage systems. The technology of fusion power and the obstacles that must be overcome.


Medical technology. Implantable replacement body organs, artificial limbs, diagnostic devices, information retrieval and medical data systems.


New materials. Fiber-reinforced composites (carbon, baron, etc.) and "foamed" metals, which combine high strength with light weight. Inexpensive alloys that can substitute for more costly metals. Superconductors. New coatings, adhesives and other materials.


Personal computers. What's new and what's next. What they offer and how they can be used. Advances which will make them more useful, more popular.

Artificial intelligence. Machines that think for themselves -- or for you. (The question is not whether this will happen, but when.) And how we'll deal with the social dislocations as menial work is phased out.
Several persons have listed high technology industries or devices and processes which are commonly encompassed by the term high technology. Two such lists are displayed in FIGURE 2. The "High Technology Industries" list was developed by Watcke and the "Devices and Processes" list was developed by Walter Edling of Lorain County Community College.

**FIGURE 2**

**HIGH TECHNOLOGY INDUSTRIES**

<table>
<thead>
<tr>
<th>Genetic Engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telecommunications Equipment</td>
</tr>
<tr>
<td>Electronic Components</td>
</tr>
<tr>
<td>Pharmaceuticals/Health Chemicals</td>
</tr>
<tr>
<td>Energy and Power Supplies</td>
</tr>
<tr>
<td>Bio-Medical Equipment (medical scanners, pacemakers, implants)</td>
</tr>
<tr>
<td>Computer Equipment (peripherals)</td>
</tr>
<tr>
<td>Computer Software and Supplies</td>
</tr>
<tr>
<td>Security Detection Equipment (fire emergency)</td>
</tr>
<tr>
<td>Home Computers</td>
</tr>
<tr>
<td>CAD/CAM Systems</td>
</tr>
<tr>
<td>Mainframe Computers</td>
</tr>
<tr>
<td>Office Automation Equipment (word processing)</td>
</tr>
<tr>
<td>Semiconductors/Integrated Circuits</td>
</tr>
<tr>
<td>Lasers and Infrared Equipment</td>
</tr>
<tr>
<td>CATV (cable television)</td>
</tr>
<tr>
<td>Microwave Equipment</td>
</tr>
<tr>
<td>Military Systems</td>
</tr>
<tr>
<td>Test Equipment (quality assurance)</td>
</tr>
<tr>
<td>Electromechanical Components (robots and numerical control)</td>
</tr>
</tbody>
</table>

**DEVICES AND PROCESSES**

<table>
<thead>
<tr>
<th>Computers (including personal computers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lasers</td>
</tr>
<tr>
<td>Fiber optics</td>
</tr>
<tr>
<td>Nuclear processes</td>
</tr>
<tr>
<td>Microelectronics (and nano- and picoelectronics)</td>
</tr>
<tr>
<td>Artificial intelligence</td>
</tr>
<tr>
<td>Computer Numerical Control (CNC) and Direct Numerical Control (DNC)</td>
</tr>
<tr>
<td>Computer Aided Engineering and Design (CAE, CAD)</td>
</tr>
<tr>
<td>Computer Aided Manufacturing (CAM) and Integrated Computer Aided Manufacturing (ICAM, CIAM)</td>
</tr>
<tr>
<td>Alternate energy forms (Solar cells, etc.)</td>
</tr>
<tr>
<td>Computer-supported Management and Planning Systems</td>
</tr>
<tr>
<td>Robots</td>
</tr>
<tr>
<td>Molecular biology</td>
</tr>
<tr>
<td>Voice Recognition</td>
</tr>
<tr>
<td>Holography</td>
</tr>
<tr>
<td>Telecommunications</td>
</tr>
</tbody>
</table>

Helms lists advances in communications, computers, robotization, biotechnology, electric power, fuels technology, material technology, and body technologies and the key words associated with each category. (See FIGURE 3) Moody lists components of the office of the future or the paperless office as word processing, personal computers, electronic mail, computer assisted retrieval, computer output microfilm, facsimile devices, teleconferencing, and reprographics. (See FIGURE 4)

A report of the Joint Economic Committee of the Congress of the United States states:
High technology industries consist of heterogeneous collections of firms that share several attributes. First, the firms are labor-intensive rather than capital-intensive in their production processes, employing a higher percentage of technicians, engineers and scientists than other manufacturing companies. Second, the industries are science-based in that they thrive on the application of advances in science to the marketplace in the form of new products and production methods. Third, R & D inputs are much more important to the continued successful operation of high technology firms than is the case for other manufacturing industries.

Although analysts have reached no general agreement on a definition of a high technology industry, there is a general agreement that the following Standard Industrial Classification (SIC) industries qualify: chemicals and allied products (SIC 28); machinery, except electrical (SIC 35); electrical and electronic machinery, equipment and supplies (SIC 36); transportation equipment (SIC 37); and measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks (SIC 38).

During the summer of 1982, Dr. Edward Q. Moulton, Chancellor of the Ohio Board of Regents, appointed numerous persons to an Advisory Committee on Two-Year Campus Academic Affairs. The Advisory Committee is an umbrella structure for several subcommittees and task forces, one of which is the Task Force on High Technology. The charge to the TFHT is as follows:

"The Task Force will examine the issues relative to the development of high technologies and will recommend policies the Regents should consider adopting in this area."

The TFHT appointed a subgroup to define high technology. The subgroup proposed the following definition:

The term "high technology" characterizes: processes, products and applications stemming from the latest scientific and technical development; utilization of high levels of artificial or machine intelligence and information/decision capabilities; and extension of human manual and intellectual capacities through the use of computer technology and the application of sophisticated physical principles.

The Task Force adopted this definition unanimously at its meeting on February 3, 1983.

* * * * * * * * * * * * * * * * *

A future that isn't forecast is like an accident waiting to happen.

Earl C. Joseph, 1982
## ADVANCING TECHNOLOGIES OF THE 21st-CENTURY

<table>
<thead>
<tr>
<th>Technology Category</th>
<th>Key Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNICATIONS</td>
<td>Computerized PBX's, Satellites, Telemarketing, Cable TV, Videodisc, Videotex, Teletext, Telemarketing, Photonics, Optical Fibers, Mass Memory Exchange, Industry and Office Automation, Lasers.</td>
</tr>
<tr>
<td>BIOTECHNOLOGY</td>
<td>Bioengineering, Genetic Engineering, Gene Splicing, DNA, RNA, Hybridomas, Mutants, Enzymes, Plasmids, Regeneration, Green Revolution, Cloning.</td>
</tr>
<tr>
<td>FUELS TECHNOLOGIES</td>
<td>Coal Gasification, Liquefaction, Shale, Tar Sands, Catalysis, Syncrude, Synfuels, Gasohol, Methane, Ethanol, Biomass.</td>
</tr>
</tbody>
</table>

**SOURCE:** W. Clyde Helms, Jr., President, Occupational Forecasting, Incorporated.
THE OFFICE OF THE FUTURE OR THE PAPERLESS OFFICE*

**WORD PROCESSING**

development, revision, and production of documents such as letters, reports, labels, and directories.

**PERSONAL COMPUTERS**

small but powerful computers that can provide groups of users with capabilities such as filing, retrieval, sorting, word processing and report creation without the need for extensive programming or reliance on a large central processor.

**ELECTRONIC MAIL**

electronic work stations and message systems to send messages to one or more addresses where the communications can be read on their electronic equipment and respond at their convenience.

**COMPUTER ASSISTED RETRIEVAL (CAR)**

a combination of a computer system and a microfilm storage and retrieval device to get information from massive files that are stored on roll microfilm or microfiche.

**COMPUTER OUTPUT MICROFILM (COM)**

a computer process which produces information on microfilm instead of on paper.

**FACSIMILE DEVICES**

a way of transmitting pages of copy, such as correspondence or contracts, over long distances.

**TELECONFERENCING**

a method of simultaneous remote communication involving many people that may be as simple as a speakerphone conference call or as elaborate as a live video conference with terminals or facsimile devices for transmitting images, whether graphic or narrative.

**REPROGRAPHICS**

the use of electronics in the preparation of documents that can include input of original text through word processors linked directly to electronically controlled equipment that can set type in a multitude of type styles and sizes as well as automatically generate logos, form outlines, and charts and graphs.

A brief explanation of each demonstration is provided on the following pages. All demonstrations are scheduled between 1-4 p.m. and are located in rooms in the Technical Education Center as indicated. Please make yourself "at home" and take the opportunity to see all demonstrations.
North Central Technical College's faculty will provide demonstrations of student programs showing Hewlett-Packard capabilities in accounting applications.

**Demonstration Hosted By:** NCTC Faculty

### COMPUTER GRAPHICS

Hewlett-Packard will demonstrate Business and Presentation Graphics on the HP 3000 general purpose computer. Featured will be HP color graphics terminals and HP hard copy graphics plotters.

**Demonstration Hosted By:** Hewlett-Packard Company

### HEWLETT-PACKARD SLATE/3000

Hewlett-Packard will demonstrate HP Slate/3000, a friendly menu-driven word processing package for the HP 3000 system.

**Demonstration Hosted By:** Hewlett-Packard Company

### PERSONAL COMPUTERS --- APPLE II

We will demonstrate software programs on Apple computers.

**Demonstration Hosted By:** NCTC Faculty

### COMPUTER AIDED DRAFTING

An AUTO-TROL CAD-CAM (Computer Aided Design-Computer Aided Manufacturing) system will be demonstrated. Features to be demonstrated include:

1. Numerical Control Family of Parts
2. Flat Pattern Development
3. Drafting
4. Other Applications

**Demonstration Hosted By:** AUTO-TROL Technology Corporation

### COMPUTER NUMERICAL CONTROL

A HURCO Numerical Controller will be used to demonstrate the programming of common mill and drill machining operations requiring control of 2 or 3 axes. A plotter is used to indicate the tool paths.

An Olivetti L1 M20 Personal Computer with interactive graphics capability will be used to demonstrate the translation of common mill and drill machining operations to a variety of numerical control machine languages.

General Electric H and L series Numerical Control Units will be used to demonstrate the programming of common mill and lathe operations.

**Demonstration Hosted By:** General Electric Company

Garco Machinery, Inc.
PROGRAMMABLE CONTROLLERS

ROOM 186-TEC

A description of a programmable controller and a demonstration of its capabilities will be provided. An Allen-Bradley PLC-2 programmable controller will be used to demonstrate the following:

1. Control circuits
2. Timers and Counters
3. Graphics
4. Report Generation

Demonstration Hosted By: KBZ Electric

PROGRAMMABLE CALCULATORS

ROOM 087-TEC

1. There will be a written explanation of the capabilities of the calculator. (Copies will be available)
2. Fifteen calculators and three printers will be set up.
3. A short program will be written on the board for anyone to try on a calculator. (Copies will be available.)
4. A list of programs studied in the Math 123 calculator laboratory will be shown. (Copies will be available.)
5. A set of detailed lesson plans for the Math 123 calculator laboratory will be on display. (No copies available.)

Demonstration Hosted By: NCTC Faculty

TECHNICAL PROGRAMMING

ROOM 186-TEC

This demonstration contains several activities utilizing several Apple II computers. Each Apple II computer will demonstrate the following:

1. How to use the Apple II computer. An Auto-Tutorial user program with graphics is used to accomplish this objective.
2. How to read a vernier caliper.
3. Control of a heating/cooling cycle.
4. Typical programs written by students enrolled in the Technical Programming 199 course.
5. Electronic circuit diagrams generated by students who used a graphics tablet.
6. Data acquisition. The computer will collect temperature data and display the data in graphic form.
7. Digital storage scope interface. When given a trigger level, the computer will capture and display 200 data points of an input voltage waveform.

Demonstration Hosted By: NCTC Faculty

MICRO COMPUTER DEVELOPMENT SYSTEM

ROOM 186-TEC

An Intell Microcomputer Development System will be demonstrated. Features to be demonstrated include:

1. Text Editing
2. Program Assembly
3. In-circuit Emulation
4. PROM Programming

Demonstration Hosted By: Arrow Electronics, Inc.
Intell Electronic Corporation
ELECTRONIC DATA ACQUISITION

A continuous graphics display will be used to demonstrate how a Digital Equipment Corporation MINC computer can be used in the real-time data acquisition environment.

Demonstration Hosted By: Digital Equipment Corporation

SMART TERMINALS AND VAX-750

Digital Equipment Corporation (DEC) GIGI terminals will be connected to a VAX-750 computer. The system will be used to demonstrate the following:

1. REGIS (Remote Graphics Instruction Set) Application
2. Programming Languages such as DCL, BASIC, FORTRAN, and PASCAL
3. Electronic Mail

Demonstration Hosted By: Digital Equipment Corporation

HYDRAULIC TRAINERS

The Sperry Vickers fluid power trainers will be used to demonstrate several hydraulic circuits which are typically used in industrial applications. A slide/audio presentation of hydraulic principles and circuits will be provided. Cut-away models of hydraulic components will be on display.

Demonstration Hosted By: NCTC Faculty

WORD PROCESSING

Will give a general overview of the word processing system used at NCTC including a description of various word processing systems used in businesses from the stand-alone to the large cluster system with massive storage. Also, a brief history of word processing and an explanation of the benefits and influences word processing has in the business world today. Following with a 20-minute demonstration of text edition capabilities and a short review of the record keeping function.

Demonstration Hosted By: Computer Dynamics