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ABSTRACT

This document describes the human resources development (HRD) seminar that has been part of Nova University's nontraditional practitioner-oriented, problem-solving, field-based doctoral program in higher education since 1990. Discussed first are HRD in the agricultural and business industrial eras and changing HRD practices/needs in the context of cognitive synapses and electronic networks. An overview of Nova University's programs for higher education and HRD, descriptions of the Phoenix Cluster HRD seminar's three sessions, and the conceptual framework of Nova University's program to create high-performance learners and leaders are presented next. A 33-item bibliography is included. Appendixes constituting approximately 80% of this document include seminar instructions/assignments and supplemental materials, instructional support materials, sample HRD vision and action plans, and the following seminar papers: "CAE-LINK Training Operations Strategic Action Plan" (Steven J. Tourville); "Central Training Academy Human Resources Department Plan of Action" (James R. Frazier); "Creation of Functional and Discipline Specific Remote Computer Labs for the Implementation of Computing and Information Technology across the Curriculum at Chandler-Gilbert Community College" (Wayne G. Gautreau); and "Action Plan towards Development and Implementation of an Interactive. Multimedia Computer Program (Karen E. Hoblit). (MN)

TOWARD THE 21st CENTURY: PREPARING PROACTIVE VISIONARY TRANSFORMATIONAL LEADERS FOR BUILDING LEARNING COMMUNITIES

HUMAN RESOURCE DEVELOPMENT

PHOENIX CLUSTER

by

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FALL 1993

TOWARD THE 21st CENTURY: PREPARING PROACTIVE VISIONARY TRANSFORMATIONAL LEADERS FOR BUILDING LEARNING COMMUNITIES

by

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Fall 1993

Abstract

The ultimate purpose of graduate and postgraduate education is to design programs to promote improvement in the quality of services that are provided in a variety of different contexts and systems -- health and human services, business and industry, government and public service, and education and training.

Nova University was founded in 1964. The Ed.D. Programs for Higher Education (PHE) were started in 1972 with a focus on preparing community college personnel. That single program evolved into three areas of specialization: (a) Higher Education; (b) Adult Education; and (c) Vocational, Technical, and Occupational Education (VTOE). The VTOE specialization consisted of two seminars: Personnel - Human Resources Development (P-HRD) and the Emergence of Vocational, Technical, and Occupational (E-VTO) Education.

A curriculum change was made in 1990 which involved the (a) conversion of P-HRD to the core seminar Human Resources Development beginning fall 1990, (b) addition of Leadership as a core seminar beginning fall 1991, and (c) addition of a VTO Trends and Issues specialization seminar for second year students beginning 1992. A specialization in Computing and Information Technology (CIT) was added in 1993 and one in Health Care Education in 1994.

Human Resources Development (HRD) as a core seminar acknowledges the centrality of learning and the systemic nurturing of human resources. Computing and Information Technology (CIT) specialization seminars consist of Computer Information Networks and Database Management Systems. Understanding networks and systems is necessary to reengineer education and training.

This paper describes HRD in the Phoenix Cluster and developmental tasks in creating High Performance Learners and Leaders for Building Learning Communities with focus on cognitive sciences and contemporary technology.

TABLE OF CONTENTS

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Quality is not an act. It is a habit. Aristotle

LEARNING TO LEARN: THE CRITICAL COMPETENCY

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CREATIVE ORGANIZATIONAL PROTOTYPES

> I believe that there exists a possibility for a type of organization so fundamentally more creative than the traditional, authoritarian hierarchy that it is only dimly reflected, even in the most successful, current practitioners of new management principles.
>
> Peter Senge. Sloan School of Management, Massachusetts Institute of Technology.

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ABCs of 3 Rs: Rethinking for Restructuring and Revitalizing

A. Agricultural Era

During the Agricultural Era, the United States had education for the elite who attended private schools and colleges for the privileged destined for the professions. Apprenticeship training was available for people who were destined to become craftsmen. The U.S. invented the "common" elementary school and spread it, first in urban areas and then in rural areas. Then, the U.S. invented secondary education and spread it in a similar manner.

B. Business Industrial Era

The transition from an agricultural era to the business and industrial era was based on low technology and know-how and took place over a long period of time. As the U.S. emerged during the business and industrial era, the vocational track was added to the academic track. A general track was added to accommodate students whose needs were not met in the academic and vocational tracks.

Major expansion occurred in the 1940s and 1950s in all sectors of the economy, particularly manufacturing and services. Rapid advances in science and technology yielded global competition and modernization at an accelerating rate. Establishments that survived, modernized with new technology in the 1960s and early 1970s. During the late 1970s and the early 1980s, it became apparent that modernization of industrial era establishments was necessary, but insufficient. The surviving manufacturing sector establishments modernized several times with contemporary technology and then began to restructure. More important, however, a few establishments began to recognize the centrality of Human Resources Development committed to Total Quality with world class Benchmarking Standards.

Alternative education has been available since the beginning of time. There have always been two primary forms of education: (1) direct experience and (2) that which is transmitted from one member of a species to another via communications. Alternative education made considerable advances with the invention of telecommunications, a trend that will accelerate with electronic books and libraries, voice activated devices, and videoconferencing.

An analysis of alternative education for a workshop for the Department of Education of Arkansas in 1989, yielded the following categories of alternative education: contemporary traditional education (CTE), partial technological deschooling (PTD), collaborative lifelong learning (CLL), and outcomes based education (OBE) or solution based learning (SBL). In 1984, the New York Institute of Technology announced it was possible to complete a four-year degree program via personnel computer and modem. Technology intensive delivery systems were described in Any Home A Classroom (Halperin, 1984) and The Education Utility (Gooler, 1986). Nontraditional education today will be traditional education tomorrow.

Although the manufacturing sector of the economy began to fundamentally restructure in the 1980s, the service sector of the economy is lagging behind other sectors. Two extremely costly services are health and education. With regard to education, the U.S. ranks second in terms of expenditure for elementary and secondary education and ranks last or nearly last in math and all categories of science among industrialized nations. Health and education will be modernized and restructured. The key issues are: (a) based on what beliefs, values, and research; (b) designed on what principles; and (c) restructured by whom (Groff, 1991).

C. Cognitive Synapses and Communication Technologies

Leaders have begun to realize the centrality of the brain and research in the cognitive sciences. Advances in research and development yielded communication and information technologies that have made it possible to transmit data, video, and voice instantaneously and simultaneously almost anywhere in the world. Human resource development systems will be created based on contemporary research in the cognitive sciences and the latest research in communication and information technologies.

Curriculum designers must produce High Performance Learners and Workers by (1) achieving greater efficiency from contemporary programs and (2) inventing outcomes based learning -- applications and solution oriented.

A. AGRICULTURAL ERA

People	Education-Training	Outcomes
Elite	Schools and Colleges	"Professions"
Others	Apprenticeships	Craftsmen

B. INDUSTRIAL ERA

Privileged	Academic Vocational General	Quality
Disadvantaged	Drop-out	Inequality

C. ADVANCED TECHNICAL ERA

Any location a learning environment

RETHINKING, RESTRUCTURING, REVITALIZING

FROM POST - INDUSTRIAL ERA (PIE)

TO

EARLY TECHNICAL ERA (ETE)

TO

ADVANCED TECHNICAL ERA (ATE)

1970s 1980s 1990s 2000s 2010s

OVERVIEW OF PROGRAMS FOR HIGHER EDUCATION

Nova University is a nontraditional institution committed to developing practitioner oriented, problem solving, field-based doctoral programs. Nova developed doctoral program that are in the Abraham S. Fischler Center for the Advancement of Education beginning in 1972: (a) Child and Youth Studies, (b) National Education Leaders, and (c) Programs for Higher Education (PHE).

Professionals who enroll as students in PHE select one of five specializations: Adult Education; Higher Education; and Vocational, Technical and Occupational Education; Computing and Information Technology (CIT started in 1993); and Health Care Education (started in 1994).

Professional who have responsibility for vocational, technical, and occupational education, at whatever level, are admitted to the VTOE specialization in PHE. They are also admitted to the Child and Youth Studies (CYS) program which is offered in traditional and multi-tech formats.

Students enroll in clusters throughout the United States. Cluster coordinators provide assistance to students as the liaison between students and other program personnel. A regional cluster was created in the early 1980s for international students and for individuals living in remote areas. The first group of international students consisted of 14 individuals from Taiwan who enrolled in P-HRD in 1986 but dropped out of PHE because of Ministry of Education requirements which have since been relaxed. The name was changed to International Cluster in 1992.

Each student completes six core seminars, two specialization seminars, four practicums, two summer institutes, comprehensives, and a Major Applied Research Project (MARP). The core seminars are held one Saturday per month during the nine month academic year. Core seminars are also offered two weeks prior to the Summer Institute and in a special format for students in the International Cluster. This format provides a means for domestic students to accelerate or catch up. Two specializations are held in conjunction with the summer institutes with some work completed (a) prior to the summer institute, (b) during the summer institute and (c) following the summer institute.

The week-long summer institutes focus on a theme and provide opportunity to hear international and national experts on the topic as well as concentrate on seminars, practicums, and PHE program requirements. Students have the opportunity to hear students' whose practicums and Major Applied Research Projects were designated as outstanding.

HUMAN RESOURCES DEVELOPMENT

Curriculum Changes

A major curriculum change was made at the meeting of the Higher Education Director's Team in February 1990. The decision involved the (a) conversion of the vocational, technical, and occupational (VTOE) specialization seminar Personnel-Human Resources Development to the core seminar Human Resources Development (HRD) beginning fall 1990, (b) addition of Leadership as a sixth core seminar beginning fall 1991, (c) addition of a VTOE Trends and Issues specialization seminar for second year students beginning 1992, (d) elimination of Learning Theory, and (e) reduction of the number of practicums from five to four.

The Human Resources Development Seminar

Human Resources Development (HRD) has its origins in Personnel - Human Resources Development (P-HRD) which was one of two seminars in the vocational, technical, and occupational specialization. The other specialization seminar is the Emergence of Vocational, Technical, and Occupational Education (E-VTOE). P-HRD and E-VTO complemented each other very well in that the first had a focus on the workforce of the future and the other had a focus on the workplaces of the future. The seminar was flexible enough to accommodate professionals employed in education and training in a variety of contexts: health and human services, business and industry, government and the military, and schools and colleges. E-VTO had a focus on anticipating the impact of technology on workplaces.

Research

Research indicates that leadership consists of three processes: (a) analysis, (b) visions, and (c) action plans; can occur at three levels: (a) self, (b) organizational, and (c) societal; and involves three sets of competencies: (a) conceptual, (b) interactive, and (c) technical.

Conceptual Framework for HRD

HRD consists of three major topics: (a) an audit of HRD in the context in which each student works, (b) creating a vision for an area of responsibility, and (c) developing a multi-year HRD action plan for the vision. The audit could focus on analysis of mission, philosophy about service and shared governance, a vision, policies in handbooks and manuals, clarity in functions, and budget for HRD (see Attachment 2). A list of audit elements is in the "Instructions and Assignments" sent to students along with other useful information (see Appendix A).

HUMAN RESOURCES DEVELOPMENT

1. AUDIT HRD

MISSION
PHILOSOPHY
POLICIES
FUNCTIONS
BUDGET

2. VISION

STRATEGIC DIRECTION
PREFERRED SCENARIO
ORGANIZATIONAL DEVELOPMENT PLAN

3. HRD PLAN

CONCEPTUAL SKILLS
HUMAN RELATIONS SKILLS
TECHNICAL SKILLS
BUDGET

PHOENIX CLUSTER HRD

A cover memo, instructions and assignments information, and a study guide were sent to students in August. The cover memo provided the conceptual framework for HRD: (a) analysis, (b) vision, and (c) action plan. Another packet contained an article on the evolution of technology and an executive summary of Printing 2000 (1990).

Assignment #1 was an analysis of HRD in the student's work context. Specifications for the paper are included in the instructions. The paper is to be sent to the faculty member one week prior to the first session. The logic of this request is three-fold. First, although basic concepts for HRD are specified in the study guide and the textbook, the concepts should be understood in the contexts in which professionals work. For example, the history of HRD can be discussed in terms of the extent to which humans are viewed as a critical resource and for which programs are available to help in their development. Second, students enrolled in PHE expect teachers to be prepared. Teachers can be better prepared if they know something about the contexts represented by the professionals in the seminar. Third, learning experiences consist of acquiring the substance of the seminar and complying with the format requirements of PHE. Evaluation of papers prior to each session provides an opportunity to emphasize substance overlooked in the papers and provide feedback and assistance for the group and individuals during breaks and after class.

First Session

An orientation to Nova and PHE was conducted by the cluster coordinator the evening prior to the first session. Seminar sessions are divided into early morning (EM), late morning (LM), early afternoon (EA), and late afternoon (LA) periods. EM consisted of an overview of HRD, discussion of basic concepts, and five minute presentations of HRD in students' work contexts. Professionals are given a sheet on which to record significant concepts and the implications for their work context (see Attachment 3).

Nine of 12 professionals were from Arizona, three were from New Mexico. Several professionals were employed in a number of colleges in the Maricopa County Community College District. Kenneth M. Schultz is the Executive Director of the Business and Industry Institute (BII) of Mesa Community College; he is a unit vice president of a major off-campus operation established to serve business and industry in a non-traditional way. BII's origin dates back to 1985. A new partnership was formed between Mesa Community College (MCC) and Motorola University (MU). MU, located in Schaumberg, Illinois, is a major commitment on the part of an international corporation to train a world class

RETHINKING, RESTRUCTURING, REVITALIZING

SIGNIFICANT CONCEPTS	IMPLICATIONS
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	

workforce. Ken distributed materials and discussed a BII card on "Our Mission: We Maximize Peoples' Opportunities"
An Unwavering Commitment to Quality in Education,
Acknowledge the Worth of Individuals,
World Class Total Customer Satisfaction,
Integrity in All We Do,
Pride in Ourselves, Our Workplace and in Our Work,
Financially Self-Sustaining, and
Innovation and Vision (see Attachment 4).

Ken discussed the change in culture due to the MCC/MU Partnership and the MU Six Sigma approach to Total Quality Management. Motorola, Inc. won one of the first Malcolm Baldridge Quality Awards in 1989 established under Public Law 100-107.

Norman C. Hintz is vice president for business affairs at Northern Arizona University (NAU). He discussed the Arizona Board of Regents' Strategic Plan Toward the Year 2000. NAU is well known for the Center for Excellence in Education which has won numerous awards. The Center delivers comprehensive teacher preparation and graduate programs through nine field sites. The Center works with community colleges to provide fully articulated, four-year sequences so that aspiring teachers can remain in their communities and pursue a degree. With the addition of a new C-band satellite uplink dish, the University is able to deliver instruction through electronic technology to the entire western U.S.

Steven J. Tourville discussed CAE-Link Corporation which "is the industry leader in the design, development, integration of advanced simulation hardware and training systems worldwide" (see Appendix C). James R. Frazier discussed Central Training Academy which provides standardized training in safeguards and security for about 110,000 personnel assigned to the U.S. Department of Energy at sites throughout the country (see Appendix D). Wayne G. Gautreau discussed computing and information technology at Chandler-Gilbert Comunity College (see Appendix E). Karen Hoblit discussed the High Tech Complex at Glendale Community College which provides 42 open entry/open exit courses for 23 disciplines (see Appendix F).

LM consisted of discussion of basic concepts of HRD, the need for clarity in mission and vision, and creating a vision and a preferred scenario. Clarity in mission and vision with preferred scenario is a necessary prerequisite to clarity in action plan and effective use of resources. The extent to which people participate in the co-creation of mission and vision is directly related to their commitment to transforming a preferred scenario into reality.

Our Mission

WE MAXIMIZE PEOPLES' OPPORTUNITIES

MESA
COMMUNITY COLLEGE

Business & Industry Institute

WE MAXIMIZE PEOPLES' OPPORTUNITIES

Our Values

An Unwavering Commitment to Quality in Education

Acknowledge the Worth of Individuals

World Class Total Customer Satisfaction

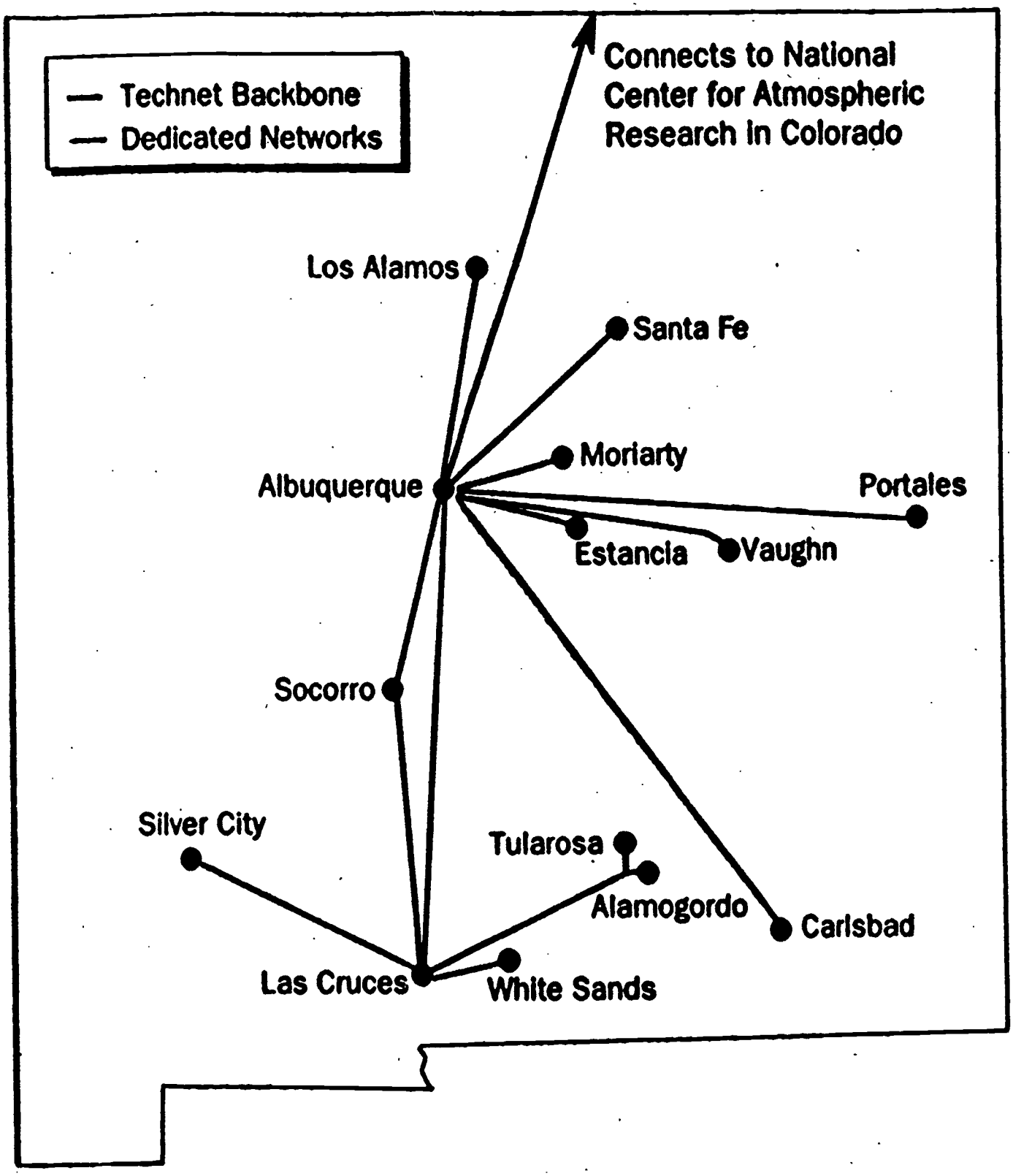
Integrity in All We Do

Pride in Ourselves, Our Workplace and in Our Work

Financially Self-Sustaining

Innovation and Vision

New Mexico's Technet Network



Visioning and scenario development has evolved over the past several decades. During the 1960s and 1970s most of whatever energy was devoted to strategic planning assumed the continuation of contemporary traditional education as the dominant means of human resources development. Visions were based on a number of internal and external demographic, social, economic, technological and governmental planning variables and scenarios that were developed could be classified as (a) expansion, (b) steady state, or (c) contraction based on the mix of above-mentioned variables.

The University of Wisconsin System had one of the most sophisticated planning systems in the 1970s with categories for assumptions about future conditions and categories for goals. In 1977-78, North Central Technical College, Ohio, began a planning process which included a detailed analysis of contextual variables which were extrapolated through the 1980s for business, engineering, health, and public service programs. Then, assumptions were specified using ten categories at institutional and program levels (Groff, 1986). NCTC then specified strategic directions as follows:

1. Information Processing
   A. Computer Literacy
   B. The Office of the Future or the Paperless Office
2. Electronic Delivery of Educational Programs and Services
   A. Interactive Diagnostic and Instructional Systems
   B. Tecommunications and Teleconferencing Systems
3. High Technology
   A. Advanced Machine Tool Design
   B. Microelectronics
   C. Robotics
   D. Lightwave Circuit Technology

NCTC then created a conceptual framwork with data and information processing at the core of its business of primary and support programs (see Attachment 5). The conceptual framework was the basis on which decisions were made for certificate and degree program upgrading, HRD programs, technology purchases, and building renovations. Students took a modified Myers Briggs test used to group professionals for visions co-creation.

EA was a discussion of HRD projects and instructions for the vision assignment. Throughout the presentation of basic concepts, professionals were asked to concentrate on the identification of an HRD project. Appendix B contains the instructional materials used in the presentation. LA consisted of vision creation for the HRD projects.

A memo was sent between session #1 and session #2 to provide additional information about Assignment #2 and to share results of diagnostic information (see Appendix A). Practicum help was held the evening before the next session.

Second Session

Assignment #2 was a vision for an HRD project. After some preliminary remarks, some students made a five minute presentation. Conceptual frameworks were distributed for the vision. Students recorded significant concepts and implications for their work context. Ken Schultz commented on Teaching the Elephant to Dance (Belasco, 1990). The former director of Motorola University West recently established a training center in Beijing, China. Training is also offered in Hong Kong, Kuala Lampur, and Singapore through the Asia Pacific Regional Center in Singapore. Norm Heintz commented on the Center for the Study of Higher Education's conference on "Restructuring Arizona's Universities" (see Appendix B). Comments were made about New Mexico's Technet Network by which high school students at Espanola Valley High School can work on a supercomputer at Los Alamos National Laboratory (Watkins, 1993) (see Attachment 6). Ron Bleed, Vice Chancellor for Information Technologies at MCCCD, discussed "Community Colleges: Using Information to Harness the Winds of Change" (Bleed, 1993).

EA consisted of discussion of basic concepts and an explanation of how to transform a preferred scenario and strategic directions into a multi-year action plan for the HRD project. Numerous examples were presented which were extensions of conceptual frameworks introduced during the first session. The NCTC strategic direction of information processing through computer literacy set in 1979 were clarified for students and college personnel (see Attachment 7). All persons should have the competency of reading a printout. Most individuals should be able to use word processing equipment as input. Student and faculty in some programs needed application competencies in computer aided design (CAD), computer aided manufacturing (CAM), inventory control and Statistical Quality Control (SQC). What were the competencies and skills needed by "knowledge workers" of the late 1970s and the 1980s? What goals and objectives had to be set and HRD programs developed and implemented to achieve modernization with contemporary technology.

Shelby State Community College developed an enrollment management system around the concept of "Student Success" which included institutional outreach, inquiry response, admissions, enrollment services, registration and retention. Following the co-creation of the conceptual framework (see Attachment 8), institutional units were identified that would take lead responsibility for each part of the conceptual framework. A detailed functional analysis yielded specific tasks that had to be performed. What goals and objectives would have to be set to achieve effective enrollment management? What customer service HRD programs would have to be implemented to achieve total quality?

ELEMENTS OF THE STRATEGIC GOAL OF COMPUTER LITERACY 1979

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

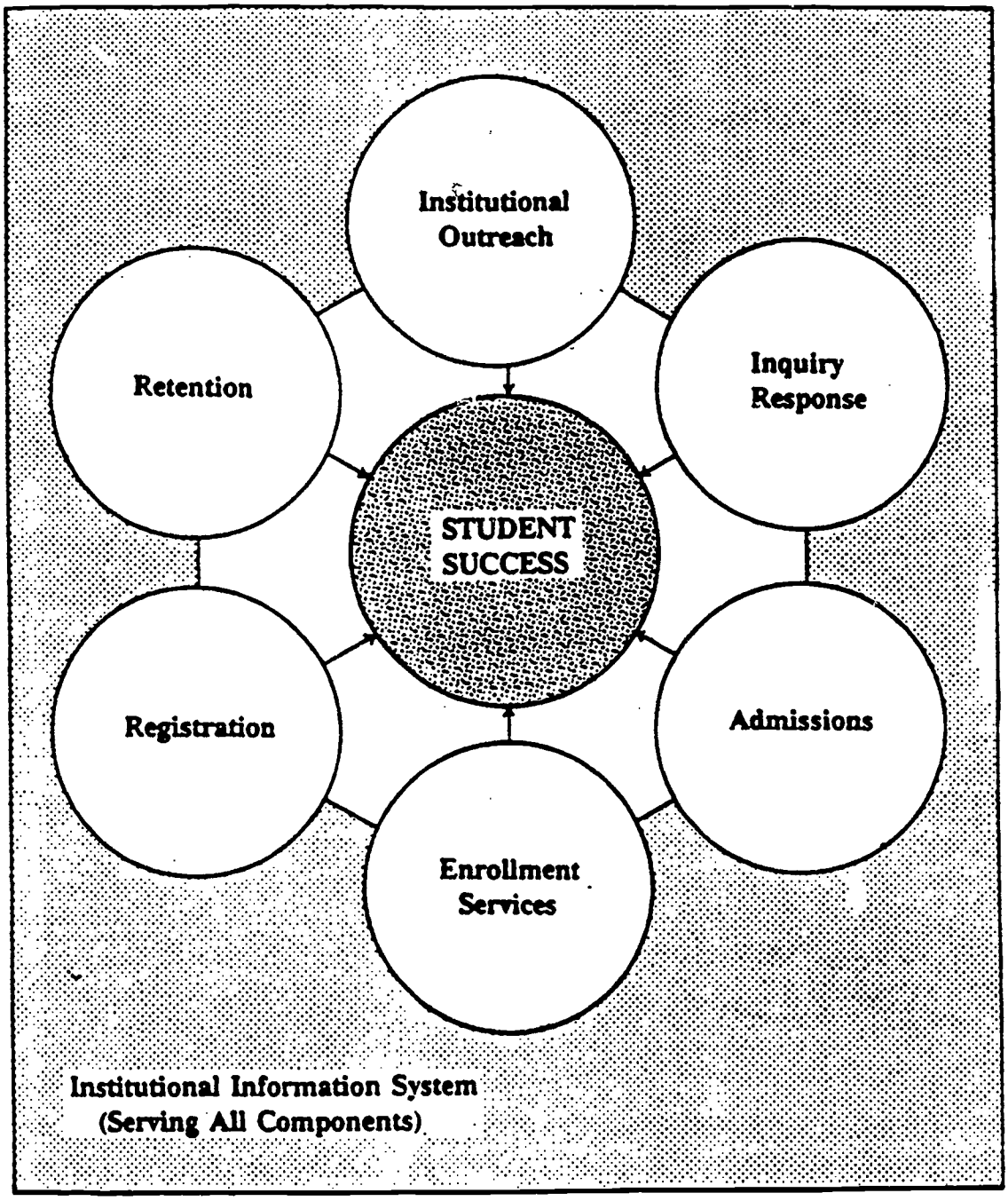
Upgrading Student Data Base

Test Grading

Use of Word Processing Equipment as Input

Reading a Printout

ENROLLMENT MANAGEMENT SYSTEM



America 2000 provides a conceptual framework for a multi-year action plan for readiness (Goal 1) and other important areas such as math and science (Goal 4). The U.S. must find better ways of developing human resources in math, science, and technology to be competitive in the 21st Century. Goal 4 has three objectives:
1. Math and science will be strengthened throughout the system, especially in the early grades.
2. The number of teachers with a substantive background in mathematics and science will increase by 50 percent.
3. The number of U.S. undergraduate and graduate students, especially women and minorities, who complete degrees in math, science, and engineering will increase significantly.

The multi-year plan can be based on the adoption of standards set by the National Council of Teachers of Math, Project 2061 with benchmarks, and technology (Science for All Americans, 1991, and Benchmarks for Science, 1993). What goals and objectives should be set to raise levels of awareness of advances in science and technology and the impact on workplaces and workforces? What goals and objectives should be set to raise the level of awareness and understanding about globalization? What goals and objectives should be set for creation of open entry/ open exit curriculum? What goals and objectives should be set for continuous quality improvement toward standards?

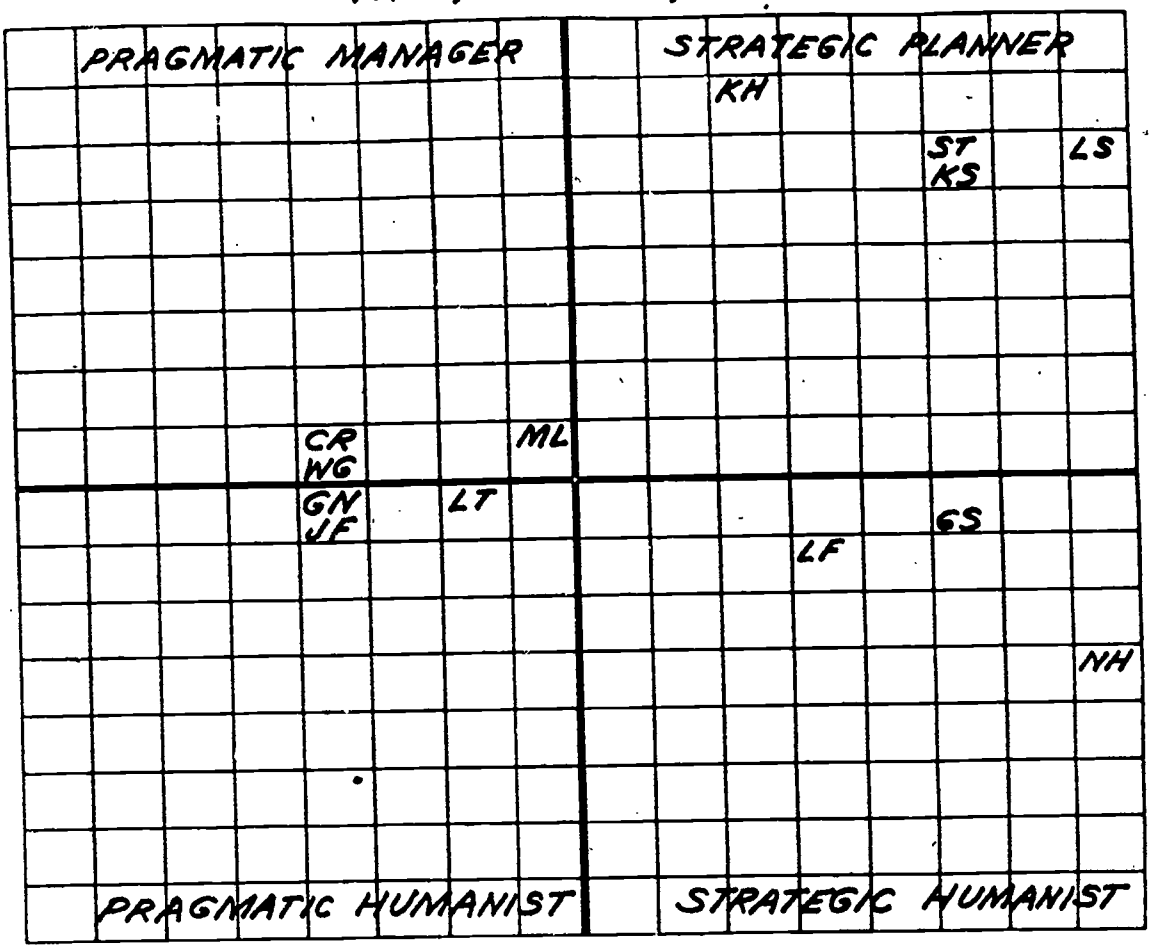
Students specified goals and objectives and then methodology for HRD projects. In each of the two sessions, students were grouped by similarity in planning preference. That is to say, students co-created part of the vision and action plan with other persons with similar predispositions. Strengths were highlighted for each of the four planning predispositions. A comparison was made between the South Florida Cluster and Phoenix Cluster. A comparison was also presented for changes in preference over the three year span between Leadership I and Leadership II in a national multi-tech Child and Youth Studies program. The second session concluded with comments about practicum ideas, the oral presentation and the final examination.

A memo was sent between session #2 and session #3 to provide additional information about Assignment #3. Practicum help was held the evening before the next session.

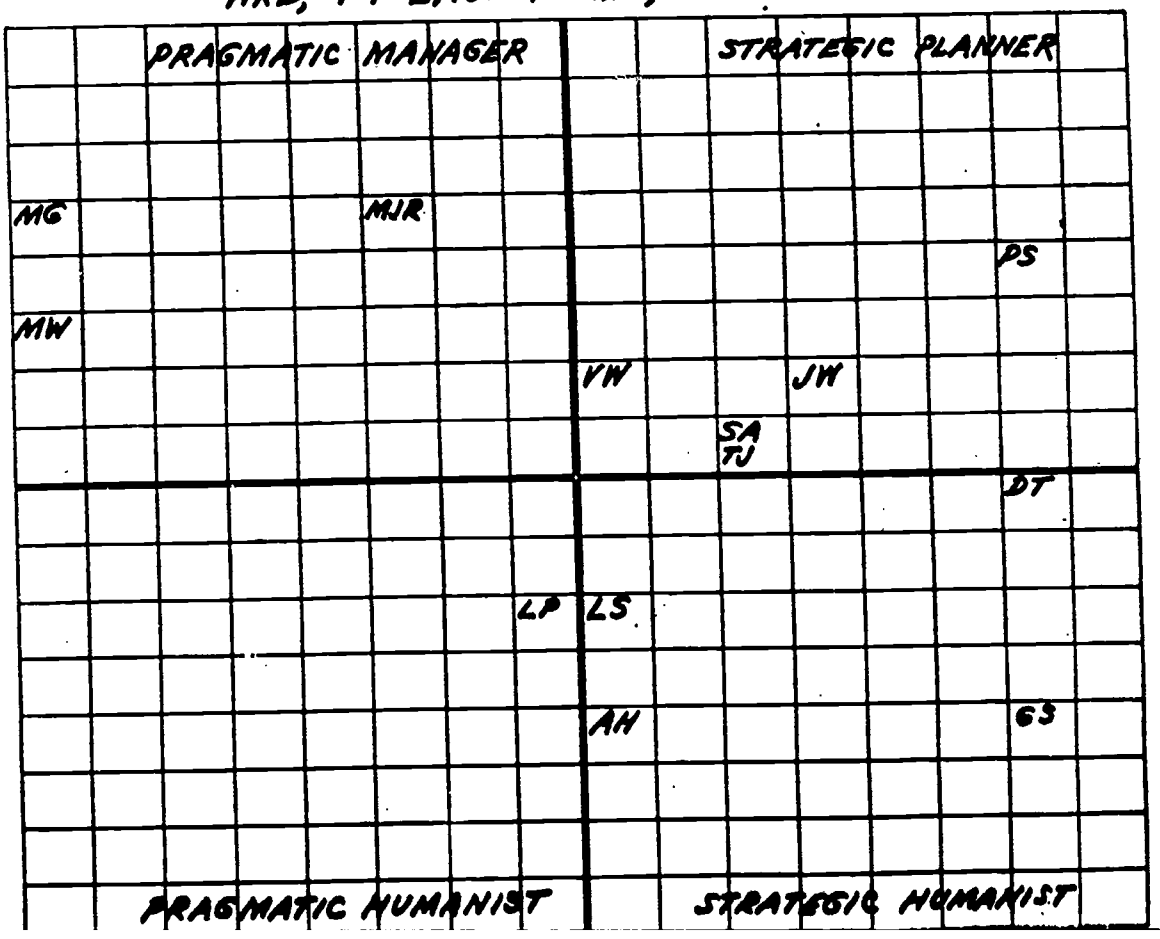
Third Session

Assignment #3 was a multi-year action plan for the HRD project. Each student made a five minute presentation on the project. Sheets were distributed on which students recorded significant concepts and implications. LM was a discussion of significant concepts, including the cognitive sciences and technology. EA was a discussion of practicum ideas. LA consisted of the written final examination.

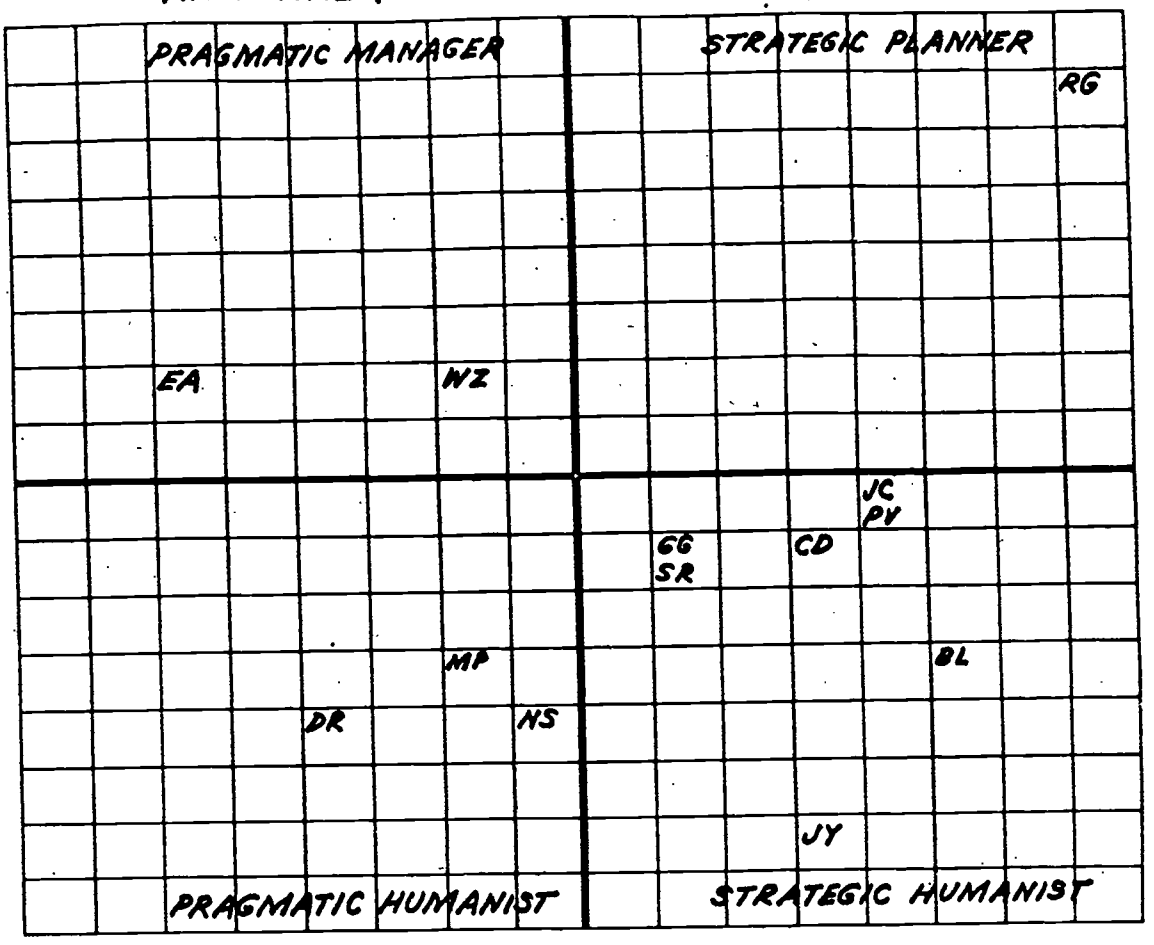
HRD, PHOENIX, FALL 1993



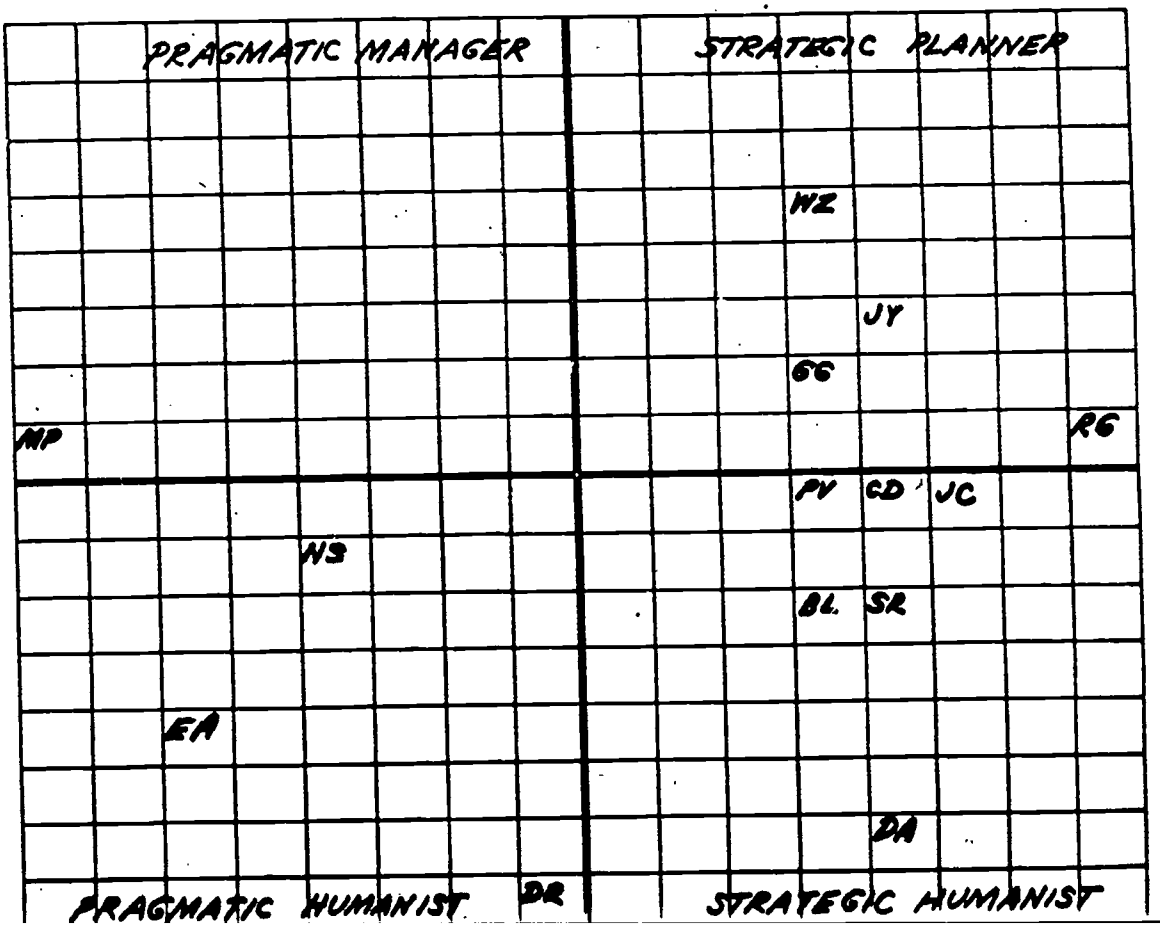
HRD, FT LAUDERDALE, FALL 1993



NATIONAL (MULTI-TECH) CLUSTER I, FEB 1991



NATIONAL (MULTI-TECH) CLUSTER I OCT 1993



HIGH PERFORMANCE LEARNER AND LEADER

Ultimate Purpose

The ultimate purpose of graduate and postgraduate education is to design programs to promote improvement in the quality of services that are provided in a variety of different contexts and systems -- health and human services, business and industry, government and public service, and education and training. To achieve that ultimate purpose, professional educators engage in basic and applied research, analyze and synthesize vast quantities of information, and create conceptual frameworks and action plans for the preparation of leaders for the above-mentioned contexts. PHE's mission is to produce high quality graduates in five specializations who are Human Resources Development Design Engineers. Thus, one ultimate outcome of PHE is to empower self-directed "Learner Leaders" who can either (a) achieve greater efficiency and effectiveness from contemporary education and training programs or (b) design more efficient and effective education and training programs.

A High Performance Learner and Leader (HPLL) in the 1990s needs better competencies and newer skills than a manager needed during the expansion era of the 1950s and 1960s or for the modernization era of the 1970s and early 1980s. Modernizing education and training in the 1970s and 1980s was difficult during a period of major advances in science and technology which impacted on workplace and workforce needs. The transition from an industrial era to an early technical era was complex and fast. However, the transition from the early technical era to the advanced technical era of the late 1990s and 21st century will be even more complex and occur at an even faster rate. What then should be the vision and action plan that is likely to yield world class HPLL? An examination of titles of reports of the VTOE specialization indicates a historical sequence of change in program emphasis that suggests direction:

Preparing Agents for Change	1984-85
Preparing Transformational Leaders	1986-87
Preparing Strategic Thinkers	1998-89
Preparing Transformational Leaders for Fundamental Restructuring	1990-91
Building Learning Communities	1992

Conceptual Framework for Competencies of a HPLL

Analysis of a number of concepts is important as a prelude to thinking about program components and formats. First, all HPLLs need to understand the PAST, the PRESENT, and have some meaningful learning experience in anticipating the FUTURE. Second, all HPLL need to understand issues such as access, cost, productivity, quality, restructuring, revitalizing, synchronizing, and thinking globally.

ERAS	ISSUES
PAST	ACCESS
	COST
	PRODUCTIVITY
PRESENT	QUALITY
	RESTRUCTURING
FUTURE	REVITALIZING
	SYNCHRONIZING
	THINKING GLOBAL

"FUTURE PULL" PLANNING

	Creation	Co-Creation
ANALYSIS	External Environment (Past, Present, Future) Internal Environment (Past, Present, Future)	
VISION		
ACTION PLAN		

Access

The PAST of ACCESS is well documented in research literature. The PRESENT of ACCESS includes dimensions of the MIND and SYSTEMS. From the perspective of the MIND, acknowledge that the left hemisphere and the right hemisphere perform different functions. Beyond that, there may not be much agreement on types of intelligences or neurolinguistic programming (see Appendix B). The education system programs students to use primarily one side of the brain. From the SYSTEMS perspective, ACCESS to the electronic highways is the civil rights issue of the decade and will become increasingly more important in the 21st Century. Ponder the following advances in technology:

In 1955, it was hand set type and the platen press.
In 1981, it was the PC.
In 1985, it was desktop publishing.
In 1989, it was voice activated technology and desktop presentations with sophisticated graphics.
In 1993, it was voice activated typewriters and electronic books.
In 1994, it is multilingual continuous voice activated desktop videoconferencing which minimizes geographic, language, physical and temporal restrictions.
In 1995, it will be asynchronous transfer mode (ATM) technology on a PC.

Principle and Questions

Without access to the latest in contemporary technology, a learner is receiving less than a complete education. What are the implications of raising awareness and understanding about advances in science and technology and access to technology for PHE? What are the implications for rethinking the PHE components (seminars, practicums, and MARP) to provide access to existing NSU technology and the delivery of PHE in a multi-tech format?

Cost, Productivity, and Quality

The PAST and PRESENT of COST, PRODUCTIVITY, AND QUALITY is well documented in research literature. The State Higher Education Executive Officers (SHEEO) published a series of publications relating to the above-mentioned issues. The Tuition Dilemma - State Policies and Practices for Pricing Public Higher Education (1993) suggests that "the setting of public higher-education tuition is shaping up as the issue of the nineties. From New York to Hawaii, governing boards, legislators, and students and their parents are debating the appropriate balance between access and cost and between state support and individual contribution." The SHEEO series on productivity include Faculty Workload: State and System Perspectives (Russell, 1992) and An Agenda for Reshaping Faculty Productivity (Heydinger, 1992).

The evolution of the focus on quality and standards began with the decline in the U.S. in manufacturing superiority and later spread to the service sector of the economy, including education at all levels. Manufacturing establishments responded with techniques such as Statistical Process Control (SPC) and Statistical Quality Control (SQC). A few manufacturing establishments in the U.S. used SPC and SQC, but far more corporations in Europe and Pacific Rim countries place greater emphasis on quality outcomes with standards. The decline in quality in the U.S. led to loss of market share of goods and services, hence jobs. SPC and SQC led to many different approaches in manufacturing that are total quality techniques. A few colleges that began to teach total quality techniques in the 1980s began to try the ideas in their institutions in the early 1990s.

Principle and Questions

Strategic planning and total quality techniques are human resources development strategies to assist individuals and establishments through the processes of (a) analysis, (b) vision co-creation, and (c) multi-year action plan development. Analysis consists of an audit of the internal environment and an assessment of the external environment. To what extent should HPLL be expected to demonstrate competencies and skills in analysis of internal and external environments and then be able to co-create a preferred scenario and develop a multi-year action plan with continuous quality improvement which holds the potential of leading toward world class benchmark standards? What are the implications for PHE for students who may want to do that through ATM or other comparable technology?

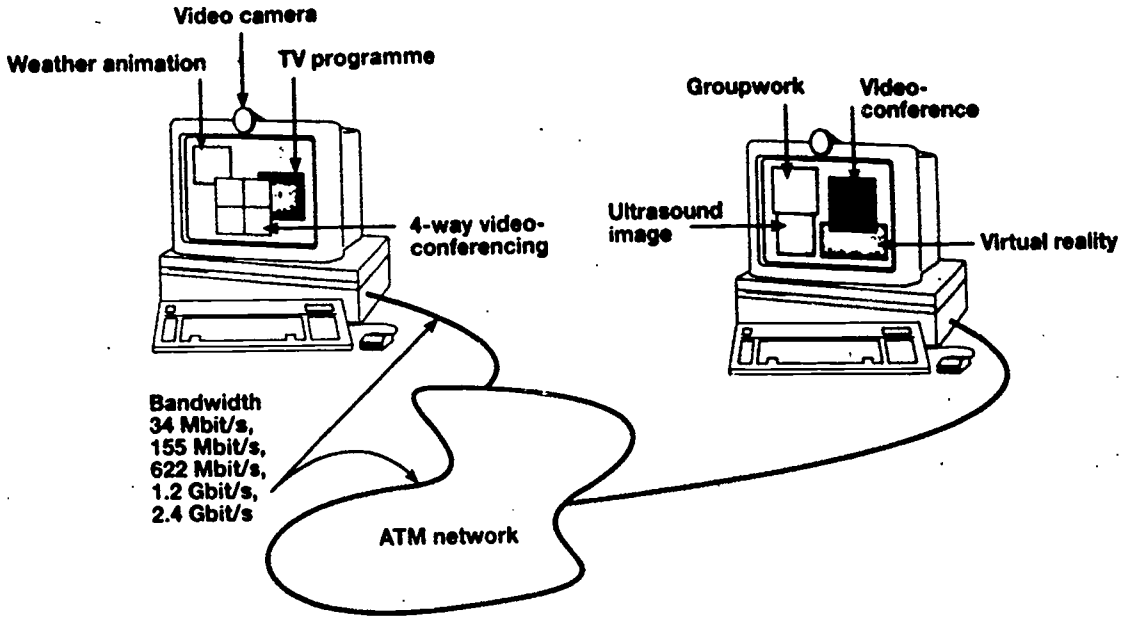
Restructuring and Revitalizing

The industrialized nations of the world and several other newly industrialized countries are transitioning through the early technical era and speeding toward the advanced technical era of the 21st Century. A few years ago who would have imagined the following:

Collapse of the U.S.S.R.
Breakdown of the Berlin Wall
Reunification of Germany
Trade with China
Peace over Vietnam
Coalition in Persian Gulf War
Coalition in Somalia

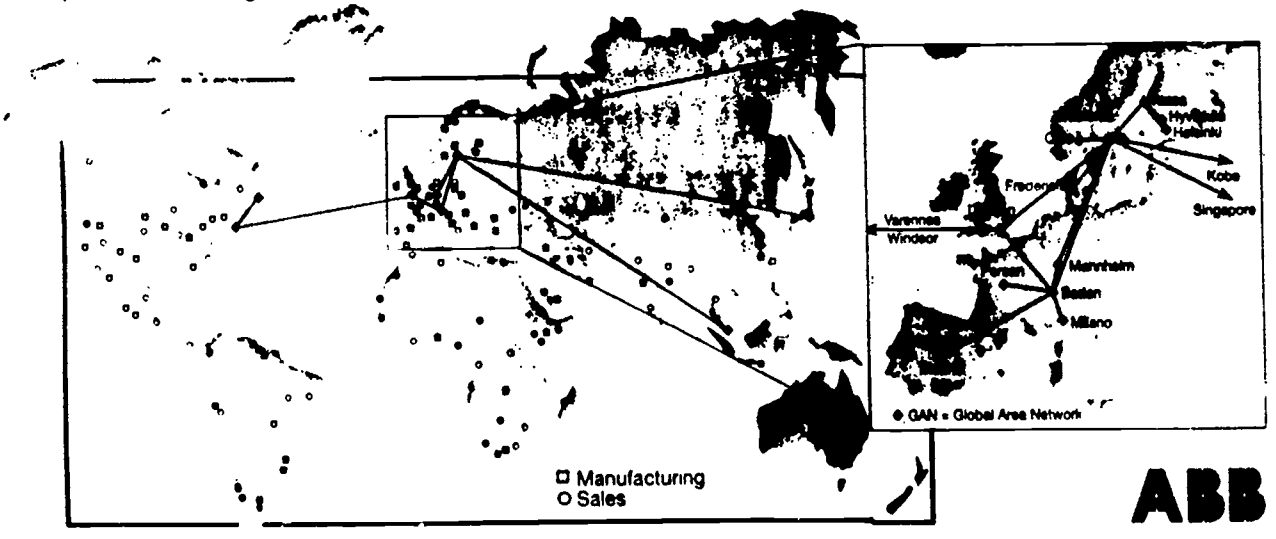
Restructuring is affecting every aspect of economies, life, and society. Restructuring followed modernization in the 1980s, first in manufacturing and then in the service sector of the economy and society. Contemporary traditional education and training is being restructured and new American schools are being designed and implemented.

BROADBAND APPLICATION ENVIRONMENT



ATM

ABB Corporate Network and Major Locations Worldwide



ABB

Principle and Questions

People are surrounded with technologies, undreamed of a generation ago, which make it possible to transmit data, voice, and video instantaneously almost anywhere in the world and simultaneously in several different languages. Although these technologies are becoming commonplace in business and are sometimes available to children in homes, they remain largely unused in traditional education. Contemporary communication and information technologies hold the potential for (a) re-engineering traditional education and (b) creating entirely new info era learning communities. To what extent should PHE students be aware of conditions of schools and understand the restructuring that is occurring?

The PHE curriculum consists of six core and two specialization seminars. The core seminars are arranged in any sequence, a pattern that was established based on the availability of faculty to teach the seminars. PHE enrolls professionals in any term. The largest number of enrollees tends to begin the sequence in the fall. Because of the large number of enrollees in the South Florida Cluster, first seminar students were placed in one section and other students were placed in a second section. The Phoenix Cluster had numerous professionals taking their first seminar but also had two students taking the last seminar. The sequence of seminars in South Florida, Phoenix, and a preferred sequence through a multi-tech format based on research at 1992 summer institute are as follows:

	South Florida	Phoenix	Multi-tech
Fall	HRD	HRD	HRD
Winter	Research	Leadership	Societal Factors
Spring	Leadership	Governance	Research
Summer	Specialization	Specialization	Specialization
Fall	Societal Factors	Curriculum	Curriculum
Winter	Curriculum	Societal Factors	Leadership
Spring	Governance	Research	Governance
Summer	Specialization	Specialization	Specialization

It was recommended that new students in the Phoenix Cluster take Research prior to the summer institute in Phoenix. What are the implications for restructuring PHE?

Synchronizing and Revitalizing

Global learning communities have been evolving rapidly for the past several decades as can be seen in the increase in partnerships between multi-national private sector group alliances and in the distance education movement.

Global commerce is providing the impetus for the use of contemporary communication and information technologies in the delivery of education and training. Asea Brown Boveri (ABB) is the world's largest electrical engineering group and is renowned for its research, product development, low

cost manufacturing, and the transfer of technology and know-how. ABB is a highly decentralized organization with business units distributed in 140 countries, employing over 200,000 people, with a net sales in excess of $30 billion U.S. (Telegate, 1993). ABB Corporate Network, ABB-CN, is used to communicate accurately and quickly through the concept of open communications which uses many types of transmittal media: data, text/fax, voice or image video. ABB-CN has been developed to provide various types of communications capabilities around the world for the exchange of drawings, proposals, and technical information.

In Finland, ABB operates via a nationwide conglomerate of independent companies, ABB Group Oy, divided into more than 40 operating locations dispersed around the country with the head offices in Helsinki. ABB Group Oy makes use of the latest communications technologies, including Telecom Finland's full service concept known as Telegate. On May 3, 1993, Telecom Finland announced the world's first commercial ATM (Asynchronous Transfer Mode) which initially connects Helsinki with Tampere, 200 km to the north (Heinanen, 1993). ATM is a fast packet switching technique to transmit data in short, fixed size cells of knowledge efficiently at very high rates. Thus, Finland was the first country in the world to implement an ATM distributed multimedia communication network for the transmission of data, voice, and video simultaneously at speeds 1,000 times greater than had been possible prior to that date. The pilot will last one year, during which it will evolve into full production of this strategically important new backbone technology.

Telecom Finland is also in numerous projects using mobile technology (Mobile, 1993). In cooperation with the National Research Centre for Welfare and Health, four communities volunteered to apply mobile communications to areas of health and welfare beginning in 1987. Ulvila, in western Finland, wanted to focus on the day care of children to improve the cooperation between parents, kindergarten, and community personnel. The results have been impressive. Beyond the clear savings in expenditure, the results have yielded (a) changes from a hierarchial structure of work to horizontal interactive networking; (b) changes in self confidence, communication skills, motivation to improve skills, and new possibilities to work better; and (c) creative meetings between producers and providers of health and social services. The producers had not envisioned all the possible applications of the new mobile communication technology and the social workers had not imagined all the possible application of the technology -- solutions to problems. Consumers and providers who use contemporary communication and information technologies are more likely to continue to use such systems in whatever role they perform -- care giver, educator, or health services provider.

Principle and Questions

Synchronizing education and training with the world of which it is a part has been a constant challenge and will play an increasing role in the evolving global economy and international learning communities. Students in elementary and secondary schools in "have" communities are already interacting with peers in several different countries. What are the implications for PHE for synchronizing content with the world of which it is a part? What are the implications for PHE for thinking global in program delivery?

Summary

Each of the above-listed issues, and others, would require lengthy discussion. Even without such discussion, a "bottom line" set of characteristics includes the conceptual, interactive, and technical competencies to take a HRD problem, analyze it in terms of the external and internal environments and share the results of the analysis with others who are affected by it. Second, a HPLL should be able to create a vision of a solution to the problem and co-create that vision with others, possibly first with people who have similar predispositions and then with people who have dissimilar predispositions. Third, a HPLL should be able to transform the vision into a multi-year action plan with organizational development and human resources development components which are in harmony with each other and synchronized to workplace and workforce needs.

From this analysis, it is apparent that the present format could be enhanced through the use of a multi-tech format. Furthermore, HRD should be the first seminar in the sequence. It is in HRD that professionals can clarify their Personal Program Plan (Triple "P") and continue to clarify a concentration, possibly even designate one.

* * * * * * * * *

TECHNOLOGY

> Technology is the primary vehicle by which institutions of higher education are going to re-engineer the teaching and learning process.
>
> Robert C. Heterick, Jr., President, EDUCOM
> The Chronicle of Higher Education
> October 7, 1992, p. A-17.

CONCLUSION

PHE has added HRD to the series of core seminars. The HRD core seminar description is stated as follows:

> This seminar treats the development of human resources within organizations. Contemporary theory, research and practice are explored. The quest to improve organizational effectiveness ultimately rests on the philosophical conviction that people are the essential capital assets. Thus, the seminar views the more effective organization of the future in terms of the strong relationship between organizational development and human resources development strategies.

The conceptual framework for the HRD core seminar consists of (a) an audit of HRD within the student's work context, (b) a vision of a strategic direction and preferred scenario for an area of responsibility within each student's work context, and (c) the creation of a multi-year HRD action plan including conceptual, interactive, and technical skills with budget estimates for implementation..

First, the HRD faculty must facilitate the seminar from the heart because the course is the soul of PHE. Second, PHE must make a Total Quality Commitment to Human Resources Development. Third, PHE must develop a multi-tech option. The HRD core seminar should be the first seminar in the multi-tech format so that each student can understand more fully the centrality of learning and create a Professional Development Plan for maximizing growth throughout PHE.

Numerous issues will be important in the 1990s. No issue will be more important, however, than assembling the critical mass of Human Resources Development Systems Engineers who will design and implement forms of alternative education which will produce a critical mass of intellectual capital, High Performance Learners and Leaders, who can create Learning Communities in an Advanced Technical Era.

* * * * * * * * * *

CREATING SOMETHING NEW AND FRESH

> The major task for society and the economy is to create something new and fresh as opposed to just improving on the old.

Peter Drucker. Innovations and Entrepreneurship Principles and Practices. New York, NY: Harper and Row, Inc., 1985.

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Telecommunications Infrastructure

Today, a modern telecommunications infrastructure is what the railroads were at the turn of the century. The communities that have information age systems will prosper and those that don't will become ghost towns. Likewise, those communities that take advantage of the relationship between telecommunications and socioeconomic factors will be assured of new jobs, growth, and a high standard of living.

Southern Bell

APPENDIXES

A. Welcome Letter, Instructions and Assignments, and Supplemental Memoranda
B. Instructional Support Materials
   Examples of HRD Vision and Action Plans
C. CAE-LINK Training Operations Strategic Action Plan - Steven J. Tourville *
D. Central Training Academy Human Resources Department Plan of Action - James R. Frazier *
E. The Creation of Functional and Discipline Specific Remote Computer Labs for the Implementation of Computing and Information Technology Across the Curriculum at Chandler-Gilbert Community College - Wayne G. Gautreau *
F. Action Plan Towards Development and Implementation of an Interactive, Multimedia Computer Program - Karen E. Hoblit

* Human Resources Development was their first seminar.

* * * * * * * * * *

A "Third Wave" Electronic College

Judith W. Leslie uses Toffler's The Third Wave to develop an educational institution in an advanced technical era dominated primarily by electronic media.

> This methodology would allow the learner to proceed at his/her own rate and style, within his/her own time period, at his/her desired location, drawing upon learning materials from throughout the country and the world. Computer science and electronics courses and programs of study would be an integral part of the curriculum. Faculty would be cross-trained in a variety of disciplines and teaching styles. They would have flexible work schedules and loads and might share an assignment with a spouse or colleague. Many faculty would instruct from their home or electronic cottage....
>
> Judith W. Leslie. "As The Third Wave Approaches Higher Education: Planning For the Electronic Institution," CAUSE/EFFECT, January 1981, Vol. 4, No. 1, p. 15.

APPENDIX A

Welcome Letter, Instructions and Assignments, and Supplemental Memoranda

TO: Students in the Phoenix Cluster

FROM: Warren H. Groff

RE: Human Resources Development (HRD) Seminar

DATE: August 1993

It is with a great deal of anticipation that I write to you about the HRD seminar. I am exceedingly pleased that we will be working together on a series of learning activities that will be challenging, exciting, and relevant to you. I will do my best to make it a very rewarding experience.

We are privileged to live during an extraordinary time -- the turning of an era. The world is passing from an industrial era to a technical era based on rapid generation and use of information. The key economic resources will no longer be raw material extracted from earth and unskilled and semiskilled labor. The essential resources are information and knowledge used by individuals, hence the need for HRD.

The conceptual framework for HRD is (1) analysis, (2) vision and (3) action plan. The specific assignments for this three part conceptual framework are described on the attached "Instructions and Assignments for HRD." We will discuss ideas for practicum proposals which could lead to ideas for Major Applied Research Projects (MARPs).

I really look forward to working with you so that you have an extremely rewarding experience in our program.

Instructions and Assignments for Human Resources Development

The purpose of this document is to provide instructions and assignments for the Human Resources Development Seminar. The first date on which we will meet is October 9, 1993.

Research indicates that most change is attributable to human resources who use technology. Research about HRD indicates that a leader must (1) analyze strengths and weakness of the existing context, (2) develop a vision of the future, and (3) specify an action plan. These three activities are the conceptual framwork of the HRD seminar.

Each student should read the Study Guide, textbook, and primary references before starting the first assignment.

Assignment #1. Analyze the strengths and weaknesses relative to HRD of the context in which you work. You should state the mission and describe the functions of your establishment and then discuss the philosophy and policies that deal with HRD. You could analyze your establishment's strategic plan and the extent to which HRD is a part of the plan. You could analyze HRD programs and activities. (See attached list). You could analyze human behavior within the establishment. Relate theory and research with practice.

The body of your paper shall not exceed ten (10) type written, double spaced pages excluding charts, tables, bibliography, and appendices. The paper must be in my possession by Friday, October 1, 1993, so I can review the assignments before our first meeting. Use the Publication Manual of the American Psychological Association. Staple your paper in the upper left corner. Do not use binders or folders. These specifications apply to all papers. Please send a Vita or Resume with the first paper. Use mail that does not require my signature. Mail your paper to Warren H. Groff, 1531 Peabody Avenue, Memphis, TN 38104. (901)-725-5287. My e-mail code is groffw.

Because students can learn a great deal from an analysis of other contexts, each person will make a brief presentation of no more than five minutes about the context in which s/he works. Handouts and a visual or two would be most appropriate. We will discuss significant concepts and their implications. I will set the stage for the second learning experience and meeting.

Assignment #2. Create a vision of the future and a preferred scenario for an HRD project of interest to you. Strategic thinking should produce a long-term vision of the future based on an analysis of alternative scenarios and the specification of a preferred scenario. The vision of the 1990s should be based on an analysis of a broad range of demographic, social, economic, technological, and political

variables. A project could be content-centered or process-centered but should focus on some HRD activity for which you have some responsibility. For example, perhaps you have responsibility for writing across the curriculum, a comprehensive learning center, or student learning outcomes assessment. What is your vision of the future and your preferred scenario based on HRD internal strengths and weaknesses and external opportunities and threats? What are the HRD requirements to achieve the preferred scenario?

Assignment #3. Develop a multi-year action plan for HRD for your project. What conceptual, human relations, and technical skills should people acquire to improve quality?

Each person will make a brief five minute presentation during the morning session. You shall distribute a copy of your multiyear action plan. We will synthesize significant concepts and their implications. I will give the final examination required of core seminars and we will discuss ideas for a practicum in HRD.

The Nova University field-based docotral programs are intended to produce agents of change. If you know someone who is interested in pursuing a field-based practitioner doctoral program, feel free to invite her/him to class.

Documents You May Find Of Interest

ED 272 772 Perspectives on the Education and Training System of the Future. Paper written for ERIC Clearinghouse at The Ohio State University.

ED 280 538 The Learning Community of the Future: Education and Training in the 21st Century. Paper presented to the Commission on the Future of Community Colleges of the Am. Assoc. of Community and Junior Colleges, April 24, 1987.

ED 287 347 The Independent Learner: The Key Characteristic in Transformation Leadership. Paper presented at the Fifteenth Annual Summer Institute for Higher Education Programs for Nova University, July 27, 1987.

ED 335 519 Toward the 21st Century: Preparing Strategic Thinkers in VTO Education for Restructuring Establishments.

Community College Futures: From Rhetoric To Reality edited by Neal A. Norris. Stillwater, OK: New Forums Press, 1989.

ED 343 484 Restructuring for the 90's...And Beyond: The Era of Smart Homes, Wired Communities, Fast Systems, Global Networks, and Fast Forward Learners in a Borderless World.

HUMAN RESOURCES DEVELOPMENT AUDIT

5 4 3 2 1 0

Mission Statement
Philosophy About Service Establishment
Vision Statement

Policy Manual
Philosophy About HRD
Hiring
Promotion
Tenure
Leaves
Academic Freedom
Professional Development
Performance Appraisal
Recognition and Reward Structure
Termination
Retrenchment
Due Process

Handbooks
Faculty
Staff
Student

Professional Development Programs
Faculty
Administrators
Professional Staff
Classified Staff

Organizational Development
(Plan with or plan for and to)
Strategic Plan
Operational Plan
HRD Plan
Planning Process

HRD for Specific Priorities
Remedial and Developmental Services
Community Outreach
Disabled and Handicapped

Budget Allocation

Key:
5 Outstanding
4 Excellent
3 Good
2 Fair
1 Poor
0 Not applicable

ERIC Documents

ED 186 060 Higher Education As A Catalyst to the Local Economy
ED 188 655 Planning Technical Education for the Eighties
ED 190 168 Human Resources Development in Technical Education
ED 190 179 A Model to Evaluate the Extent to Which Goals are Reached
ED 197 779 Environmental Trend Analysis & Strategic Decisions
ED 200 711 Trend Analysis as a Component of Comprehensive Planning
ED 201 030 Key Data Elements in a PME Syllogistic Model
ED 201 295 Key External Data in Strategic Decision Making
ED 201 343 Market Analysis. What Is It? How Does It Fit Into...?
ED 201 357 Technical Ed As A Catalyst: Retraining & Collaboration
ED 202 498 Shaping Society through Outcomes: Measuring Output
ED 212 946 Preparing Proactive Transformational Leaders, Cluster #34
ED 213 446 Strategic Planning: A New Role for Mg Info Systems
ED 214 555 Statewide Coordination in Technology Transfer
ED 216 654 Strategic Planning: Matching Ext Assess with Int Audit
ED 217 907 Strategic Planning of Technology Transfer
ED 218 993 Entrepreneurship through Strategic PME
ED 219 007 Building Futurism into the Institution's SP and HRD
ED 221 249 Strategic Planning for Community Services & Continuing Ed
ED 223 273 Computer Literacy: Data & Info Processing as the Core
ED 227 888 Utilizing R & D Products in SP and HRD
ED 229 591 Econ & Soc Impact of Tran from Industrial to Info Society
ED 231 453 Assisting a College's Service Area in the Transition....
ED 233 651 Strategic Planning & Mg for the Third Wave
ED 236 394 Strategic Planning for Economic Development
ED 237 129 SP & Mg for Voc-Tech Ed at the Community College Level
ED 244 668 Quality Education. What Is It? (Nova #5)
ED 247 822 Strategic Planning for Economic Development
ED 259 804 Institutional Advance & Role of Resource Dev Office (NCRD)
ED 267 665 Snowmass Institute Report, 1985
ED 272 247 Preparing Agents of Change in Voc-Tech-Occup Ed, 1984-85
ED 271 184 Leadership: Vision & Sturcture (NCRD)
ED 272 772 Perspectives on the Education & Tr System of the Future
ED 280 538 The Learning Community of the Future: Ed & Tr in 21st (AACJC)
ED 287 347 Independent Learner: Key Characteristic In Trans Ldr, 1987
ED 290 860 Preparing Transformational Leaders in VTO, 1986-87
ED 298 977 Achieving Excellence Through SP, Snowmass Report, 1988
ED 313 946 Toward 21st Century: Preparing Proactive Trans Ldr, 1989
ED 319 882 Toward 21st Century: Prep Strategic Thinkers in VTO, 1988-89
ED 327 117 Preparing Strategic Thinkers in Grad & Postgrad Education
ED 327 118 Preparing Visionary Proactive Transformational Ldrs 34,37,38
ED 327 651 High Tech-High Touch Collaboration in Helping the United States to Develop "Learning Communities of the Future."
ED 335 519 Toward the 21st Century: Preparing Strategic Thinkers in Vocational, Technical, and Occupational Education for Restructuring Establishments 1991
ED 343 484 Restructuring for the 90's...And Beyond 1992

EJ 212 639 Data as an Institutional Resource in a PME System
EJ 242 674 Key External Data Required in Strategic Decision Making
EJ 280 495 Strategic Planning of Technology Transfer
EJ 293 632 Strategic Planning - Jossey-Bass New Directions
EJ 295 399 Data Processing in the Post-Ind, Tech, Info Society, CAUSE
EJ 298 509 Education's Future Faces Four Great Challenges
EJ 312 404 Critical Mass: Education and the Economy

DOCUMENT RESUME

ED 351 499 CE 062 261

AUTHOR	Groff, Warren H.
TITLE	Toward the 21st Century: Preparing Strategic Thinkers in Vocational, Technical, and Occupational Education for Building Learning Communities.
PUB DATE	92
NOTE	234p.; For related documents, see ED 272 247, ED 290 860, ED 319 882, and ED 335 519.
PUB TYPE	Reports - Research/Technical (143) -- Viewpoints (Opinion/Position Papers, Essays, etc.) (120)
EDRS PRICE	MF01/PC10 Plus Postage.
DESCRIPTORS	*College Faculty; *Community Colleges; Critical Thinking; Distance Education; Futures (of Society); Labor Force Development; Lifelong Learning; *Nontraditional Education; *Productive Thinking; Seminars; Strategic Planning; Summer Programs; *Teacher Education; Two Year Colleges; *Vocational Education
IDENTIFIERS	Nova University FL

ABSTRACT

The 1992 component of Emergence of Vocational, Technical, and Occupational Education (E-VTO) focused on preparing strategic thinkers in vocational, technical, and occupational education (VTO) for building learning communities. The E-VTO seminar was one of the two seminars that comprised the VTO specialization of Nova University's doctoral program to prepare community college personnel. The seminar was offered during the Summer Institute. Students were provided with a study guide and two textbooks in the spring. They were expected to complete a learning contract, two assignments, and a paper before the Summer Institute. The Summer Institute included an opening speech that provided an overview and 10 structured roundtable discussions conducted by faculty on such topics as "Rethinking, Restructuring, Revitalizing." Concentrations in technology education and computer studies were planned for 1992-93. A concurrent Summer Institute theme session was "Developmental Tasks toward the 21st Century: Learning Communities of the Future," which focused on developmental tasks for Nova Communiversity II. Students at the Summer Institute developed "learning community" action plans which were presented at the closing session. Much of the "Rethinking, Restructuring, Revitalizing" discussion is summarized; handouts are provided. Appendixes include 24 references and correspondence and memos sent to students. The following seminar papers prepared by Summer Institute students are included: "The Emergence of the Technical Society," "Improving Postsecondary Vocational Education," "Intellectual Capital Formation, Technology and Distance Education," and "Developing a Three-Year Student-Success Program for International Students" (Donna Smith); "Refocusing of the Educational Process in Health Occupations at Sarasota County Technical Institute" (Deborrah Metheny); "Developing a Total Quality Learning Environment" (Karen Ziegler); and "Development, Implementation, and Evaluation of a Model for the Review of Associate in Science Degree Programs" (Brian Satterlee). (YLB)

DOCUMENT RESUME

ED 335 519 CE 058 736

AUTHOR Groff, Warren H.
TITLE Toward the 21st Century: Preparing Strategic Thinkers in Vocational, Technical, and Occupational Education for Restructuring Establishments.
PUB DATE Aug 91
NOTE 299p.; For related documents, see ED 272 247, ED 290 860, and ED 319 882.
PUB TYPE Reports - Research/Technical (143) -- Information Analyses (070)

EDRS PRICE MF01/PC12 Plus Postage.
DESCRIPTORS Change Strategies; *College Faculty; Community Colleges; Critical Thinking; Doctoral Degrees; *Doctoral Programs; Higher Education; Industrialization; Institutes (Training Programs); *Labor Force Development; Leaders; *Leadership Training; Program Development; Program Implementation; *Seminars; Student Research; Technical Education; Two Year Colleges; *Vocational Education
IDENTIFIERS Nova University FL; *Strategic Planning

ABSTRACT

This report describes how Nova University started the Ed.D. Programs for Higher Education with a focus on preparing community college personnel. The Vocational, Technical, and Occupational Education (VTO) specialization consisted of two seminars: Personnel--Human Resources Development (P-HRD) and Emergence of VTO. The program focused on preparing transformational leaders who think strategically about fundamental restructuring of establishments created in the industrial era. The seminars were offered in a format linked to the Summer Institute (SI). Students received materials and completed assignments prior to the SI, participated in SI activities that consisted of a theme and specialization sessions, and produced a synthesis paper. Related activities included workshops and practica. Following the eight-page report are these appendixes: (1) P-HRD materials, including a resource manual with readings, practicum and research project ideas, proposal development and evaluation protocols, and sources of information; (2) E-VTO materials; (3) titles of VTO and HRD practica undertaken as related activities; and (4) materials from the "Leadership for Innovation and Change" workshop. A postscript provides information on the author. The following student seminar papers by Polly Schultz are provided: "Redesign of the Education System"; "The Emergence of the Technical Society"; "Studies about Education"; Intellectual Capital Formation"; "Relevant VTO Materials"; and "Intrapreneurship in Postsecondary Education." (YLB)

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ABSTRACT

This paper examines institutional restructuring in higher education for the 1990s and the 21st century and the leadership required for that restructuring. Following an overview and a discussion of selected pertinent demographic, social, economic, technological, and political variables, the paper focuses on the strategic importance of Mid-America to changes occurring in Eastern and Western Europe and the newly industrialized countries of the Pacific Rim. There follows a discussion of the learning enterprise in the schools and colleges of the United States. This is a prelude to a review of an agenda for the 1990s which recommends: (1) analysis of conditions of society and establishments; (2) transforming trend analyses into action plans; (3) development of leadership and human resources; and (4) emphasizing integrity within the learning enterprise. This agenda could lead, it is argued, to the creation of an infrastructure for developing world class information era learning communities. A description of such institutions covers leadership qualities and role, planning for quality technology, and the relationship of society, work and education. Also included are 43 footnotes and citations of 3 other documents. (Author/JB)

TO: Students

FROM: Warren H. Groff

RE: Article on Technology and Trends in Printing

DATE: September 13, 1993

By the time you receive this inforamtion you should have a much better understanding of Human Resources Development. Many of you will have read several documents and most of you will have completed an analysis of HRD in your work context.

Since a Nation At Risk was released a decade ago, there have been hundreds of commissions and reports that suggest the centrality of learning and human resources development. You will have the opportunity to deepen your understanding of the theory and practice of HRD in the three step process: analysis, vision of an HRD project, and multi-year action plan for the HRD project.

The analysis assignment provides you with information about the **REAL** and gives you insights about projects you could select. During the first meeting you should zoom in on an HRD project for which you want to create an **IDEAL** vision. The **REAL** compared against the **IDEAL** provides you with ideas about what you **NEED** in the action plan:

Analysis	**REAL**
Vision	**IDEAL**
Action Plan	**NEED**

Adult Literacy in America provides one more indicator of the degree to which education is out of synchronization with workforce and workplace needs. I will focus a few remarks during the first session on the (a) evolution of technology from textbooks to multimedia and (b) the printing and publishing industry. Attached are two papers on the topics. Both have a relationship to literacy, productivity, and promotion of democracy. Please review them for our first meeting. Feel free to bring similar relevant articles to class. Be sure to include all citation information.

Your HRD project can focus on a topic within the context in which you work or on a topic that addresses something within the "service area" of the establishment in which you work.

I have also enclosed a title page for seminar papers.

I look forward to working with you.

EXAMINATION OF RETENTION, ATTENUATION AND PERSISTENCE IN THE PERU UNIVERSITY CENTER FOR ADVANCED LEARNING

Seminar Title

by

John R. Rastin, M. S.

Tibet University

National Lecturer

Cluster Location

A seminar paper presented to Nova University in partial fulfillment of the requirements for the degree of Doctor of Education

Nova University

August, 1990

Evolutions in Technology

by Elizabeth Greenfield

Evolution of the Textbook: From Print to Multimedia

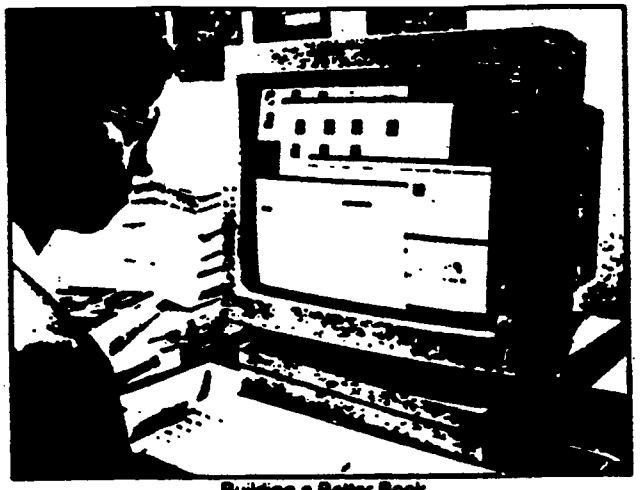
Education has relied on printed textbooks as the primary vehicle for disseminating information to students for hundreds of years. But the information age has transformed the way education defines the word "textbook." Just as new pedagogical methods emphasize more hands-on instruction and less rote learning, textbooks are also changing; print is not the only curriculum resource available to today's teachers.

Many are seeing the need to merge the old with the new. A popular addition is the software and textbook bundle. Applicable for many disciplines, combinations offer textual instruction and exercises, plus software that dynamically presents information in a relevant electronic medium. For example, business-oriented combinations present textual accounting principles and corresponding spreadsheet problems.

The advent of multimedia has further expanded the curriculum grab bag. But multimedia's impact extends beyond mere add-on products. Of particular note are videodisc and software curricula that are recognized as the next step in the textbook food chain.

Universities, colleges and even districts are realizing the benefits of another textbook permutation, custom publishing. Rather than making students purchase three or four texts for a few chapters' relevancy, instructors often opt to create their own books. Many have personal materials and other documents copied and bound together in mass quantities as a textbook option, also known as "the Kinkos phenomenon."

Or instructors can investigate electronic publishing, where an online database of textbooks can be searched and chapters culled to create one unique book. Lastly, some instructors are choosing to put their materials online, allowing students to access all pertinent information—notes, syllabi, articles, etc. —then save those materials to a disk for use at home or on campus.



Building a Better Book

■ Textbook/ Software Bundles

The first evolutionary phase for the textbook is the hardcopy/software bundle. Combining the two serves many purposes: It adds a multimedia element that most educators agree improves retention and engages students, plus adds a "real-life" immediacy for students. Working with spreadsheet and database software while studying accounting, or using math and engineering simulation packages to complete exercises also gives students hands-on experience with these tools, which they will use when employed.

Increasingly, textbook publishers and software developers work hand-in-hand to coordinate the two. Student editions of popular, mature programs, plus run-time versions and custom templates are all examples of software bundled with specific texts.

Textbook publishers like The Benjamin/Cummings Publishing Co. offer such bundles. That company has agreements with several software publishers to custom-bundle any of 15 packages with teacher-requested textbooks. Lotus 1-2-3, AutoCAD, FrameWork, PageMaker and dBase are all popular programs that can be shipped with any text.

Recently acquired by The Thompson Corp., Course Technology, Inc. (CTI) also integrates commercial software with academically authored textbooks and companion tutorial files. CTI has licensing agreements with eight software companies—Lotus Development Corp., Borland International, Microsoft and SYSTAT to name a few—giving CTI the right to package their programs with its course materials.

To date 35 products are available, covering accounting, business, computer information systems and statistics. Lotus 1-2-3 for Business is an example of one course offered by the company.

Knowledge Revolution, the developers of Interactive Physics, a motion simulation authoring system, has agreements with Prentice-Hall to provide its run-time version—called Interactive Physics Player—with the publisher's texts. The firm also offers template files that directly correlate with problems in Saunders Publishing's *Physics* textbook. Students can run the templates with the low-cost student version of Interactive Physics.

The beauty of Knowledge Revolution's products is that not only is a given textbook problem presented onscreen, but students can push a button and see the exer-

cise come to life. They can also change the parameters to observe how the laws of physics respond to slightly different circumstances.

Along those lines, Universal Technical Systems has taken the formulas covered in ten popular textbooks and converted them into templates that run with the developer's TK Solver software. The templates are bundled with the texts or offered separately. Examples include *Roark's Formulas for Stress and Strain* and *Formulas for Natural Frequency and Mode Shape*. In addition, four other titles are bundled with run-time versions of TK Solver.

"There will come a day when textbooks themselves will become obsolete."

Other companies offer "electronic handbooks." MathSoft, Inc., for example, produces 18 Educational Handbooks that are teaching tools not directly correlated to a specific text, yet are written by instructors and target a specific topic. Each contains mathematical discussions followed by examples, interactive exercises and solutions; titles include Algebra I, Precalculus and Introductory to Ordinary Differential Equations. All Handbooks require Mathcad 3.1 or later.

An interesting twist, The MathWorks, Inc. has sponsored the publishing of texts written by instructors who use its MATLAB software. Some of these books are written for teacher use and others for students; many include a disk of supporting template files. Examples include *Matrix Theory with Applications* by Jack L. Goldberg, published by McGraw-Hill, and *Modern Control System Analysis and Design Using MATLAB* by Robert Bishop, from Addison-Wesley.

And to illustrate that software isn't the only technology that can be used concurrently with text, Prentice-Hall produces a teacher's edition of its *Magruder's American Government* textbook that includes customized lesson plans that link narrative to related video footage found on ABC News InterActive's Powers of the U.S. Government videodisc series.

■ Teaching Without the Book

There will come a day when textbooks themselves will become obsolete. A scary thought to some, since one CD-ROM can hold many books in a more compact and lightweight format. Computerized textbooks also offer sound, animation, hypertext links and all the other bells and whistles associated with multimedia.

For the purpose of this article, applicable products are those that stand-alone as full curriculum for a semester or year; self-paced, supplemental material or mini-course modules do not qualify. Products must also be utilized by all students in a specific discipline and grade level, not those applied to only special or remedial education, or basic skills instruction. ILSs are in a different class and also not covered.

So one further evolutionary level places the contents of a textbook on diskette or videodisc. Many states have already taken a few tentative steps in this direction, adopting videodisc and software curricula as textbook options. This allows schools to purchase technology tools with state funds.

In 1990 Optical Data Corp. made waves by becoming the first company to have its Windows on Science videodisc instructional system adopted as a textbook by the state of Texas. Since then, districts in California and Maryland have also adopted the 11-disc science curriculum product. In fact, Maryland is the first state to adopt Windows on Science districtwide. The three-year program places the package in 36 elementary and middle schools—empowering more than 27,500 students. Optical Data has also recently begun distributing INSIGHTS, a hands-on science curriculum for grades K-6.

Encyclopaedia Britannica Educational Corp. also has a science curriculum, the Britannica Science System (BSS), which relies largely on hands-on activities and multimedia materials; no textbooks are needed. Lately, the system was adopted by California, Nevada, Utah, New Mexico, Indiana and in West Virginia.

BSS is an integrated science curriculum for grades 3-6 that involves students with Full Option Science System's experimental desk-based materials, videotapes, Level I videodiscs with bar codes, and Level III discs with accompanying software.

Yet another example is Glencoe Macmillan/McGraw-Hill's TLTG Physical Science and TLTG Chemistry, developed by Texas Learning Technology Group. These are complete, 160-hour, two-semester multimedia courses on videodisc for secondary students. Chemistry I was adopted by the state of Texas last November. Also, Decision Development Corp.'s Science 2000 package was adopted by California in 1992 and West Virginia earlier this year.

"Many states have already adopted videodisc and software curricula as textbook options."

South-Western Publishing offers a full semester course on computer literacy, ComputerVisions, which comprises hours of videodisc materials, software and a teacher's introductory videotape. A student activity disk boasts 140 pre-designed, hands-on computer applications and additional classroom activities. Covered are an introduction to computers, word processing, graphics, spreadsheets, telecommunication, programming, ethics, history and more.

Fred Lux at Cantrick Middle School in Michigan has used ComputerVisions since last fall in his seventh-grade computer literacy class. He says that the curriculum contains enough material for a full-

year, middle-school course.

Lux is very impressed with ComputerVisions, especially with the system's ability, through its management software, to customize lessons. "I can grab video from the discs and a particular lesson then save them as a separate file on my hard drive," he explains. This technique works well in preparing the nine-week mini classes he holds for staff development workshops.

■ Electronic Publishing

California's Palo Alto Unified School District relies on documents that must be printed or copied and shared among students, faculty, parents and community leaders. In August 1991 the district's print shop installed a Xerox DocuTech Production Publisher, a high-speed, high-resolution digital image capture and document manipulation system that marries a 600 dpi digital scanner, an icon-based user interface and a 600 dpi laser printer with binding capabilities.

Original documents are scanned in and become digital masters that can be recalled and printed on demand. Users can move blocks of text, graphics or photos from one source to another. The laser printer then generates up to 135 pages per minute, performing inline collating, binding, stitching and stacking.

"In the yearbook project alone, the Production Publisher saved the district from $5 to $7 per copy."

In Palo Alto, the print shop receives 3,000 job requests per month via plain-paper fax, most for 30 to 150 copies. Examples of materials the district can now publish itself include summer school catalogs that boast text and children's drawings plus yearbooks complete with scanned student photographs and original poems or drawings. On the yearbook project alone, the Production Publisher saved the district from $5 to $7 per copy compared to using an outside company.

Another custom publishing product, Primis was introduced in the fall of 1989 as a collaboration between McGraw-Hill, Eastman Kodak and RR Donnelley. The system provides databases of McGraw-Hill textbooks, allowing professors to combine selected chapters, journal articles, case studies and other materials tailored to specific classes or students. Those materials are then bound into texts and published in mass quantities at RR Donnelley's plant and shipped to the school's bookstore within 72 hours. Students in particular save money with Primis; they need only buy one book, not several texts merely for one or two pertinent chapters in each.

The heart of the system are databases of McGraw-Hill texts; over 70,000 PostScript pages are available representing 17 disciplines. Chapters are chosen online. And McGraw-Hill ensures that all copyrights are protected.

English composition students at the University of Houston are using a Primis-built reader developed to their instructors' specifications. The text is comprised of articles culled from a Primis database called *The Accommodating Reader*, which boasts essays, nonfiction prose, short stories, poetry and drama.

The reader is being implemented by 31 UH lecturers and teaching assistants. Also, instructors at more than 300 other universities and colleges have created course-specific texts based on the *The Accommodating Reader*.

IBM Corp.'s BookManager platform takes electronic publishing to its ultimate, paperless end. Based on WordPerfect or Microsoft Word formats, BookManager's BUILD modules create online books comprised of instructor notes, texts, outlines or any departmental softcopy documentation. Building texts can occur on OS/2 workstations or on VM and MVS systems.

Students can access online books developed by their instructors through BookManager's READ products. Searches can be made on OS/2 and DOS computers, or on VM, MVS and AIX/6000 systems; instructors can both update and distribute books online. Students can also arrange several books into a "bookshelf."

"English composition students at the University of Houston are using a Primis-built reader developed to their instructors' specifications."

IBM has recently introduced a Library Reader component that acts like a lock-and-key system. Instructors can allow students to save their books to disk for later use on home computers, imbedding a "lock" within the book. Library Reader saves an accompanying generic run-time version of the READ program, which acts as the key to open the book, when the locked files are downloaded.

The department head of Louisiana and Lower Mississippi Valley Collections for Louisiana State University, Faye Phillips has been implementing BookManager in a project that places special collection materials—rare books, historic photographs, etc.—on CD-ROM. The department has been scanning in visual and textual materials, using OCR software to import the documents and then saving them as WordPerfect files. BookManager acts as the navigation software.

For example, Phillips scanned in a rare book first published in 1846. The OCR software saved the text as a WordPerfect document, which she edited. When researchers or students access the CD-ROM, they can read the WordPerfect text; if they want to view the book's original page, they can call up its image. Best of all, if that researcher wanted to save the text file to a floppy disk, he or she could, using the Library Reader feature (all of the resources ➡

DIRECTORY

SOFTWARE/TEXTBOOK BUNDLES

Bantam Books
New York, NY
Write 901 on Inquiry Card

Benjamin/Cummings Publishing Co., The
Redwood City, CA
Write 902 on Inquiry Card

Computer Associates International, Inc.
Islandia, NY
Write 903 on Inquiry Card

Course Technology, Inc.
Cambridge, MA
Write 904 on Inquiry Card

Houghton Mifflin
Boston, MA
Write 905 on Inquiry Card

Knowledge Revolution
San Francisco, CA
Write 906 on Inquiry Card

Macmillan/McGraw-Hill, Inc.
New York, NY
Write 907 on Inquiry Card

MathSoft, Inc.
Cambridge, MA
Write 908 on Inquiry Card

MathWorks, Inc.
Natick, MA
Write 909 on Inquiry Card

Prentice Hall
Simon & Schuster Ed. Group
Englewood Cliffs, NJ
Write 910 on Inquiry Card

SMP Courseware Group
St. Martin's Press
New York, NY
Write 911 on Inquiry Card

Universal Technical Systems
Rockford, IL
Write 912 on Inquiry Card

CURRICULA OPTIONS

Decision Development Corp.
San Ramon, CA
Write 922 on Inquiry Card

Encyclopaedia Britannica Educational Corp.
Chicago, IL
Write 913 on Inquiry Card

Glencoe Macmillan/McGraw-Hill Publishing
Westerville, OH
Write 914 on Inquiry Card

Optical Data Corp.
Warren, NJ
(800) 524-2481

South-Western Publishing Co.
Cincinnati, OH
Write 915 on Inquiry Card

Tech Pubs Hal, Inc.
Rutherford, NJ
Write 916 on Inquiry Card

Wisconsin Foundation for Vocational Tech. & Adult Ed.
Middleton, WI
Write 917 on Inquiry Card

ELECTRONIC PUBLISHING

IBM Corp.
Boulder, CO
Write 918 on Inquiry Card

Primis/McGraw-Hill
New York, NY
Write 919 on Inquiry Card

Riso, Inc.
Danvers, MA
Write 920 on Inquiry Card

Xerox Corp.
Rochester, NY
Write 921 on Inquiry Card

The directory is not comprehensive and reflects those companies that responded to T.H.E. Journal's inquiries.

included are public-domain).

Although still in development, this CD-ROM should be ready for pressing in July. It will be provided at the 25 CD-ROM workstations in the library as well as placed on the university's mainframe and network; dial-in access is also planned. In addition, the disc's rare materials will be available to students in the library's adaptive computing center, where computers will read the CD-ROM aloud to students and Braille keyboards and printers further facilitate usage. LSU libraries will also sell the disc.

Phillips decided to use BookManager because the school "had all the necessary pieces on campus." It was also less expensive than any other software. Says she: "students will have much broader access to the rare materials" with the new CD-ROM.

■ Off in the Distance

What the evolution of textbooks really does is place control of content in the hands of teachers. Software and textbook bundles ease the transition between text-only and software-only instruction, while providing valuable tools students will need when applying their skills in the workplace. And custom textbook publishing makes it easier for instructors to teach *exactly* what they want.

So perhaps textbook-only instruction is on the endangered species list. While the emphasis isn't on abolishing text per se, or that students shouldn't be encouraged to read books, what is being acknowledged is that technology products indeed enhance education, offering a more engaging and complete learning experience. One in which sight, sound, interaction and inquiry are married with hands-on exercises and led by a mentor who is not constrained by someone else's teaching style.

Executive Summary

SunChemical
General Printing Ink

BACKGROUND

Printing Industries of America (PIA) commissioned SRI International to conduct a comprehensive study of the future of the printing industry in the United States and Canada to the year 2000. The purpose of the study was to develop an overall picture of the major forces shaping the future of the industry and to assess the impact of those forces on the business of different kinds of printers. SRI addressed a broad sweep of issues that should concern a wide range of printers, from the very smallest—those with annual sales of less than $2 million today—to those with sales of more than $50 million.

SRI addressed prospective changes in thirteen printing markets:

- Magazines
- Catalogs and directories
- Direct mail
- Labels and wraps
- Inserts and coupons
- Other advertising printing and free circulation papers
- Annual reports
- Business forms
- Business communications
- Manuals and technical documentation
- Quick printing
- Books
- Printing trade services.

The study did not address commercial printing segments that are of interest to relatively few PIA members, nor did it include the future of newspaper printing.

SRI conducted an extensive survey of industry literature (forecasts, segment studies), drew on its own internal databases on the industry and related technology, and interviewed industry, market, and other experts. SRI then analyzed the main trends in printing technology, critical macroenvironmental forces, and likely changes in the thirteen printing markets; the cross-impacts of the major trends and uncertainties identified; and relationships of the traditional printing system to new forms of printing collectively labeled "nontraditional printing" and to information production systems that complement and compete with print. SRI and the PIA Task Force jointly reviewed the results of the research, identified the major implications of our findings, and analyzed the likely future structure of the industry.

HIGHLIGHT OF TRENDS

Four major clusters of factors will affect printers' businesses during the 1990s. (1) Macroenvironmental factors, such as the U.S. economy, the structure of the population, consumer lifestyles, business trends, general technology trends, trends in advertising, and the like, will shape demand for the products printers make. (2) More specific factors, such as labor force trends and environmental regulation, will affect printers' future operating environment directly. (3) Changes in printing and related technologies will determine the range of technologies that printers must invest in to remain competitive. (4) Finally, changes in the major printing markets will determine demand for printed products.

MACROENVIRONMENTAL TRENDS

Economic Factors

- The North American economy will grow at a slowing pace during the 1990s, ultimately resulting in a slowdown in the growth rate of demand for printing. Printers will have to achieve success more through increased profitability, market share, specialization in faster growing niches, and the like than by simply enjoying overall growth in a booming economy.
- Inflation will remain low to moderate, but real interest rates will stay high. Hence the cost of borrowing money to buy needed technology will remain high.
- Printers oriented toward geographic markets will find that economic growth and the kinds of customers they serve vary increasingly from region to region. Awareness of local rather than national economic and business trends will become more important to printers serving such markets.

Population and Lifestyle Factors

- Demand for printed products that satisfy the information needs of adults and students will continue to be strong. But population growth will slow during the 1990s, and the U.S. and Canadian populations will grow older. The next generation, entering the labor force after 2000, will be much more comfortable with electronic media, which will draw some demand away from print. Printers will see some further erosion of growth rates in demand for print toward the end of the decade.
- American society will become more fragmented and consumer markets more segmented. The number of special interests and consumer market niches will grow, with the consequence that printers will see demand for more printed products; but audiences will be smaller and hence print runs will be shorter and work more personalized to reach these audiences.

Education

- The U.S. education system will not change significantly during the 1990s, so demand for printed educational materials will increase as the next wave of students reaches high school and college. And, since educational and literacy problems will persist, printers will also see growing demand for business training and retraining materials.

Business Trends

- There will be much more widespread use of computers and communications networks in all businesses, including printing. Most important, printers serving business markets will see erosion of demand, because new media, such as electronic mail and electronic data interchange, will provide adequate substitutes for printed products. Improvements in desktop publishing technologies will, however, increase demand for very short run business printing.
- The number of small businesses will grow more slowly during the 1990s than during the 1980s, although turnover will be high. Growth will be slower for printers serving small businesses, but demand will shift from one- and two-color work to higher quality color products.

Advertising and Promotion

- Advertising and promotional spending, major drivers of demand for printing, will grow faster than the economy. Most of the increase in advertising will be for nonprint media, meaning slowing growth for magazines, direct mail, and the like; but printed promotional materials will continue to become more important for printers.
- The key trends in advertising will be more precise targeting of audiences and better measurement of the advertisements' effectiveness. Demand for shorter runs, higher quality, and color products will increase.

New Electronic Technologies and Media

- Many new electronic technologies and media will enter consumer and business markets during the 1990s. These will set the stage for competition with printed products, some of which will occur during the late 1990s. During the next decade, developing businesses based on these new media constitute opportunities for enterprising printers.

OPERATING ENVIRONMENT TRENDS

Labor Force Trends

- Slowing growth in the North American labor force will intensify competition for highly skilled labor among all businesses. Hiring and retaining good managers and workers and managing their work force more effectively will become more important for all printers. Skilled workers and managers will cost more.
- Continual training and retraining of workers will become crucial as printers strive to keep up with new printing technologies, more sophisticated customers, and the restructuring of printing businesses.
- Workers' demands for benefits will become more diverse and important. Printers will have to offer more comprehensive and more costly benefit packages, especially covering health and retirement, as the work force matures.

Environmental Regulations

- Environment regulations will become more stringent in all jurisdictions—federal, state, and local—especially in regions where major air, water, or toxic waste and solid waste problems exist. The bottom line is that virtually all printers will have to deal with environmental issues by the end of the decade.
- "Small-quantity-generator" exemptions, which have spared small printers to date, will not be available after the mid-1990s. Small printers will have to make adjustments to comply with regulations.
- In many areas, local and regional public pressures will exceed federal and even state regulations, so some printers will have to re-evaluate plant location or invest in abatement equipment and institute new work procedures as regulations tighten.
- Limited landfill capacity will increase pressures to recycle paper. While higher quality printing papers represent only a small part of paper wastes, they will not be exempt from pressures as this issue evolves. Pressures to require the use of recycled paper will probably first affect lower quality papers for products such as inserts and directories. Printers will be affected as selected customers see the need or desirability for greater use of recycled paper.

Postal Regulations

- Postal rates are likely to rise about 20% every three years during the 1990s. Publishers, direct mailers, and others using the postal system will be under pressure to design their products for economical mailing and to find more cost-effective and alternative distribution systems. Opportunities for printers to become involved in distributing printed products will grow.

PRINTING TECHNOLOGY TRENDS

- The 1990s will be the first decade in which most, if not all, of the information processed by prepress shops and printers will be largely in digital formats.
- Workstations now called desktop publishing systems are already so ubiquitous in businesses and among printing firms that they are becoming front-end platforms (FEPs) for printing. They will continue to alter the relationship between prepress activities and customers.
- High-speed communications will be used increasingly in the printing industry for transmitting files and documents between vendors, clients, and end users. Printing firms will have to incorporate telecommunications capability into their operations as the technologies become available and their customers implement them.

Prepress Technologies

- By 1995, prepress systems will be able to transmit data (text and graphic images) and documents between different manufacturers' hardware systems. Prepress functions and products will be linked from graphics artists at one end of the production process through to printers at the other end.
- FEPs and high-speed, high-volume telecommunications will further augment the trend toward globally based publishing. Printers will increasingly be doing work for customers who are located at great distances and in different countries.
- Many design and creative functions will move back from vendors toward their customers; prepress shops will find clients retaining greater control over the production of camera copy or electronic substitutes.
- Other developments include color electronic prepress systems (CEPS) in a complete range of capabilities and prices, improved charged-couple device scanners, significant penetration of digital proofing by 1995, and direct-to-plate prepress processes for offset. Change in these and other prepress technologies mean continuing pressures to upgrade technology to remain competitive and improving quality and capabilities at all levels of prepress operations. Printers will also see much faster turnaround, significant reduction in rework and waste, lower labor costs, and the increased use of color and new markets for color.

Offset Printing

- The major trend in web offset printing will be increasing automation, which will improve speeds, reduce waste and makeready time, improve quality, and reduce labor costs. Web improvements will allow faster and longer runs, making web more competitive with rotogravure, while also extending the range of web offset to shorter runs.

- The increased technological complexity of presses will increase the demand for systems engineers, systems analysts, and maintenance technicians to keep computer-controlled presses running efficiently.
- Improved production efficiencies will increase competition, forcing web printers to integrate forward (prepress) and backward (finishing and binding). Competitive pressures will also force web printers to seek shorter jobs to maximize capacity utilization.
- Few significant changes will occur in sheet offset technology, although speeds will generally increase, making sheet-fed presses more competitive for longer runs. However, most sheet printers will be moving toward shorter and shorter run work and more specialized and personalized products.

Rotogravure Printing

- Although rotogravure will grow more slowly than offset and flexographic printing, technological improvements will enable rotogravure to remain competitive with offset (better efficiencies and shorter run jobs) by streamlining cylinder preparation and increasing speeds. Competition between rotogravure and offset will increase in higher run work and move down to the 100,000 impressions range.
- Automation of rotogravure presses will lag offset; the major opportunities will focus on automated cylinder changeover, the transport and loading of paper rolls, and related functions.

Flexographic Printing

- The major improvements in flexography will be in the quality of plates and inks, including improved halftone quality, sharper edges approaching offset quality in some applications, and improved density and consistency of water-based inks (better color).
- Environmental regulation will favor the growth of flexographic printing, but its main markets will be newspapers, inserts, and comics; directories; direct mail pieces; business printing; and packaging.

Inks

- Improvement in inks is a major area of focus for suppliers because of environmental regulation. Areas of rapid development include soy-based, water-based, electron beam, and ultraviolet-curable inks. Waterless lithography inks and plates in use in Japan are also expected to penetrate North American printing.

Plateless Printing

- The quality of electrophotography (laser and light-emitting diode processes) will increase, but speed and economics will lag behind other printing technologies, limiting greater penetration to office, in-plant, and fast-service printers markets.
- Ink-jet quality and speeds will improve and prices will fall, mainly to the advantage of office printing markets. Use of ink-jet "printing" for personalization of periodical and direct mail products will also increase.
- Thermal, ion deposition, and magnetography technologies will improve but will lag electrophotography and ink-jet printing in most applications. Holography will remain a specialty tool for advertising images in the 1990s.

Postpress Functions

- Nonautomated and labor intensive postpress operations will remain a major bottleneck in production environments. Cost pressures will focus attention on automated or robotized materials tracking and handling systems, and automated in-line finishing and binding extensions to high-volume presses.
- Capital investment for increasing automation in postpress will increase as very large printers grow even larger.

KEY MARKET TRENDS

Nearly all major printing markets will grow more slowly during the 1990s than during the 1980s. This study addressed thirteen key markets, whose historical and future prospects for growth are summarized in Table ES-2.

Magazines and Other Periodicals

- Growth in magazines and other periodicals will be about the same as in the 1980s; consumer magazines will grow at a relatively slower rate and business magazines at a slightly higher rate. Professional and scientific/technical journals will continue to grow rapidly, providing good opportunities for printers serving these niches.
- Finer targeting will reflect the increasing segmentation of magazine markets by publishers and advertisers. Printers will see more demand for shorter runs, regional and special editions, and personalization of advertising. In-line ink-jet printing and similar capabilities will move down from larger periodical printers to medium-size printers. Offset will remain the dominant printing technology in this segment.
- Postal cost pressures will force publishers toward alternative distribution channels; opportunities will increase for printers to develop distribution capabilities.

WE ARE NOT ALONE

BY PAT ALLEN

There are more of you out there than you may think.

We know how it is. It's late. The people you work with left hours ago. Yet you're still there, still trying to complete a project.

Much is made of publishing as a cooperative venture and it is. But much of the creating—the writing or the illustrating—is solitary work.

If it's any comfort to you during those long and lonely evenings, there are more of you out there than you may think.

Here are a couple of facts and figures we've been collecting lately on what you do and its importance.

•Corporations spend from 6 percent to 10 percent of their revenues on publishing.
Source: Interconsult, Cambridge, Mass.

•U.S. industry and government spend more than $50 billion annually on electronic printing and publishing—as much as 5 percent to 15 percent of total corporate revenues.

More than $12 billion a year is spent on laser printing alone.
Source: XPLOR International, Palos Verdes Estates, Calif.

•In 1990, desktop publishing systems were sold at a rate of 200,000 per year. By 1993, 250,000 systems will be sold annually. The desktop market will total $4 billion in sales in 1993.
Source: BIS Strategic Decisions, Norwell, Mass.

•More than one-third of the materials received by printers from their customers are in electronic format.
Source: Printing Industries of America Inc., Alexandria, Va.

•The worldwide computer graphics market was estimated at $33.3 billion in 1990 and is projected to nearly double by 1994.
Source: Kurta Corp., Phoenix

•Unit sales of desktop imaging software (including image editing, illustration, optical character recognition [OCR] and page layout products) will grow 50 percent in the next three years—from 1.5 million unit sales in 1992 to 5 million unit sales in 1995.
Source: BIS Strategic Decisions, Norwell, Mass.

•Total U.S. shipments of image and OCR scanners are forecast to grow from $612 million in 1991 to $1.7 billion in 1996.
Source: Frost & Sullivan International, New York

•The total value of all color products shipped—scanners, graphics boards, monitors, printers, copiers and film recorders—is projected to reach $13.3 billion by 1997.
Source: Market Intelligence, Mountain View, Calif.

•"Desktop publishing businesses" was the second fastest growth category of listings in the Yellow Pages in 1991.

There were 2,859 businesses listed in the Yellow Pages in the beginning of 1991 and 4,734 at the end of 1991—a 65 percent increase.

It was second only to the baseball sports cards/memorabilia category.
Source: American Business Information Marketing Research Division, Omaha, Neb.

TO: Fellow Members of Our HRD Learning Community

FROM: Warren H. Groff

RE: Our Next Increment of Growth

DATE: October 14, 1993

It was a pleasure to work with you during the first session of HRD. We talked about thinking "wholistically" and began a process to do that. Develop goals and objectives for your Personal Program Plan (PPP).

Each of you began to develop a conceptual framework for an HRD project with a vision (paper 2) which will be refined into an action plan (paper 3). Outline what you think will be contained in your visions paper. The outline will ultimately become a TABLE OF CONTENTS with INTRODUCTION and CONCLUSIONS, both of which shall be concise and focused statements. You have a great deal of latitude with presenting the body of the visions paper. You may want to have a short section on BELIEFS, PRINCIPLES, AND VALUES. The bulk of the paper will be on the HRD project. A brief section following the HRD project could be on SUPPORT SERVICES - Library and Media Center, Communication and Information Infrastructure. Include some REFERENCES. Support information may be included in the APPENDIXES.

Quality and substance are most important. Become familiar with APA. I appreciate papers one week before we meet. Other options are to send the paper the Monday before class to my home in Memphis or to the hotel if later in the week. I want to read the paper the Friday before class. The Travelodge address is:

Dr. Warren H. Groff
Phoenix Metro Center Travelodge
8617 North Black Canyon Hwy.
Phoenix, AZ 85021

The second part of the visions assignment is to have something for distribution to the cluster and PHE personnel. You decide what to distribute. Please bring 15 copies. Also, feel free to bring relevant articles with citations. Feel free to collaborate and network. Get online and network electronically. You could collaborate with someone on almost every aspect of the visions paper.

After you have completed the visions paper, begin to elaborate on the wholistic PPP as it related to HRD. Also, think in terms of the sequence of requirments and your computer system. The audit paper could have been "HRD.1.a. Audit" and your notes could be "HRD.1.b.Audit." Your vision paper could be "HRD.2.a.Vision" and notes "HRD.2.b.Vision."

The original instructions packet sent to you contained an ERIC Document Resume. ED 351 499 contains papers by three students. ED 335 519 contains the work of another student.

During the second session we will spend some time reviewing the visions and then create and co-create action plans. We will also discuss ideas for a practicum near the end of the day. If you want to, you can develop the idea on a single sheet of paper and send it to me or bring it to class. I will demonstrated access to Electronic Library and Internet before and after the first class.

I will attend the practicum work session on Friday night.

As the "Lead Facilitator" of our HRD Learning Community, my role is to help you become a High Performance Learner and Worker to enhance the possibility of program completion. I look forward to working with you again the next session.

Invite a friend to attend.

* * * * * * * * * *

In the end, it is important to remember that we cannot become what we need to be by remaining what we are.

Max De Pree. Leadership Is An Art. NY: Doubleday, 1989.

PERSONAL PROGRAM PLAN

by

I. M. Visionary

Nova University

October 1993-96

TABLE OF CONTENTS

TO: Fellow Members of Our HRD Learning Community

FROM: Warren H. Groff

RE: From Vision to Action Plan

DATE: November 24, 1993

It was great to work with you again on HRD.

During the second session I shared with you a great deal of information about vision and scenario creation and gave you a sheet with a display of planning preferences of the Phoenix and South Florida Clusters. Attached is information about learning styles and hemisphericity. There is a great deal of diversity in the Phoenix Cluster. We shall explore diversity and practicum ideas during our next session.

I appreciate receiving papers before I arrive in Phoenix. I want to read papers before the class. I will stay at the Hampton Inn:

Dr. Warren H. Groff
Hampton Inn, I 17
8101 Black Canyon Hwy.
Phoenix, AZ 85021
602-864-6233

I will conduct an orientation session for the Child and Youth Studies doctoral program on Friday night, December 10, at the Western Office of Nova.

I hope you had a Happy Thanksgiving. I look forward to working with you on December 11.

* * * * * * * * *

TECHNOLOGY

Technology is the primary vehicle by which institutions of higher education are going to re-engineer the teaching and learning process.

Robert C. Heterick, Jr., President, EDUCOM
The Chronicle of Higher Education
October 7, 1992, p. A-17.

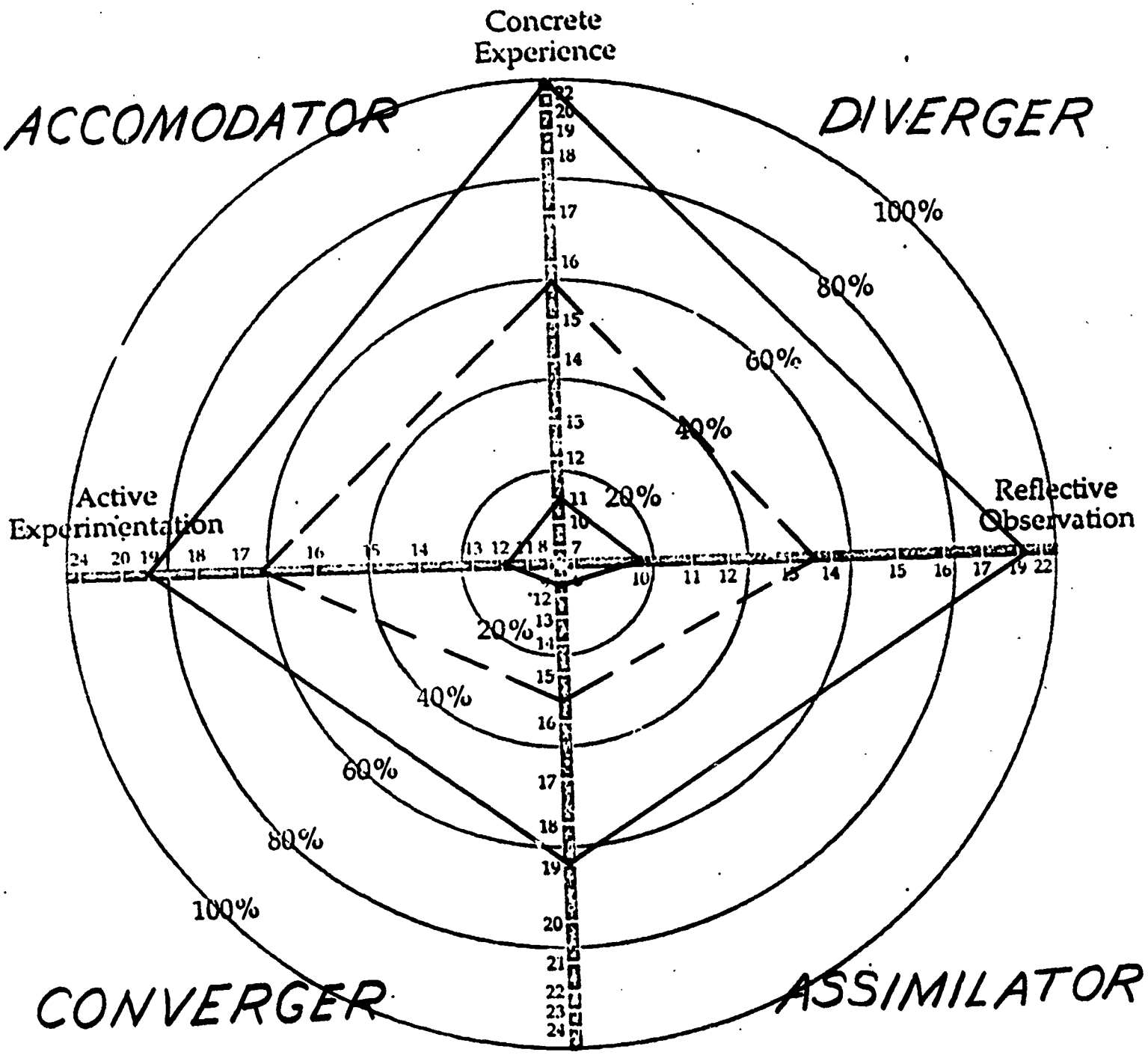
Human Resources Development. Phoenix Cluster. November 1993

PERSONAL DATA VARIABLES

ST	Myers - Briggs E	I	S	N	T	F	P	J	Kolb Learning Styles CE	RO	AC	AE	Hemisphericity R	L	I
1.	2	5	2	5	2	4	4	3	11	13	18	17	8	10	23
2.	0	7	6	2	3	4	1	7	23	20	13	12	14	10	16
3.	5	1	6	2	4	3	2	5	13	10	19	18	7	10	23
4.	3	4	0	8	1	5	0	5	15	11	19	18	14	12	14
5.	7	0	2	5	7	0	1	5	12	12	15	18	19	6	13
6.	8	0	4	3	3	3	3	3	15	11	15	18	14	13	13
7.	4	3	6	2	4	3	4	5	14	20	16	13	13	11	16
8.	5	2	1	6	0	6	4	2	20	14	14	18	14	5	21
9.	6	1	4	4	1	7	3	5	19	18	10	15	9	9	22
10.	7	0	0	8	6	1	1	7	13	11	20	15	20	10	10
11.	0	6	5	3	2	5	5	3	22	14	12	19	21	10	9
12.	5	2	1	6	6	1	1	5	13	10	19	19	5	14	21
									High 23	20	19	19	21	14	23
									Mean 15.8	13.7	15.8	16.7	13.2	10.0	15.9
									Low 11	10	10	12	5	6	9
												25-29			1
												20-24	2		4
												15-19	1		2
												10-14	5	9	4
												5- 9	4	3	1
												0- 4			

LEARNING STYLE PROFILE

Norms for the Learning Style Inventory



HRD, PHOENIX, AZ
FALL 1993

APPENDIX B

Instructional Support Materials
Examples of HRD Vision and Action Plans

The Distance Education Vision: Project Outreach

The Homestead Campus of Miami-Dade Community College has identified computer-based distance education as a primary initiative in its strategic plan for technology. The various aspects of this initiative have been grouped together under an umbrella concept called Project Outreach. This project is an effort to address the college's mission of providing appropriate educational opportunities to the metropolitan Dade County community. Using technology, the project hopes to increase access to the abundant educational opportunities available on campus.

Goals:

The overall goal of this initiative is the creation and implementation of an effective distance education program for this campus.

The specific goals of this initiative include:

1. The development of a replicable technology solution for distance education
2. The creation of an instructional design model for distance education that can be used as a foundation for curriculum development.
3. The development of user-friendly software systems to support distance education.

Year 1

Objectives:

The technology team implementing Project Outreach will:

1. Institute a training program to provide faculty, staff and administrators with the necessary technology skills.
2. Create an instructional design model that can be used as a basis for distance delivery.
3. Reorganize existing computer labs to support pilot courses based upon the new instructional design.
4. Incorporate distance education facilities in the planning of the campus technology building under construction.
5. Initiate the League for Innovation project in order to gain additional data on current practices in distance delivery.
6. Prepare and submit grants to provide additional funding for the initiative.

Evaluation:

Review of computing capabilities, Teacher Review of instructional design model, League review of project

Budget:

Equipment/Personnel costs: $80,000

Year 2

Objectives:

1. Create and test pilot courses using the instructional design model.
2. Search for, evaluate and identify software appropriate to distance education.
3. Begin acquisition and testing of hardware and software necessary for distance delivery.
4. Organize and coordinate the League for Innovation project committee's efforts in the development of a distance education model.

Evaluation:

Student evaluation of piloted courses, League approval

Budget:

Operating costs: $5,000

Year 3

Objectives:

1. Implement hardware solutions for distance delivery of pilot programs.
2. Expand distance education approaches in pilot programs to include all possible media available on campus.
3. Adjust and test pilot curriculums to reflect the inclusion of additional media.
4. Develop and implement a marketing plan for distance education courses.

Evaluation:

Successful computer delivery, Student evaluation of piloted courses

Budget:

Equipment and Development costs: $150,000

Year 4

Objectives:

1. Expand the pilot program to develop and test courses in additional ontent areas.
2. Identify and train distance education faculty and staff in the delivery technology.
3. Fully implement and test distance delivery of pilot programs.

Evaluation:

Successful computer delivery, Student evaluation of piloted courses, Teacher training evaluations

Budget:

Training and Development costs: $5,000

Year 5

Objectives:

1. Evaluate the effectiveness of the distance education approaches and curriculum.
2. Disseminate Project Outreach to interested institutions.

Evaluation:

Response to published results

Budget:

Dissemination costs: $2,000

APPENDIX A

DEVELOPING A TOTAL QUALITY LEARNING ENVIRONMENT
ADULT EDUCATION AND TRAINING PROGRAM
MERCER COUNTY COMMUNITY COLLEGE

LONG RANGE GOAL: To create a Total Quality Learning Environment in the Adult Education and Training Program		
YEAR ONE	**YEAR TWO**	**YEAR THREE**
Goal: 1. Facilitate Total Quality Leadership (TQL)	Goals: 1. Create a Total Quality Enrollment Process (TQE) 2. Institute in-field research procedures	Goal: 1. Provide Total Quality Instruction (TQI)
Objectives: 1. Provide TQM leadership training to program supervisors 2. Orient all faculty/staff to the total quality concept	Objectives: 1. Modify the intake process to ensure a positive beginning in the education process 2. Provide an orientation for all programs 3. Ensure correct placement within the education process 4. Assist in the removal of potential barriers to the education process 5. Collect data/facts pertaining to customer needs and expectations for the improvement of all education programs	Objective: 1. Offer all program courses with a total quality emphasis and approach
Methodology: o Leadership training program o Workshops, seminars, literature, videos, guest speakers, consultants o Visitations	Methodology: o Examination of the enrollment procedure o Data gathering o Flow chart preparation o Customer survey/interviews o Mailing list creation o Data input/storage process	Methodology: o Curriculum review/revision o Textbook/materials review o Courses of study review/ revision
Evaluation: o Demonstrate ability to implement five guiding principles of TQM	Evaluation: o Development of data collection plan o TQM ready for implementation	Evaluation: o Relevancy to customer needs o Meets set criterion
Budget: Consultant services, $2,000 Workshop/seminars, $1,000 Videos/literature, $500 Travel, $250	Budget: Part-time data entry clerk. $5,000 per year Duplicating sevices, $700 Postage, $1,000	Budget: Textbooks, $3,000 Supplementary materials, $750 Part-time data entry clerk, $5,000 per year Part-time clerk typist, $4,000 per year

LONG RANGE GOAL: TO IMPLEMENT TOTAL QUALITY INTO THE OTS ORGANIZATION AND CURRICULUM

YEAR 1: AWARENESS

GOAL:	**OBJECTIVES:**				
1. PROVIDE TOTAL QUALITY AWARENESS TRAINING TO STAFF AND FACULTY	1. OBTAIN SENIOR LEADERSHIP COMMITMENT	2. OBTAIN CERTIFICATION TRAINING FOR INSTRUCTORS/ DEVELOPERS	3. REVIEW/OBTAIN TOTAL QUALITY LITERATURE	4. OBSERVE TRAINING PROGRAMS IN EDUCATION AND TRAINING INSTITUTIONS	5. MODIFY COURSE TRAINING PLAN
METHODOLOGY:	• PUBLICLY PROMOTE TQ AT OFFICERS CALL AND STAFF MEETINGS • WRITE & DISTRIBUTE POLICY LETTER INSTITUTING TQ IN THE ORGANIZATION • INTRODUCE TQ TO STUDENTS DURING COMMANDERS WELCOME	• FAMILIARI-ZATION, EXECUTIVE, AND TEAM LEADER TRAINING • FACILITATOR CERTIFICATION TRAINING	• REQUEST QUALITY CENTER SUPPORT FOR REFERENCES • PURCHASE REFERENCES APPLICABLE TO AN EDUCATION INSTITUTION	• QUALITY CENTER CONSULTANTS REPORTS • VISIT OTHER EDUCATION INSTITUTIONS	• DETERMINING TQ TOPICS TO BE TRAINED • DRAFT NEW STUDENT MASTER SCHEDULE (WHAT & HOW TO USE) • DRAFT NEW INSTRUCTOR QUALIFICATION COURSE (IQT) MASTER SCHEDULE (WHAT & HOW TO TEACH)

LONG RANGE GOAL: TO IMPLEMENT TOTAL QUALITY INTO THE OTS ORGANIZATION AND CURRICULUM (cont)

YEAR 2: AWARENESS AND COMMITMENT

GOAL:	**OBJECTIVES:**		
DEVELOP A TOTAL QUALITY ORGANIZATIONAL STRUCTURE	1. TRAIN STAFF AND FACULTY	2. DEVELOP VISION, MISSION, GOALS, OBJECTIVES	3. DEVELOP STUDENT LEARNING MATERIALS
METHODOLOGY:	• INSERVICE NEW & REFRESHER TRAINING FOR INSTRUCTORS • TRAIN NEW STAFF AND FACULTY THROUGH INSTRUCTOR QUALIFICATION COURSE (IQT) • ESTABLISH STAFF/FACULTY TEAMS • ESTABLISH STUDENT TEAMS	• DEVELOP VISION, MISSION, GOALS, AND OBJECTIVES CONGRUENT WITH HIGHER COMMAND ECHELON • TASK SUBORDINATE ELEMENTS LEADERS TO WRITE THEIR VISION MISSION, GOALS AND OBJECTIVES	• REVISE STUDENT & IQT LESSON PLANS/STUDY GUIDES INCORPORATING TOTAL QUALITY • WRITE NEW TQ LESSON PLANS & STUDY MATERIAL FOR INSTRUCTOR QUALIFICATION COURSE AND STUDENTS

LONG RANGE GOAL: TO IMPLEMENT TOTAL QUALITY INTO THE OTS ORGANIZATION AND CURRICULUM (cont)

YEAR 3: COMMITMENT/DEDICATION

GOAL:	OBJECTIVES:			
DEVELOP A TOTAL QUALITY CURRICULUM	1. TRAIN STUDENTS	2. VALIDATE TRAINING PROCESS/ MATERIALS	3. VALIDATE STUDENT APPLICATION OF TOTAL QUALITY	4. REVISE TRAINING PROCESS AND MATERIALS
METHODOLOGY:	• SUMMARIZE CRITIQUE STATISTICS • PROVIDE STATISTICS TO CURRICULUM REVIEW COMMITTEE • EVALUATE EXAM STATISTICS	• VALIDATION FORMS: DEVELOPER, STUDENT, INSTRUCTOR, OBSERVER • SUMMARIZE STATISTICAL DATA • CURRICULUM COMMITTEE REVIEWS STATISTICAL DATA	• VALIDATION FORMS: DEVELOPER, STUDENT, INSTRUCTOR, OBSERVER • SUMMARIZE STATISTICAL DATA • CURRICULUM COMMITTEE REVIEWS STATISTICAL DATA	• PUBLISH NEW LESSON PLANS • PUBLISH NEW STUDY MATERIALS

LONG RANGE GOAL: TO IMPLEMENT TOTAL QUALITY INTO THE OTS ORGANIZATION AND CURRICULUM (cont)

YEAR 4: DEDICATION

GOAL:	OBJECTIVES:	
EVALUATE EFFECTIVENESS OF TOTAL QUALITY TRAINING	1. SURVEY GRADUATES AND THEIR SUPERVISORS	2. PROVIDE TOTAL QUALITY TRAINING PACKAGE TO COMMISSIONING EDUCATION COMMITTEE
METHODOLOGY:	• MAIL OUT SURVEY • MAIL OUT FOLLOW-UP QUESTIONNAIRE	• COMMISSIONING AGENCIES FEEDBACK

the environmental scanning newsletter
for leaders in higher education

On the Horizon

IT'S TIME TO RE-INVENT HIGHER EDUCATION

A Strategic Assessment

David Pearce Snyder, The Snyder Family Enterprise, and Gregg Edwards, the Academy for Advanced & Strategic Studies

In its 1982 Annual Report to the Joint Economic Committee of Congress, the U.S. Bureau of Labor Statistics (BLS) forecast that by the end of the decade there would be far more college graduates than there would be appropriate jobs for them. At the time, no one paid much attention to the BLS projections, since conventional wisdom held that the United States was on the way to becoming a high-tech information economy in which a college degree would be the minimum requirement for all middle class jobs.

At regular intervals throughout the 80s, surveys of employers reiterated mounting concerns over putative shortages of college-trained workers, especially scientists and engineers. These forecasts, plus Americans' long-standing faith in the unalloyed value of education, sustained an ongoing boom in college enrollments during the 1980s, in spite of the fact that the traditional college-aged share of the U.S. population shrank by 15% and average tuition doubled.

> We are about to re-invent all of our great institutions. When we get done, we will have re-invented America.

To offset the rising costs of higher education, the government, business and philanthropic sectors nearly doubled college financial aid, including over $15 billion in student loans. Politicians, economists and school officials routinely cited the widening gap between the median incomes of college graduates and their high school counterparts. But, as the 80s turned into the 90s, economic reality and the 1982 BLS forecasts converged, and higher education began to look more and more like a very expensive highway to nowhere.

A July 1992 U.S. Labor Department analysis revealed that the growing income disparity between high school and college graduates had been almost entirely due to a sharp drop in the wages of high school graduates. The average income of employees with college degrees barely kept pace with inflation in the 1980s, indicating that there was no marketplace shortage of such workers. The BLS estimated that at least 35% of recent college graduates, including scientists and engineers, end up in jobs that do not require a post-secondary degree. A 1990 survey of 55,000 1980-88 college graduates revealed that only 1/3 or fewer of those with degrees in the social sciences, humanities and liberal arts were able to find employment in their own fields, just as BLS had predicted back in 1982.

Higher education wasn't the only major U.S. institution to misjudge the on-coming curve of national restructuring during the past decade. Even though America's employers bought $1.2 trillion worth of new information technology during the 1980s, productivity growth among information workers did not improve. Hundreds of billions were spent on center city development, but most urban economies continued to deteriorate. Similarly, Americans invested over $1 trillion in higher education—double what we spent in the 1970s; yet neither the graduates nor the nation as a whole appeared to have derived any significant additional benefit. One published estimate by a member of the National Academy of Engineering asserted that only 1/6 of the 2.7 million scientists and engineers who graduated between 1978 and 1988 were actually working in the fields for which they had prepared.

The Future Is Closer Now

By the end of the 1980s, it was clear that the information economy would not require millions of additional scientists, mathematicians and engineers. It *will* require workers, at all levels and in all functions, who possess formal information-using skills; these include the ability to gather, organize and analyze data, and the ability to think systemically. To achieve most of the productive potential of information technology, employers will have to do more than simply install computers and train people. Institutions will also have to completely re-

Continues, p 2

From the Editor

This is our final issue in Volume One. Subscription responses have been great. We already have several hundred domestic and international subscribers.

For Volume Two, we are pleased to announce that the STEEP sections will be headed by well recognized experts in their respective areas. Jan Gruell, who will head the SOCIAL section, is a political scientist at the University of Akron's Institute for Future Studies and Research; she is also program director of the Ohio Policy Issues Network and editor of *Ohio Foresight*. Wally Albers, recently retired head of Operating Sciences (scanning, market research, decision and risk analysis) for General Motors Research Laboratories and now principal of a consulting firm specializing in management science and decision making, forecasting, and scanning, will be responsible for the TECHNOLOGICAL area. Stell Kefalas, professor of management at the University of Georgia and a specialist in international business and information systems, will be responsible for the ECONOMIC area. David Orr, department of environmental studies at Oberlin, and the author of several books on the environment, is responsible for the ENVIRONMENTAL area. The POLITICAL sector will be written by Graham Molitor, president of Public Forecasting, Inc., and vice-president of the World Future Society. Graham served as director of research for both of Vice-president Nelson Rockefeller's campaigns for the Republican presidential nomination and is author of over 200 articles and monographs on political forecasting. I will introduce the other members of the 1993-94 editorial board in my column in the October issue of Volume Two.

Nancy Blom, a research associate in the North Dakota University System, writes, "It is truly the only newsletter out of the scores of them that cross my desk that I read cover to cover. Why? Because the format is refreshing and USEFUL. You not only state what is going on in higher education, but you give us the impact and

Continues, p 16, col. 1

On the Horizon is published October, December, February, April, and June by the Institute for Academic and Professional Development, School of Education, The University of North Carolina at Chapel Hill. For more information, write James L. Morrison, Editor, *On the Horizon*, CB3500 Peabody Hall, University of North Carolina, Chapel Hill, NC 27599 (phone 919 966-1354; Internet James_Morrison@UNC.EDU)

The Institute for Academic and Professional Leadership serves leaders in higher education by providing professional development workshops and seminars. For more information about the Institute, its facilities, and its services, contact William S. Pate, Program Coordinator, The Friday Center, CB #1020, UNC-Chapel Hill, Chapel Hill, NC 27599, (919) 962-3276, Internet wspate@gibbs.oit.unc.edu.

Summer: A Time for Renewal

WORKFORCE EDUCATION AND TRAINING REQUIREMENTS FOR COMMUNICATION AND INFORMATION TECHNOLOGIES AT THE UNITED STATES ARMY AVIATION CENTER

by

Michael Wayne Cupples

A Major Applied Research Project presented in
partial fulfillment of the requirements for
the degree of Doctor of Education

Nova University

December, 1992

SURVEY OF WORKFORCE

Your participation in this survey is voluntary and anonymous. The information summarized from this survey will be used for planning purposes to improve human resources development plans.

Section I. Communication and Information Technologies in the Workplace.

1. The following list contains a series of potential applications of communication and information technologies for administrative purposes and instruction development. Please rank the ten (10) most important applications according to how you feel about the significance of using these technologies in your workplace. The most important application give a "10," the next important "9," "8," "7," "6," and so forth. If you feel very strongly about certain applications not listed, you may write them in the appropriate space and rank them. Rank (10) only.

/ / Word processing on a desktop computer
/ / Electronic filing
/ / Budgeting resources
/ / Electronic presentations/briefings
/ / Electronic mail
/ / Monitoring work progress
/ / Processing information
/ / Data manipulation
/ / _____
/ / _____

/ / Controlling
/ / Videoconferencing
/ / Problem solving
/ / Goal setting
/ / Forecasting
/ / Project management
/ / Desktop publishing
/ / Scheduling
/ / _____
/ / _____

What bothers you about the applications of communication and information technologies in the USAAVNC workplace? _____

_____

_____USE BACK OF SHEET IF NEEDED

2. The following list contains a series of potential job critical skills required when using communication and information technologies for administrative purposes and instruction development. Please rank the ten (10) most important skills according to how you feel about them in relation to using these technologies in the workplace. The most important application give a "10," the next important "9," "8," "7," "6," and so forth. If you feel very strongly about certain skills not listed, write and rank them in the appropriate space. Rank 10 only.

/ / Organizing your own work
/ / Getting along with others
/ / Electronic presentations/briefings
/ / Knowledge/technical ability
/ / Ability to learn quickly
/ / Research in network/data bases
/ / Negotiation through consensus building
/ / Evaluating alternatives
/ / Putting ideas into practice
/ / Monitoring performance/work progress/budgets
/ / Enter data into spreadsheets/data bases
/ / Retrieving information
/ / Coping with change
/ / Influencing skills
/ / _____
/ / _____

/ / Electronic filing
/ / Problem solving
/ / Creativity
/ / Planning
/ / Basic computer skills
/ / Keyboarding/typing
/ / Forecasting
/ / Reasoning
/ / Goal setting
/ / Processing information
/ / Diagnostic skills
/ / Communication skills
/ / Supervisory skills
/ / Setting priorities
/ / _____
/ / _____

3. What should be the workforce education and training requirements to close the gap between applications of communication and information technologies and workforce critical skills at USAAVNC?

USE BACK OF SHEET IF NEEDED

4. What bothers you about the workforce education and training requirements for communication and information technologies in the USAAVNC workplace?

USE BACK OF SHEET IF NEEDED

5. Have you ever used communication and information technologies?

// YES, then continue with the questionnaire.
// NO, then go directly to Section II.
// DO NOT KNOW? Then talk to individual who gave you the questionnaire.

6. Check any of the following communication and information technologies that you have used.

// Desktop Computer	// Networked Systems	// Facsimile (FAX)
// Videoconference	// Telecommunications	// Data Bases
// Desktop Publishing	// Word Processing	// other:_____

USE BACK OF SHEET IF NEEDED

7. When did you start using communication and information technologies:

// at home? __/__ month/year? // at work? __/__ month year?

8. Was working with communication and information technologies:

// A positive experience? // A negative experience? // Do not know?

Describe your experience with communication and information technologies?

USE BACK OF SHEET IF NEEDED

9. Does your current job performance plan or efficiency report support form direct you to use communication and information technologies on the job?

// Do not know // No // Yes

If yes, how will you use these technologies?

USE BACK OF SHEET IF NEEDED

10 Was successful completion of any education and training requirements a condition before working w n communication and information technologies?

// Do not know // No // Yes

If yes, then describe the education and training:_____

_____

_____USE BACK OF SHEET IF NEEDED

11. How would you rate the adequacy of your education and training before working communication and information technologies?

// Poor // Fair // Average // Good // Excellent

Explain:_____

_____

_____USE BACK OF SHEET IF NEEDED

12. How would you rate the relevancy of your education and training before working communication and information technologies?

// Poor // Fair // Average // Good // Excellent

Explain:_____

_____

_____USE BACK OF SHEET IF NEEDED

Section II. Characteristics of the USAAVNC Workforce Sample. Place "X" in the applicable space // or fill in the blank with the appropriate response.

1. Sex: // Male // Female

2. Date of birth: _____/_____ month/year

3. Ethnicity:

// Black of non-hispanic origin
// White of hispanic origin
// Black of hispanic origin
// Other Explain: _____
// American Indian/Alaskan Native
// Asian/Pacific Islander
// White not of hispanic origin
USE BACK OF SHEET IF NEEDED

4. Workforce status: (Check One In Each Row)

// Military
// Administrative Support
// Army civil service employee
// Project Action
// Supervisory
// Other
Explain: _____
USE BACK OF SHEET IF NEEDED

5. Highest formal civilian education degree completed:

// Less than high school
// Associate degree
// Bachelor
// Master
// Doctorate
// High school diploma
// GED
Major:_____
Major:_____
Major:_____
Major:_____

New Jersey School Boards Association
Technology Steering Committee

Technology in Schools Survey

The NJSBA *ad hoc* Technology Steering Committee is assessing how New Jersey school districts are using technology for both instructional and non-instructional purposes, and determining the informational needs of school districts. Please complete and return this confidential survey, in the enclosed postage paid envelope, by July 15. Thank you for your cooperation.

District Demographics

1. Grade organization: ( ) K-6, ( ) K-8, ( ) K-12, ( ) 7-12, ( ) 9-12
2. Are you a regional district?: ( ) Yes ( ) No
3. Number and types of schools:
   _____ elementary, _____ middle, _____ jr. high, _____ high school(s).
4. Number of students: _____
5. Number on board of education: _____
6. Location: ( ) urban, ( ) suburban, ( ) rural
   ( ) North, ( ) Central, ( ) South

Computers

7. Number of computers, by type, used for instructional purposes.
   ____ Macintoshes, ____ Other Apples, ____ IBMs or clones, ___ Other _____

8. Describe their use and grade level: _____
   _____
   _____

9. Which educational software packages used by your district are considered outstanding? (Use additional paper if necessary.)

Title	Publisher	Grade Levels

- over -

10. Number of computers, by type, used for non-instructional purposes.
____ Macintoshes, ____ Other Apples, ____ IBMs or clones, ____ Other _____

11. Describe their use: _____

_____

_____

12. Which applications software packages are you using for non-instructional purposes? (List name and use.)

Title	Publisher	Use

13. What are your annual expenditures on:
Instructional hardware _____? Non-instructional hardware _____?
Instructional software _____? Non-instructional software _____?

Telecommunications

14. Which of the following operate within your district? (Check all that apply.)

	Instructional	Non-instructional
a. Distance learning through satellite, cable, or microwave broadcast, and/or fiber-optic technologies.	_____	_____
b. Electronic mail.		
c. Telephone voice mail.	_____	_____
d. Fax technology.	_____	_____
e. Local area networks.	_____	_____
f. Token ring networks.	_____	_____
g. Wide area networks.	_____	_____
h. Multimedia teaching/learning.	_____	_____
i. CD ROM	_____	_____
j. Interactive video disk.	_____	_____
k. Educational TV.	_____	_____
l. Computerized library.	_____	_____
m. Bulletin board systems.	_____	_____
n. Other: _____	_____	_____

15. What immediate plans, if any, do you have to implement or upgrade telecommunications capabilities? _____

_____

_____

16. What are your annual expenditures on telecommunications _____?

Applications

17. How are you applying technology to the learning process?

_____

_____

_____

_____

18. Please explain how you consider your district's use of technology exemplary.

_____

_____

19. What programs, that you know of in other districts, do you consider exemplary?

_____

_____

Staff Development

20. How are you training instructional staff to use technology? (List the areas of training, the number of sessions, and number of staff involved.)

_____

_____

_____

_____

21. What plans do you have for future training of instructional staff? _____

_____

_____

- over -

22. How are you training non-instructional staff to use technology?

23. What plans do you have for future training of non-instructional staff?

Other

24. What information and/or assistance do you need to help you make decisions on the issues of technology and education?

25. Briefly, what is your district's vision for the use of technology?

26. Are there any factors that limit the use of technology in your district?

27. What plans, if any, do you have for raising funds for your technology efforts (i.e.: grants, business/industry assistance)?

28. What is being done to acquaint your community with the district's use of technology?

_____

_____

_____

_____

_____

29. What else should we know?

_____

_____

_____

_____

30. NJSBA will hold a technology conference in February, 1994. What topics would be of greatest interest to your district?

_____

_____

_____

_____

The information below is requested in the event that the committee needs to contact you for further information or clarification. Data will only be reported in the aggregate, not by individual district.

District: _____

Address: _____

City: _____, **NJ Zip Code:** _____

Your Name/Title: _____

Telephone Number: ( ) _____

THANK YOU!!

CENTER FOR THE STUDY OF HIGHER EDUCATION

Restructuring Arizona's Universities

College of Education

THE UNIVERSITY OF ARIZONA.

Restructuring Arizona's Universities

Saturday, September 18

8:45 a.m. Introductory remarks: Dr. Gary Rhoades

9:00 a.m. Session I: **Assumptions and Conceptions Underlying Restructuring**

Various assumptions and conceptions about decision making and resource allocation underlie restructuring processes--e.g., about whether, where, and how cuts must be made, about the process being one of downsizing, of renewing the organization's commitment to quality and customer, of reorienting the university mission and programmatic focus, or of performing academic triage. The point of this session is to clarify these, to consider some alternatives from the past and current experience of other institutions, and to explore how various assumptions and conceptions interact with each other in institutional planning.

A. "Rethinking Restructuring." Dr. Gary Rhoades (20 minutes)

B. Task Group Discussions (in several small groups, each of which includes members of ASU, NAU, and UA). (60 minutes)

10:20 a.m.- 10:35 a.m. Coffee break

10:40 a.m. Session II: **Patterns and Problems in Academic Program Cuts**

Higher education institutions across the country have experienced academic program cuts and retrenchment in the 1980s and early 1990s. Out of the collective experience of those institutions emerge some patterns and problems in cutting academic programs--e.g., programmatic cuts compromise the broad liberal education mission of the institution, they eliminate fields that serve large numbers of women, minority, and first generation students and that lead to good middle class jobs, and they lead to lawsuits. The point of this session is to identify existing patterns and problems in academic program cuts, to consider the implications that they have for public institutions seeking to fulfill their undergraduate missions, and to pose some mechanisms for avoiding the pitfalls experienced elsewhere.

A. "Who Gets Cut?" Dr. Sheila Slaughter (20 minutes)

B. Task Group Discussions (in several small groups, each of which includes members of ASU, NAU, and UA). (60 minutes)

12:00 p.m.- 1:45 p.m. Lunch

1:45 p.m. Session III: **Financial Indicators and Criteria in Calculating Costs and Allocating Resources**

Financial considerations are critical in setting institutional priorities, evaluating existing programs, and making decisions about investing university resources. What sorts of financial indicators and criteria are utilized by other institutions in calculating costs and allocating resources? The point of this session is to explore the use, misuse, and underutilization of various economic indicators and measures in institutional planning, to consider some alternative tools, such as activity based costing, and to generate some practical suggestions for restructuring in Arizona regarding financial indicators and instruments.

A. "Costing and Costs in Restructuring." Dr. Larry L. Leslie (20 minutes)

B. Task Group Discussions (in three groups, organized by campus) (60 minutes)

3:05 p.m.- 3:25 p.m. Coffee Break

3:25 p.m. Session IV: **Students, Enrollments, and Public University Mission**

Restructuring processes within public universities have implications for systemwide concerns and plans. Decisions about academic programs that make sense for the individual institution may be problematic for the state system of public higher education, or vice versa--e.g., cutting a program at one institution is problematic systemwide if it is the only program in the state. The point of this session is to consider the relationship between academic program cuts on the one hand, and on the other hand serving the state's existing students, meeting future student demand, increasing access for minority students, and fulfilling the educational and service roles of a public university.

A. "Serving Students, Managing Enrollments, and Fulfilling the Mission of a Public University." Dr. Dudley B. Woodard (20 minutes)

B. Task Group Discussions (in several small groups, each of which includes members of ASU, NAU, and UA). (60 minutes)

4:45 p.m.- 6:00 p.m. Reception

Sunday, September 19

9:00 a.m. Session V: **The Process of Restructuring**

University reorganization is often bounded by a planning and implementation process that follows existing academic and administrative structures. Such structures do not fully promote interaction, ideas, and planning that cuts across these units--e.g., assessments and plans are developed by discrete units that cannot and do not fully speak to the interrelationship among units and the possibilities of cooperative activities that could increase productivity. Such structures also do not fully promote the broad and joint involvement of faculty, students and administrators. The point of this session is to consider mechanisms by which restructuring processes can better draw upon the insights and resources of a wider range of university employees, and at the same secure peoples' commitment to reorganization and organizational renewal.

A. "Opening Up the Restructuring Process." John Taylor, Dean, College of Education, The University of Arizona

B. Task Group Discussions (in three groups, organized by campus) (60 minutes)

10:20 a.m.- 10:40 a.m. Coffee Break

10:45 a.m. Session VI: **Productivity for Faculty, Administrators, and Institutions**

In the press to meet the immediate demands of universities' budget crisis, restructuring processes tend to focus on cutting costs on the basis of centrality, overlooking questions of productivity and the long-term reorientation of the university. Yet the long term economic security of universities lies in a systematic consideration of a broad range of productivity indices and a reorientation of academic and administrative work. The point of this session is to generate ideas regarding a range of productivity measures regarding faculty, administrator, and institutional productivity.

A. Moderated panel of faculty and students from the Center for the Study of Higher Education. (60 minutes)

11:45 .m. Concluding remarks: Dr. Gary Rhoades

Conference Presenters

Dr. Larry L. Leslie, Professor and Director, Center for the Study of Higher Education.

Professor Leslie is a leading finance scholar in the study of higher education. His book (with Dr. Paul Brinkman), The Economic Value of Higher Education (ACE/Macmillan, 1988), synthesizes research on various questions in the economics of higher education. He is currently working on questions regarding administrative costs, and serves on the Joint Legislative Budget Committee in Arizona.

Dr. Gary Rhoades, Associate Professor of Higher Education, Center for the Study of Higher Education.

Professor Rhoades has conducted organizational and sociological research on policy, change, and retrenchment in higher education. His work has appeared in professional journals such as the Sociology of Education, Journal of Higher Education, Higher Education, and the Review of Higher Education. He is currently carrying out studies of restructuring and internal resource allocations in universities, focusing on administrative costs as well as on academic programs. He has served on the College of Education's Ad Hoc Budget Committee, which developed contingency plans for cuts.

Dr. Sheila Slaughter, Professor of Higher Education, Center for the Study of Higher Education.

Professor Slaughter is a leading policy scholar in the study of higher education. Her recent book, The Higher Learning and High Technology: Dynamics of Higher Education Policy Formation (SUNY, 1990), analyzes the influence of universities' involvement in high technology on higher education policy. She is currently conducting research on retrenchment in the 1980s. She has served in the PAIP (assessment of institutional priorities) process at The University of Arizona, and is a member of the Committee on the Status of Women.

Dr. John L. Taylor, Dean, College of Education.

Dean Taylor was formerly Dean of the College of Education at California State University at Chico. He has been a faculty member at the University of Illinois, Urbana Champaign, and a senior research associate at the U.S. Department of Education.

Dr. Dudley B. Woodard, Professor of Higher Education, Center for the Study of Higher Education.

Professor Woodard is past president of the leading professional association in student affairs, National Association of Student Personnel Administrators, and former Vice-President of Student Affairs at The University of Arizona from 1983-1992. He is currently engaged in research on enrollment management. He serves on the University Strategic Planning Committee and served on the University Committee on Assessment of Institutional Priorities.

Conference Purpose

Ultimately, the aim of the conference is to enhance institutional planning and practice by creating a forum in which people can be exposed to some new ideas, to information about patterns and practices elsewhere, and can come together to reflect on, discuss, and develop creative strategies for addressing issues of restructuring and productivity.

Presentations will outline the patterns in other institutions, identify potential problems with existing restructuring processes and practices, and suggest concrete and practical mechanisms for addressing such problems.

The aim of the Task Groups is to enable members to interact in extended discussion about restructuring with people in different positions and on different campuses. Discussions will address questions and issues that have been difficult to consider and pursue in the press of ongoing committee work and decision making processes. Information about developments and experiences elsewhere, and dialogue about difficulties being confronted in the current restructuring processes in Arizona, should help Task Group members to consider new possibilities and to generate practical problem solving measures. Task Group leaders will be appointed, and will be responsible for summarizing the discussion and for identifying a set of recommendations for practice.

Conference Participants

The intended audience for the conference includes administrators, faculty, and students from each of Arizona's three public universities. We are particularly interested in having representatives of various campus constituencies involved (e.g., from undergraduate and graduate student organizations, from various faculty organizations, and from various administrative divisions). In addition, we will extend invitations to a select number of entities and groups that interact with the three universities, from representatives of the Arizona Board of Regents, to members of local community groups, to members of business and labor groups.

Sponsors

The short conference, "Restructuring Arizona's Universities," was made possible through the support of The University of Arizona Foundation, the College of Education and the Center for the Study of Higher Education at The University of Arizona.

Restructuring Arizona's Universities

EXECUTIVE SUMMARY

Session I: Assumptions and Conceptions Underlying Restructuring

- "Rethinking Restructuring." Dr. Gary Rhoades, presenter

  * The assumptions underlying restructuring are that we have overextended ourselves and that we must combine and eliminate academic programs in order not to compromise quality.

  * Most higher education managers, in a neoclassical economic approach, focus on cost containment, on minimizing direct labor costs. Most restructuring: (a) involves allocating more monies at the margin to more productive units, and reducing allocations to or eliminating less productive ones; (b) is based in a classical view of dual governance, separating restructuring on the academic side from the non-academic side, which often adopts some model of TQM; and (c) assumes a rationalistic view, seeking to gather more data, to make decisions data driven and less politicized.

  * The neoclassical view: (a) focuses on sorting existing programs, involving less restructuring than reallocating; (b) does not focus on key aspects of institutional productivity, such as retention and time to completion; and (c) draws attention away from the source of greatest growth in expenditures and personnel in recent years, administration (at the UA, the budgetary category that has most increased its share of the campus budget is institutional support; instructional personnel at UA are 43% of the main campus' state budget, and 52% of personnel costs). WE SHOULD FOCUS ON THE PRODUCTION PROCESS, REDISTRIBUTING FACULTY EFFORTS SO AS TO GRADUATE STUDENTS FASTER, AND GAINING STRATEGIC ADVANTAGE BY BRINGING NEW CURRICULA, RESEARCH PROGRAMS, SERVICES, AND TECHNOLOGIES TO THE MARKET FASTER BY REDUCING INDIRECT COSTS.

  * Processes that separate planning for academic and administrative units: (a) create political problems, setting these units against each other; and (b) impede any cross-unit plans that various units might devise to effect savings and increase productivity. WE SHOULD ENCOURAGE PLANNING EFFORTS (not just evaluation committees) THAT CUT ACROSS THE ACADEMIC AND ADMINISTRATIVE DIVIDE AND THAT CUT ACROSS DISCRETE UNITS WITHIN THESE DIVISIONS.

  * Organizations generally gather more information than can be used, and underutilize what is gathered. They also fail to gather important information. WE SHOULD GATHER DATA ON INVESTMENT IN UNITS (direct and indirect costs), AND DATA EVALUATING THE RESULTS OF RESTRUCTURING DECISIONS (e.g., are intended savings realized?).

- Discussion

  * "re-engineering" processes on the academic side often involve an increased focus on undergraduate education, but may do little to effect savings or increase productivity.

  * Our planning efforts are too short-term, and do not involve sufficient self-examination of how we do our work. <u>We are rearranging chairs on the Titanic, versus looking for icebergs</u>.

  * There is much concern about whether and how the information being gathered in the planning processes is being used. Some believe that important data are not being utilized--e.g., data on SAT scores' influence on graduation and time to completion, that suggests we do a good job with a large proportion of students.

* Data on class size, faculty contact with undergraduates, and time to completion are more important than workload data. But our job is more than graduating students quickly. We must think about the organizations, professions, and businesses that rely on us. We will lose opportunities unless we think about how we can better organize ourselves to transfer knowledge throughout the state.

* In response to the question of whether we should admit students who score low on SATs, are less likely to graduate, are likely to take longer to graduate, and therefore cost more to educate, some respond that the political and economic costs of not educating these students is higher than the cost of admitting them. We must consider the larger perspective. Will we serve a small part of society, or will we take on social responsibilities and address social and economic problems as central parts of our mission?

* We need to recouple the schools to the university. University in general, and academic units in particular, should intervene in schools to help get students better prepared before they enter. But there must be some reward within the university for such work.

* Before we can work effectively in bridging the gap between the schools and the university, we must work to bridge gaps within the university, between academics and administrators, and among academic units. The model has been divide and conquer. Current restructuring processes continue to divide us more than bring us together. Early on in PAIP there was the core of something good, bringing people together to get to know each other's situations and connect units. But the outcomes have been disastrous.

Session II: Patterns and Problems in Academic Program Cuts

- "Who Gets Cut?" Dr. Sheila Slaughter, presenter

  * At the institutional level, restructuring generally involves evaluating academic programs on the basis of various criteria: student numbers; external resource generation; centrality; labor force value and market position; costs; excellence; and diversity.

  * In utilizing such criteria, priorities or weightings are not attached to the various criteria. Nor is there consideration of interaction among them and the fact that they can be competitive or contradictory. The criteria are less a guide for decision making than a repertoire of rationales for particular decisions.

  * The criteria can be operationalized in various and sometimes competing ways--e.g., centrality can be defined as centrality to mission, to workflow (valuing units that interact with other units), or to some notion of liberal/general education.

  * Some of the criteria, such as labor force value and closeness to the market, are not grounded in empirical data. For example, law is seen as closer to the market than education, although teachers and lawyers' starting salaries nationally are comparable. Moreover, no more than 50% of graduates are working in the fields in which they specialized five years after graduation.

  * Cuts in the 1980s were guided by adherence on the part of faculty and administrators to deep structures of prestige (embedded conceptions of value, of closeness to the marketplace, and of productivity) that had the unintended consequence of causing cuts to fall most heavily on programs in which there were particularly large numbers of women and minority students.

- Discussion
  * General problems with the criteria: (a) for some units, the criteria are not very relevant; (b) there is not enough emphasis on career placement; (c) the weighting of the criteria, such as placement, should vary by type and level of the academic program; and (d) the criteria are often not measured or used, and decisions are based more on who is on the committee and their gut feelings.

  * Excellence is a problematic criteria for graduate programs; it relies on peer evaluations, perpetuating programs that make no contribution beyond preparing future faculty in that field.

  * Problem is to connect what is going on at institutional level with planning at the departmental level. Could have departments develop their own plans and criteria by which they are measured, but these must be reviewed as consistent with institutional goals.

  * How do we get people to work from the ground up when they know they're going to get hit? How do we create the conditions that will encourage and enable people to act as good citizens in planning? We need to change the time frame, to give people the sense that we are undertaking a careful, considered planning process. If it is not possible to guarantee job security to all, we should assure and demonstrate to all employees that we will exhaust all other possibilities before laying people off, and that we will help them (or train them) to find employment elsewhere.

  * Committees that cut across departments can be problematic if they lack criteria, and if they are simply evaluating programs. However, such committees have "raised consciousness" among members about the situations confronted by others. If they focus on how to increase productivity and cooperation, with a long range view, and if they include faculty broadly, they could be effective.

Session III: Financial Indicators and Criteria in Calculating Costs and Allocating Resources

- "Costing and Costs in Restructuring." Dr. Larry L. Leslie, presenter
  * Costs can be operationally defined as expenditures, and given the nature of higher education can be misleading. Universities are revenue and prestige rather than profit maximizers. The revenue theory of cost is that higher education institutions raise all the money they can and spend all that they raise. COSTS EQUAL REVENUES, SO VERY SUCCESSFUL UNITS--THOSE THAT RAISE A LOT OF REVENUE (AND SPEND IT)--CAN BE VERY COSTLY. In the absence of incentives for saving, cost analysis may be misleading; i.e, high costs for an academic unit may not indicate inefficiency.

  * Costing tends to be misused in higher education. Generally, appropriate use of cost information is to compare similar programs in similar institutions, and to examine costs by unit over time, to look for evidence of suspiciously high costs. THIS IS WHERE MOST COSTING STUDIES END; BUT IT IS WHERE THEY SHOULD BEGIN, FOR THE KEY QUESTION IS WHY COSTS ARE WHAT THEY ARE.

  * In some cases, and in comparisons of certain units, salaries may be a major factor in cost variations, but the major explanations of costs relate to volume: teaching loads, student/faculty ratios, number of class sections, and frequency of course offerings.

  * In general, costing data may be most effectively used in posing questions to units and raising their consciousness about costs, for people in the unit can best identify ways of cutting costs.

* Some private and a few public universities use responsibility centered budgeting (RCB), which involves requiring units to live within the revenues that they generate. An advantage is that RCB provides incentives and decentralizes responsibility for cost containment and revenue generation. A disadvantage is that some units cannot survive on their own revenues, although they may be seen as essential. Other units must be assessed a "tax" to help support such units, as well as costs of centralized functions such as administration.

* The source of the greatest percentage cost increases in the past two decades has been administration. Nationally, instruction's share of higher education budgets has declined by 2% in the past decade, whereas administration's share has increased by 2.9%. Similarly, personnel growth has been greater in administration (18%) and in "academic professionals" (61%) than in faculty (6%). Several explanations have been posited, but none has been confirmed empirically.

- Discussion

* Many people expressed reservations about responsibility centered budgeting. One related to units' need for assurance and insurance that whatever savings they effect can be rolled over to later years and will not lead to reduced allocations. The key general point being made is the need for flexibility in the use of resources. Another reservation had to do with taxing productive units to support units that cannot generate revenues. There was considerable concern about the basis and the fairness of the "tax" assessment. Finally, there were some negative allusions to the incentive such a system creates for engaging in revenue enhancing activities of dubious educational merit.

* In discussing incentive systems, several people raised the question of who gets credit for interdisciplinary courses, or for courses that are required by one unit but taught in another one (i.e., teaching non-majors--a big issue in social and behavioral sciences, as well as in English and Math departments). There is no structure to address the (dis)incentives that are involved for various sorts of units.

* RCB should pay more attention to opportunity costs of allocating faculty resources in particular ways. For example, to what extent is productivity (and revenue) reduced due to faculty who are not teaching full loads because of having released time? Given the small proportion of people, even in the sciences, who get grants, would most faculty's time be better invested in teaching?

* A major volume factor affecting instructional costs is class size. There is much research on the relationship between class size and student learning that has not been utilized in allocating faculty resources and in planning, although discipline based considerations might in some cases override the general research.

* The fulcrum for controlling instructional costs is at the departmental level: eliminating tenure, and firing unproductive faculty, in most cases would not effect significant cost savings, particularly when the costs incurred (e.g., legal) in pursuing such measures are considered.

Session IV: Students, Enrollments, and Public University Mission

- "Serving Students, Managing Enrollments, and Fulfilling the Mission of a Public University." Dr. Dudley B. Woodard, presenter

* In restructuring, we should try to envision what classrooms will be like in thirty years, not by simply extrapolating from the present, but by looking back thirty years, and remembering how different classrooms were then from what they are today.

* In restructuring, we should anticipate the nature and the needs of the potential student body in the coming decades, and recognize the special demands that are increasingly emerging in educating our current student body (e.g., remediation, diversity). We need to address the questions of whether and how we are going to adapt our institution to the changing clientele. How are we positioning ourselves in relation to student markets and student needs?

* Discussions about restructuring must address the question of whether we will seek to address new clientele. Should we choose, as a possible scenario, seeking to emulate institutions such as Stanford and the Universities of California in educating essentially upper middle class students? Or should we take on the responsibility for educating a wider spectrum of students in the state in terms of socioeconomic background and ethnicity? In considering such choices we should address not only the political but the economic, social, and educational implications of such orientations. What sort of a market niche is possible for Arizona's universities? Are we in danger of being outcompeted by other sectors of higher education in and outside the state?

* Are we restructuring, or do we largely seek simply to reallocate resources at the margins in ways that will allow us to perpetuate the basic structures that are currently in place?

* In restructuring, we need to pay more attention to our competitors in education and in the private sector, particularly as they currently are more flexible in designing and operating innovative learning environments. This is more than a matter of sustaining enrollments; it is a matter of securing political support in the community and the state for our enterprise.

* In restructuring, we should transform our service mission as a land grant institution, developing innovative mechanisms for addressing fundamental social, educational, and economic problems in the state. Our political position in the state, and our claim on state resources relative to other state agencies, are likely to be a function of the extent to which we can deliver such services.

- Discussion

  * In the discussion, there was evidence of people wanting to avoid having to deal with "new traditional" students. For example, some spoke of the need to raise standards. But as others pointed out, even those who meet standards often have trouble in classes. <u>The problem is how do we make ourselves more effective with a large proportion of our current students</u>?

  * Part of restructuring should address how we deliver instruction to students. The delivery system needs to be changed not simply for reasons of more efficiently allocating faculty resources, but for reasons of accommodating a student body that is different in significant ways from what universities have educated in the past.

  * We need to stop thinking of ourselves in isolation. The schools are reorganizing in curricular and pedagogical ways that we are way behind on (we raise standards, but need to change pedagogical

strategies). We should consider the educational continuum from K-college. We need to involve ourselves in the preparation of future students, and to reward faculty and units for doing so.

* We tend to think about quality and improvement in terms of economic possibilities and constraints. In other words, we could do better if we had more resources. But there are other sources of constraint, that are not purely economic. Instead, these dimensions of constraint reside in our assumptions about how we organize and allocate our work and our workers.

Session V: The Process of Restructuring

- "Opening Up the Restructuring Process." Dr. John Taylor, presenter
  * One of the keys to restructuring successfully is opening up the process so that people have a sense of ownership and thus will commit seriously to developing strategies for reconfiguring and reorienting their units. Part of opening up the process is to share the budget and develop consensus around budget priorities.

  * Certain principles are central to making restructuring work: (a) You must create a sense of security--we cannot forget we are talking about people, and we should do our utmost to sustain our commitment to protecting and taking care of people; (b) No cannibalism, with units protecting themselves by attacking others; and (c) Do not mortgage the future by weakening vital programs and giving up lines that can be used to bring in new blood.

  * A successful restructuring process must enable others to act, enlisting the support and assistance of all those who must make the process work and those who must live with the results. Units should be encouraged to collaborate. Activities at the college level should be mirrored by similar activities at the unit level (as well as at the university level). The process of preparing plans should be open and shared. Units and participants must be given mechanisms by which to ensure that their input has been seriously considered and utilized. THIS ALL TAKES TIME.

  * In restructuring, leaders must model the way. Participants are more likely to commit to the process if they can see that leaders are practicing what they preach--for example, if the offices of the institution's leaders are taking some of the biggest cuts.

  * There needs to be consistency and follow through in the process. If units get the idea that not everyone is playing by the same rules, and that those who violate the rules are not punished, that undermines the process. If the process changes midstream, that leads to discontinuities in planning activities from year to year, and it compromises peoples' commitment to any planning process.

- Discussion
  * Committing to people need not mean guaranteeing everyone their current job. But it can mean ensuring people job security in the organization (perhaps in another capacity) or committing seriously to retraining and placement processes to take care of those who are laid off. People need a sense of security to ensure adequate strategic planning.

  * One of the keys in committing to people is units' flexibility in utilizing resources. For example, instead of filling an empty staff line, other staff in the unit might prefer to take some of the savings in salary increases. Similarly, the demands on staff in the university are "seasonal." There are peak times and down

times. By combining various units' resources at certain peak times, units may be able to avoid adding staff.

* One of the major problems in planning is the changing of the rules and even the mechanisms of planning. This creates confusion about the connection between various processes. It also gives people a sense that there is a lot of activity with few outcomes. The shift is particularly problematic when it moves from an open, collaborative process among units, to a closed, cannibalistic one in which units deal only with themselves in isolation from others.

Evaluation of "Restructuring Arizona's Universities" Conference

Please take a few minutes to provide some feedback regarding the restructuring conference. Your comments, criticisms, and suggestions will be quite useful to us as we pursue the organization of future forums to discuss and shape the restructuring process within Arizona's universities. Please circle your response (SA=strongly agree; A=agree; D=disagree; SD=strongly disagree) to the questions, and feel free to write in additional comments. Thank you again for your participation in the conference.

1. I found the presentations to be informative and useful. SA, A, D, SD

2. The presentations were an effective way of framing the discussions in the breakout sessions. SA, A, D, SD

3. The discussions in the breakout sessions were informative. SA, A, D, SD

4. The discussions in the breakout sessions generated some useful insights regarding restructuring. SA, A, D, SD

5. The format of the conference was sufficiently structured to focus discussion around the major issues involved in restructuring. SA, A, D, SD

6. The format of the conference facilitated the involvement of a broad range of people and viewpoints. SA, A, D, SD

7. The promotional literature regarding the conference was clear and inviting. SA, A, D, SD

8. Suggestions for future forums:

APPENDIX C

CAE-LINK Training Operations Strategic Action Plan
- Steven J. Tourville

CAE-LINK TRAINING OPERATIONS STRATEGIC ACTION PLAN

Human Resource Development

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CAE-Link Corporation

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Phoenix, Arizona

A seminar paper presented to Nova University in partial fulfillment of the requirements for the degree of Doctor of Education

Nova University

December, 1993

TABLE OF CONTENTS

INTRODUCTION

CAE-Link Corporation is the industry leader in the design, development, and integration of advanced simulation hardware and training systems worldwide.

Since 1929, when Edwin A. Link invented the world's first instrument flight trainer, CAE-Link has pioneered realistic advanced simulation technology, and their standard of excellence is unrivaled.

As the world leader in training services, the Training Operations Division of CAE-Link provides courseware design, training systems implementation, management, operation, instruction, and logistic support to all of the U.S. military services and to countries throughout the world. A premier example is the U.S. Air Force Aircrew Training System (ATS), which encompasses training and support services in several locations in the United States, Europe, and the Pacific.

This report represents the Training Operations Division's first deliberate endeavor to take responsibility for its own future. In some ways, it is very different from what is expected a "strategic plan" will look like. This plan does not contain financial tables; nor does it announce any organizational changes.

Instead, this plan provides for expansive guidance - a specific direction to help committees, managers, and individuals to initiate their own strategic thinking and planning. Rather than a prescribed set of directions, this should be a living document that will be constantly challenged, changed, and improved through the active participation of all employees.

In recent months, a challenging process of self-evaluation has been underway in response to the general sense and tone of input received from staff. An honest look at ourselves, our corporate culture, our management style, and our way of doing business has emerged. This evaluation revealed that although CAE-Link own a tradition of service and performance it should be proud of, our heritage in Training Operations does not necessarily leave us well prepared to excel in the uncertain future.

We are privileged to live in historic times. In recent years, remarkable political events have occurred that give reason to be encouraged about the world situation. Yet many people have become increasingly concerned about ecoromic, environmental, and social trends. The world in which CAE-Link was founded in 1929 has fundamentally changed, and we must change with it.

In thinking about Training Operations' role for the future, an examination of basic principles was first necessary. Core values that have been and should continue to be the basis of our operating philosophy are identified in APPENDIX A. Purpose was debated, and those people and institutions who are vested in us were identified in the broadest sense. The results of this effort are diagrammed in this report in a new "MISSION" statement for Training Operations.

The section of this document entitled "GOALS," presents specific goals identified during the planning process, followed by "STRATEGIES" to attain focus on these goals. The section "ACTION," introduces Appendix B, where a specific set of objectives are presented. The conclusion contains an invitation to change: "TRANSITIONS," which will require creativity, energy, and persistence by all staff in Training Operations.

VALUES

The planning process identified those corporate values (Appendix A) that shape our organizational culture and behavior. When reflecting on why we, as individuals, have chosen to be a part of Training Operations, we have identified those values that are important to us in our careers and in our lives. We

also identify with many of the defined values, as we recall the pride and teamwork that accompanied our start-up of the Training Operations program.

MISSION

The CAE-Link Training Operations Division is dedicated to enhancing the security, prosperity, and well-being of our customers.

We affirm our dedication by valuing our customers. As a multi-program training facility, and provider of customer-oriented training systems, we are devoted to leadership in anticipating customer priorities. We strive to apply the best integration of intrapreneural creativity and innovation to achieving comprehensive, timely, and cost-effective solutions to our customer's most pressing problems.

We pledge ourselves to the high standards of integrity and objectivity demanded of the nation's military complex and its leaders. We apply these same standards of excellence to our customers and suppliers alike with equal and fair consideration.

Our quality standard is meeting customer requirements every time; our performance standard is continuous improvement.

Achieving our mission depends upon the values of

individual growth, creativity and teamwork, and enduring commitment to the protection of the environment, safety, and health of all CAE-Link employees.

ASSUMPTIONS

The planning process conducted a comprehensive survey of our operating environment. We discovered that we operate in a broad environment - one affected by domestic and international political, economic, and social change. We identified a sensitivity to how the customer evaluates the return on their investment in us; and that we must acknowledge the needs of those individuals and institutions working with us. Because training and learning technologies are a major component of our business, we must survey evolving trends in these technologies. And more so than at any other time in our history, we need to understand the social and attitudinal directions of the public.

GOALS

An important outcome of the planning process was an expression of (ideal) goals. The goals which follow are global statements of desired outcomes that should serve as guidance to activity and support committees.

Surely, there are additional goals worthy of

consideration and discussion. We invite committees and individuals to develop other goals consonant with the thrust provided here. Indeed, this process should occur throughout the Corporation, with participation at some level by all employees.

Consideration of these goals may raise issues about programs, facilities, practices, or current operations that need discussion and resolution. Committees, other groups, and individuals are the best sources for identifying issues and empowering themselves to resolve them.

1.0. Achieve an empowered culture: We will be a customer-oriented, energetic, dynamic, enthusiastic, participative organization in which people have the freedom to have an impact.

The success of any organization rests with its people. We are fortunate to have talented technical and administrative employees. However, for creativity, participation, and ownership to flourish, a culture permitting the assumption of risk and responsibility by individuals must be fostered. This requires managers to give up close control and permit others to assume a share of individual responsibility, power, and risk for

Training Operations' future. Thus invested, individuals will provide the energy, enthusiasm, creativity, and perseverance to succeed - or fail. Management's job is to furnish the support needed to perform in an environment of risk and challenge. This first goal calls for nothing less than creating a new Training Operations Division.

2.0. Exhibit leadership with comprehensive, innovative, creative, and cost-effective solutions in areas of customer concern.

We must recognize that our customers need solutions to a variety of problems. Many of these are complex, and will require comprehensive solutions integrated with political, social, technological, and other component issues addressed. With imagination, sensitivity, initiative, and leadership, the Training Operations Division must conceive and advance technical, customer-oriented solutions in many areas of importance. This goal will add viability to our curriculum products and training services, and applies to all program activity in the Training Operations Division.

3.0. Demonstrate leadership in quality and quality progress.

We intend to become nationally recognized among our customers and the defense community generally as a leader in quality. To achieve this goal means we must develop a culture dedicated to quality progress. The goal; "Achieve an empowered culture," is essential to the success of this issue. Quality is also an important component in the effort to return value for the customer's investment.

ACTION

Specific goals have been identified in this initiative to meet the demands of the future, correlated with our continuing technology integration initiatives. The various aspects of these goals have been grouped under a multi-year umbrella concept; or strategic plan of action. APPENDIX B outlines the mission in objective terms of developing a corporate culture which provides a customer-orientation to problem-solving, and to the enhancement of staff growth and development.

This action plan will prepare the Training Operations Division for the future of high technology interactive and intermodal training and education in the advanced flight simulation industry.

Computer-based distance education has previously

been identified as the primary initiative in our strategic plan. This is based upon the customer's requirement to train in an environment that not only simulates the task to be mastered (one-dimensional); but also affords the opportunity to achieve competency in an ever-changing and dynamic environment replicating the true, multi-dimensional world of flight operations.

Technology integration is real and is happening in the Training Operations Division. However; if the personnel required to integrate these methodologies into their curricula are not adequately prepared, program quality will decline.

The action plan in APPENDIX B, therefore, represents concrete, and real movement towards attainment of an ideal future of service to our customer, and staff growth and development.

STRATEGIES

This section is provided as additional guidance toward the desired goals:

1.0.1. Focus on the customer through project-oriented management styles.

Programmatic responsibility and line authority need to align on the goal of delivering program results to the customer. Line management should support

program management across Training Operations. Planning and budgeting should be driven by program needs, and cost trade-offs should be weighed in light of total program objectives.

1.0.2. Negotiate and support "ownership" to the appropriate levels.

A generally accepted principle of good management is collocation of accountability and authority at the point where a function is performed. Management must resist upward bureaucratic forces and negotiate accountability and authority downward to those who are most closely associated with and knowledgeable about the activity.

1.0.3. Improve the level of trust between support and project groups.

Conferring ownership requires trust. Support activities have an ownership stake in the success of Training Operations projects and programs. Agreements between project and support groups should be negotiated in good faith with the objective of successful delivery of the services that help achieve project objectives.

1.0.4. Value thinking that is "outside the norm."

Our heritage and traditions have helped to create a concept of what we are, of how we perform our jobs,

and what are appropriate activities for us to pursue. These unconscious, collective definitions have no official endorsement: they just evolved in our culture. These traditions are based upon past accomplishments, but they can also become "norms" that needlessly limits potential to contribute to the customer's needs.

1.0.5. Improve all levels of communication.

Communication should be authentic, constructive, and multi-directional. When all participants share and support the same mission and vision, there should be no fear associated with free and genuine communication of opinions and views on how to achieve desired goals.

1.0.6. Exercise the reward system to encourage an empowered culture.

We must examine what standards of behavior and performance our reward system is designed to promote; and we must change the reward system to encourage the creativity, enthusiasm, and customer-orientation we desire demonstrated. Advancement and financial incentives, while fundamental, are not the only motivational factors for the attributes we wish to foster. In fact, a culture that places too great an emphasis on rank-consciousness and monetary reward is likely to demotivate its staff. Recognition of

achievement takes many forms that are conducive to building a participative, mutually supportive culture.

1.0.7. Promote teamwork.

Teamwork is a hallmark of our heritage. However, as applications become more complicated and interdisciplinary, team participation must become broader and more flexible. Professional distinctions are less important than the need for the correct mix of people to focus on a project.

1.0.8. Instill a sense of urgency in the way we go about our work.

Our future success will require maximum effectiveness from everyone. We should seek to be identified as innovative, energetic, hard-working, and successful. The concept and identification of "must succeed" endeavors must be adopted as a means of communicating corporate commitment.

1.0.9. Enhance interpersonal effectiveness skill levels.

We must train in the skills of conflict management and resolution; and those skills required for project management and managing change. These skills are essential for effective teamwork and individual participation.

1.0.10. Establish a process for introducing and

nurturing a new culture.

We acknowledge that our skills in the management of change are not mature enough to accomplish the cultural transformation desired. We must seek to enhance these skills throughout our staff using the best training available.

2.0.1. Establish groups to evaluate evolving customer priorities.

These groups should be encouraged to look at opportunities for our involvement, since the next decade should provide numerous opportunities for us to engage in new programs. Advisory boards and experts can objectively assess trends and identify issues that may not be evident to persons not directly involved. Part of this evaluation should include a candid benchmark of Training Operations against other organizations to determine where we may realistically aspire to leadership.

2.0.2. Create, demonstrate, and sustain our differentiating strengths.

We should cultivate and promote particular strengths that differentiate us from other competing organizations in ways that demonstrate added value to our customers.

2.0.3. Use knowledge of evolving customer priorities to influence product and services development directions.

Anticipating customer needs is the first step. The next step is integrating creativity to achieve solutions. This process should be performed internally so that we are well positioned to offer timely solutions.

2.0.4. Consistently and persistently communicate the mission and strengths.

The fundamental message is that our business is the security, prosperity, and well-being of our customer; and that our special strength is providing solutions.

2.0.5. Communicate these goals.

The desired goals listed here are the basis for re-orienting our thinking along problem-solving lines. Communicating this guidance will be important to its success. Ultimately, all of us should be made cognizant of these goals, and aware of their long-term implications.

2.0.6. Task activity and support committees to establish priority initiatives of "customer importance" with "innovative and creative" technical solutions.

To claim leadership, we must aggressively exploit new concepts. We need to impart the opportunities identified through systems analysis, and we should encourage a continuous stream of new ideas to flow to and from all affected. Many of these may be suitable as new initiatives, and proposals should be pursued to discover solutions.

3.0.1. Establish and implement organizational performance criteria such that our customers may model.

This effort will require a commitment to continuous improvement based on customer satisfaction and the establishment of performance metrics by which quality progress can be measured. The structure of a quality improvement process is already in place at some levels of management and should be institutionalized throughout the Company. We encourage the establishment of mechanisms to deal with quality performance issues at the lowest levels within and across functional boundaries. Typically, Process Action Teams are established to address short-term difficulties, and Process Improvement Teams are geared to long-term improvement of a process or function. We are not

immune in this area; our success will depend greatly on our ability to translate insights into process improvements.

3.0.2. Fully engage the administrative function of the organization in the quality initiative.

We have a talented and dedicated corps of administrative professionals who are indispensable to the success of our programs overall. Quality of service in management, administration, and support functions is an important component of total Training Operations performance; and contributes substantially to product quality. The foundation of that quality service will be continuous improvement of good business practices.

3.0.3. Continue and strengthen our commitment to full compliance with environmental, safety, and health requirements, and other laws and regulations affecting our operations.

We commit to being a model facility with respect to environment, safety, and health performance. We have already made significant progress in procedures, training, documentation, planning, and performance. However, it is not enough merely to comply. We must continually explore how we can do our jobs safer than is feasible with contemporary processes.

TRANSITIONS

Our "ASSUMPTIONS" are that the world is undergoing fundamental change that is both encouraging and challenging. "GOALS" and "STRATEGIES," illustrated several directions in which change must occur. Our motivation for change is not merely to survive; rather, it is to prosper on the merits and quality of our service, leadership, values, contributions, and people.

A candid self-examination reveals that our current culture is derived from the traditional corporate model of hierarchical control. Successful high-technology companies require flatter hierarchies; multi-directional communication; participatory management; empowered individuals; project-oriented and informal organizational structure; and dedication to the mission is a passion shared by everyone. Such an environment fosters creativity, individual growth, and teamwork.

Transitioning to such a culture requires time and commitment, and the process will require choices. There exists no illusion that this plan will make change happen by virtue of being published. It is only a call to commit to change. The real work needs to be done by individuals at every level in the organization.

There is a strange paradox in this task: the desired results cannot be mandated, directed, or marshaled into being; they can only be fostered, encouraged, demonstrated, and permitted to occur.

It is certainly not intended to mandate in this report how managers and supervisors should foster cultural change. Instead, it is suggested that individuals think creatively about how to go about this process, and broad participation, listening, acknowledgment of others' candid opinions, objectivity, and introspection is encouraged. Conversely, exhortation, judgement, and permission-seeking is discouraged.

The invitation (and the challenge) presented is an opportunity for personal responsibility in making the Training Operations Division a creative, empowered, and dynamic community of talent.

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APPENDIXES

APPENDIX A - VALUES

INTEGRITY

- Honesty
- Objectivity
- Fairness

QUALITY

- Conform to customer requirements for performance, cost, and schedule
- Explicitly plan for and achieve continuous improvement

LEADERSHIP

- Anticipate the needs of the customer
- Convey a vision
- Execute innovative and integrated solutions; encourage creativity, innovation & initiative
- Set the standard
- Understand and manage risk
- Be driven by a desire to be the best; have a passion for excellence and success

TEAMWORK

- Ensure shared values and focus
- Conduct internal and external teaming
- Create mutual benefits; mutual respect

RESPECT for the INDIVIDUAL

- Trust and empower the individual
- Treasure individuality and diversity
- Sensitivity to individual needs & aspirations
- Expect, encourage & reward accomplishment

APPENDIX B - ACTION PLAN

GOAL:

1. Provide an empowered work environment in which staff members function effectively and productively in their defined areas of responsibility.

OBJECTIVE:

1.1 Assess the workload requirements and roles of all staff positions in the Training Operations Division.

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Develop an assessment instrument itemizing workload tasks, Instructor duties, and responsibilities Instrument will be designed to measure Instructor staff, Administrative staff, and Support staff Will identify overlapping areas of responsibility	Assessment instrument developed Assessment data collected and summarized Areas requiring improvement are identified	Process Action Team (PAT) member opportunity costs associated with time away from other duties and required responsibilites Approximately: $10,000, with no separate allocation required
YEAR 2: Planning/Understanding		
Investigate available internal/external resources for workload management Investigate available software/hardware systems for workload management Benchmark similar programs in hi-tech training/education and flight simulation industry Solicit outside OD consultant services	Staff needs matched with available resources Competitive bids from vendors secured	Process Improvement Team (PIT) member opportunity costs associated with time away from other duties and required responsibilities Approximately: $10,000 with no separate allocation required Initial consultant retainer fee for expert services Approximately: $2500 allocated in FY _____ budget
YEAR 3: Dedication/Commitment		
Pilot test selected hardware/software for specific workload function Recommend purchases	Evaluate pilot test results for validity and reliability Evaluate results for ease of use and efficiency	Approximately: $15,000 allocated in FY _____ budget

GOAL:	OBJECTIVE:
1. Provide an empowered work environment in which staff members function effectively and productively in their defined areas of responsibility.	1.2 Prepare staff to function in their work responsibilities effectively and productively.

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Stimulate an awareness of workload inefficiencies and potentiality for growth Involve staff in development of worksite vision for incorporation of electronic classroom and interactive CBT instructional strategies and methodologies Arrange off-site visits to benchmark similar programs	Staff will recognize the need for new technologies Expanded use of existent technologies Additional requests for learning/preview materials	Preview materials: $1000 Off-site visits: $2000 allocated in FY _____ budget
YEAR 2: Planning/Understanding		
Increase staff utilization of existent technologies in logistics/workload management using available materials Preview Training Management Systems software and hardware requirements Staff attends workshops and seminars on personal self-management and team-building	Increased use of internal existent hardware/software in personal self-management programs Increased effective use of pilot programs to empower staff to accept personal responsibility	Logistics Management System (LMS)/Training Management System (TMS) hardware and software purchase. Approximately: $50,000 with multi-year schedule amortization programming required
YEAR 3: Dedication/Commitment		
Complete the transition to gain full functioning with Training Management and Logistics Management Systems (TMS/LMS)	Office tasks and staff workload requirements will be streamlined to fully-automated capabilities. Fully functioning system with moderate degree of initial acceptance and use	Completed purchase and installation of TMS and LMS Amortization programming schedule complete with delivery to customer for Training program contract cost billing

GOAL:	OBJECTIVE:
2. Exhibit leadership in providing a customer-oriented environment where staff are competent in presentation skills, and are able to elicit various learning styles to achieve competencies.	2.1 Provide an avenue for staff to determine learning styles of students/customers.

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Pilot available software for determining learning styles Investigate alternative resources for determining learning styles	Recommend purchase of software	Software - approximately $2000 allocated in FY budget
YEAR 2: Planning/Understanding		
Develop a program of assessment using a cross selection group (random) of students	Use the software to produce reports on student learning styles Interpret analysis to students	None required
YEAR 3: Dedication/Commitment		
Implement learning style assessment with all Qualification students/ customers prior to program entry	Students will be assessed prior to program entry and information will be provided to staff	None required

GOAL:	OBJECTIVE:
2. Exhibit leadership in providing a customer-oriented environment where staff are competent in presentation skills, and are able to elicit various learning styles to achieve competencies.	2.2 Train staff to develop instructional strategies/methodologies for different student/customer learning styles.

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Train staff in the use of diagnostic software and interpretation of results Train staff in accurate collection of data, and understand the implication of accurate assessment	Staff will be able to describe and apply their responsibility to accurately assess student learning styles	Training materials and staff time Approximately: $5000 materials and opportunity cost
YEAR 2: Planning/Understanding		
Train staff in the use of various instructional strategies/methodologies to accomodate specific learning styles	Staff will be able to describe and apply their personal skills in modification of presentation to accomodate student/ customer requirements Additional (new) strategies will be attempted Students/customers will indicate that presentation is more effective, easier, and productive	Process Action Team (PAT) conducts training program No cost other than opportunity costs
YEAR 3: Dedication/Commitment		
Implement instructional plans using strategies aimed at specific learning styles Utilize high-technology CBT and electronic classroom methodologies to deliver program objectives	Students/customers may choose method of delivery to complete program objectives Competencies are achieved by students/ customers using any of several high-technology or traditional modes	Preview costs: $500

GOAL:	OBJECTIVE:
2. Exhibit leadership in providing a customer-oriented environment where staff are competent in presentation skills, and are able to elicit various learning styles to achieve competencies.	2.3 Modify the learning environment to enable the delivery of instructional materials in a high-tech format.

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Develop available hardware and software applications for use in the high-tech electronic classrooms Preview interactive materials available Recommend outside purchases if development costs are over program budget requirements	Development teams selected Training task analysis and development task defined Outside vendors selected and bids secured	Hardware and software requirements allocated in FY _____ budget Approximately: $25,000
YEAR 2: Planning/Understanding		
Pilot internally developed instructional program vs. externally secured test package with selected group of students/ customers Compare successes of two programs with traditional groups using non-interactive format	Competencies achieved and learning processes enhanced Students achieve greater success and quicker results in achieving competencies	Possible modification of internally developed program: $5,000 (approximately) budgeted
YEAR 3: Dedication/Commitment		
Implement fully interactive curriculum in programs incorporating high-tech instructional strategies/ methodologies Individualizaed learning plans implemented	Curriculum delivery based upon student learning styles/ preferences	None

GOAL:	OBJECTIVE:
3. Demonstrate leadership in quality and quality progress by utilizing established quality commitment concepts as the basis for evaluating all aspects of the customer refocusing effort.	3.1 Acquaint staff and customers with the philosophy and processes of total quality commitment

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Provide resource materials on the concepts of Quality in education/training to all staff members	Staff begins to associate quality concepts with quality terminology	Articles, Videos, etc. Approximately: $1000 budgeted in FY _____
Locate and solicit quality training programs (schools, facilitators, consultants)	Concepts of Quality will be initiated in various instructional programs as staff "try these principles out"	
YEAR 2: Planning/Understanding		
Encourage integration of quality concepts into the classroom context	Several programs will integrate quality concepts/principles in their classroom context	Outside quality consultant services Approximately: $1500
A model of quality in an educational setting will be developed and implemented	Most curricula will include outcome measures incorporating Statistical Process Control (PPC) measures to indicate degree of quality	
YEAR 3: Dedication/Commitment		
Involve students in a leadership role in integrating quality into the classroom setting	Quality concepts will be evident in all classrooms	None
Students will become active participants in their own learning processes in terms of content and context	All Training Operations curricula will incorporate quality commitment as a major theme	

GOAL:	OBJECTIVE:
3. Demonstrate leadership in quality and quality progress by utilizing established quality commitment concepts as the basis for evaluating all aspects of the customer refocusing effort.	3.2 Implement Quality commitment as the basis for operation in the Training Operations Division.

METHOD	EVALUATION	BUDGET
YEAR 1: Assessment/Awareness		
Present concepts of quality as the basis of functioning at each staff meeting Involve students/customers in dialogue with staff on issues of quality	All staff will use quality terminology associated with discussions on their programs	None
YEAR 2: Planning/Understanding		
Use quality as the basis of program evaluation Assess all aspects of program curricula, instructional strategy, methodology, delivery and effectiveness against objectives from a quality perspective	Students/customers and staff will recommend to Division management changes based upon assessments	Staff time for developing and implementing assessments Approximately: $1000
YEAR 3: Dedication/Commitment		
Make program changes based upon quality assessments	Program changes will be reflected in all materials and approaches	Staff and support time in making program changes No separate allocation required

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Dear Sir; **1 Jan. 1994**

This letter provides authorization to use my Human Resource Development seminar paper: CAE-Link Training Operations Strategic Action Plan, for a report to be produced by Dr. Warren Groff of Nova University.

Sincerely;

Steven J. Tourville

cc: ECD8008HRD

APPENDIX D

Central Training Academy Human Resources Department
Plan of Action - James R. Frazier

CENTRAL TRAINING ACADEMY

HUMAN RESOURCES DEPARTMENT

PLAN OF ACTION

Human Resources Development

by

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Central Training Academy

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A seminar paper presented to Nova University
in partial fulfillment of the requirements for
the degree of Doctor of Education

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TABLE OF CONTENTS

INTRODUCTION

The Central Training Academy (CTA) is a training facility operated by Wackenhut Services Incorporated of Coral Gables, Florida, for the Department of Energy (DOE). The purpose of the CTA is to provide standardized training in safeguards and security for approximately 110,000 personnel assigned to DOE sites throughout the country. Since the ratio of private contractor employees to DOE federal employees is about 10-to-1, there are many unique business challenges for Wackenhut and the CTA not found in the private sector.

The Human Resources Department is one department within the administrative functional area that plays an instrumental role in all levels of activities at the CTA. In order to meet the requirements of this responsibility, the human resources department must set short-term, mid-range, and long-term goals in an attempt to dovetail its efforts with the strategic plans of the academy. Among these efforts are employee personal and professional development, the maintenance of open and positive interaction and communication through all levels of the organization, and the improvement of the CTA contractual position through management development programs and assistance.

RATIONALE

If the CTA is to attain its mission (see Appendix A) and continue to be successful, it must move from a very traditional

method of operation to a new vision (see Appendix B) of how to do business in the future. There are several factors to consider. The underlying theme must be "if it ain't broke, break it." If the CTA doesn't break it intentionally and adopt new methods, it will surely fail naturally. This transition to a new way of operating will enhance creative ideas for improving the quality of life and morale for all employees. It will increase equality of opportunities for advancement, and establish a model training institution within the DOE community. It will also give Wackenhut a measurable business advantage and increased return on their investment in human resources development throughout the operation.

GOALS AND OBJECTIVES

The goals and objectives to achieve this new vision must address both employee and management concerns, and show an acceptable return for the amount of discomfort (change) involved. All parties must also believe that the outcomes are possible. The goals must be directly related to the CTA's long-range strategic plan and be specific, achievable, challenging, motivating, and realistic enough to fit into both short-range and mid-range plans of the human resources department's efforts.

Each goal must be determined and selected based on an analysis of the organization, employee needs, and the technologies available to accomplish them. The goals are

further broken down into required specific objectives. These objectives are developed to help determine where the organization is in its transition to becoming a change agent organization.

The three primary goals and associated objectives for the human resources department are as follows:

Goal 1. Increase the opportunities for development of individuals' personal and professional improvement needs.

Goal 2. Improve organizational commitment to the communication and implementation of traditional values and ethical business practices.

Goal 3. Influence the transition of management's ability to employ strategic visioning to enhance the CTA's continued business opportunities with DOE.

The objectives that would be associated with these goals are as follows:

Goal 1 Objectives

Objective 1. Select a human resources training specialist.

Objective 2. Establish personnel training programs to address required training issues.

Objective 3. Select employees for cross training into advancing technological fields.

Objective 4. Develop human resources to match future organizational technological needs.

Objective 5. Establish functional area training programs to enhance job knowledge for all levels of the organization.

Objective 6. Develop orientation guides and mentoring programs for individuals in new positions. (See Appendix C.)

Goal 2 Objectives

Objective 1. Establish vehicles to improve trust and communications through all levels of the organization.

Objective 2. Establish mandatory periodic interpersonal skills training for all members of the organization.

Objective 3. Provide information on new procedures, policies, and opportunities in a timely manner.

Objective 4. Celebrate individual contributions through employee valued recognition incentives. (See Appendix D.)

Goal 3 Objectives

Objective 1. Encourage management's risk-taking behavior in analysis, visioning, and action plans.

Objective 2. Provide leadership training for managers that includes conceptual, interactive, and technical focus.

Objective 3. Influence management to experiment with rethinking, restructuring, and revitalizing changes to the organization.

Objective 4. Increase the organization's orientation and tolerance for change through collaborative committees.

Objective 5. Encourage creative individuals to be involved in organizational decisions and long-range plans.

Objective 6. Reduce operating costs by helping management utilize internal human resources.

The optimum outcome of these goals and objectives would be the development of various skills. Both employees and management would have a more active role in the transition of the organization into a new-era training facility. These skills are depicted in Appendix F.

METHODOLOGY

The methods required to carry out such goals and objectives are complex. The process requires the application of all three domains of learning, to include cognitive, affective, and psychomotor behaviors. This is no easy task and requires the application and repetition of several steps at all levels of the organization. For these changes to succeed, everyone must be able to see the advantages and participate fully. This transformation requires that managers be leaders and change agents. Their role must be seen as active commitment and not just passive permission. The changes must be a dynamic process that evolves through four levels of complexity. The human resources department must take the lead to initiate these levels

of change until all goals and objectives are attained. At the same time, they must continue to examine how to continue to improve the system through rethinking, restructuring, and revitalizing the human resources development of the CTA.

Level one would involve discussion with managers about goals, plans, types, and number of people involved in the short term. Level two includes the annual budget plan, specification of quantity and quality of skills needed, and the identification of all problems (goals) requiring action. The third level would involve computer analysis of the causes of problems, to include future trends. The fourth level would include on-line modeling and computer simulation of needs, flows, and costs. These would aid in the process of updating, projecting staffing plans, opportunities, and decision generation. Also, at this level external data could be factored in from such areas as economics, education, manufacturing, transportation, and services (Werther, 1989).

The specific steps in this process would include a progressive problem-solving methodology with several related implementation activities to consider as the action plan develops.

Step 1. Initial diagnosis and preparation.

Conduct an assessment of human resources department customer concerns.

Conduct phase 1 training.

Organize a CTA improvement council.

Develop a CTA vision statement.

Step 2. Influence management to establish an improvement plan.

Develop and implement data collection vehicles.

Solicit work groups to analyze data and develop specific recommendations for change.

Establish priorities for change.

Develop broad management goals to improve organizational efficiency.

Develop an improvement plan.

Select a "new-era" management system.

Step 3. Communicate to the organization the philosophy, direction, and approach that will be taken.

Communicate the vision, goals, objectives, and strategies to all employees with responsibilities and time tables.

Conduct phase 1 training as required.

Conduct phase 2 training.

Step 4. Develop a "teamwork" infrastructure.

Mobilize and empower teams and individuals.

Organize improvement teams at all levels.

Conduct phase 3 training.

Hold individuals responsible for responsibilities and time tables.

Direct improvements to organizational and business development.

Step 5. Implement all improvement strategies throughout the organization.

Continue phase 3 training.

Refine work groups and processes.

Step 6. Establish methods for continuous improvement.

Assess and reward progress.

Reset improvement goals.

Conduct ongoing training.

Think globally.

Think collaborative strategies.

Think visionary leadership (Carnevale, 1990; Cocheu, 1992; Huse, 1985; Werther, 1989).

Step 7. Evaluate.

Monitor the operation.

Solicit ideas.

Encourage feedback.

Think continuous improvement.

Rethink, restructure, revitalize.

Because this applied step-by-step approach is one that emphasizes a cooperative work environment that addresses management as well as supervisor and employee needs, evaluation and monitoring are especially important. They provide the basic

data to management that the human resources department function is important to the organization's strategic goals, as well as its daily operations.

EVALUATION

The program will be continuously evaluated for all three levels of individual development. These levels are cognitive, affective, and psychomotor. These are critical to ensure individual and organizational change. The successes of individuals, groups, and the organization will also serve as evaluation measures. Individual confidence and commitment levels should also serve as evaluation tools. The morale and motivation level is also a good indicator. An overall perception of viable career opportunity concerns, traditional values management, and hopeful contract renewal probability would also indicate a successful program.

BUDGET

Budget considerations are always of paramount concern. The initiative of a new, perceivably risky plan for organizational change would certainly be rejected. This, coupled with the close proximity of contract renewal, could possibly create such traditional "wagon-circling" as to prevent any possibility of enactment, much less success. Therefore, the initiation of such a project must emphasize the use of available resources and talents already available to the human resources

department. These would include individual and departmental commitment of human resources, time, and abilities. In-house training programs are already available for most all categories required. A variety of human resource specialists' availability throughout the academy that could initiate and oversee various aspects of the program as career broadening opportunities.

The budget has already been established to hire a human resources development training specialist full time. Also, through the application of the "just-in-time" management model in Appendix G, the human resources department has access to both the Wackenhut training division, and the DOE Office of Personnel Management training division. Both of these resources have vast quantities of training resources available.

The major expense that the CTA would have to absorb would be the expenditure of time and effort of one single person to initiate, oversee, and follow through with the plan. As mentioned earlier, the budget has already been set aside for such a position in the human resources department. This training specialist position is ideal for this program.

CONCLUSION

The plan of action discussed in this paper is designed to be accomplished within two years. This accelerated time table has been established to assist the CTA in DOE contract renewal in July 1995. The unpredictable aspect of this plan is

management's willingness to embrace the idea of visionary leadership and actively participate in the process. If the CTA can accomplish this plan of action, Wackenhut will be assured a better position for renewing the contract.

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APPENDIXES

Appendix A

Central Training Academy Mission

The mission of the Central Training Academy (CTA) is to ensure the effective and efficient training of safeguards and security personnel throughout the Department of Energy (DOE) who are, or may become involved in, the protection of vital national resources. The CTA will provide oversight for all safeguards and security training at all DOE facilities for the Headquarters Office of Safeguards and Security. The CTA implements training programs designed to enhance the quality and depth of safeguards and security throughout the department where appropriate.

Appendix B

Central Training Academy Vision

The vision for the CTA focuses on the human resources department's ability to help create an environment that will enhance continued business opportunities. This vision includes the development of short-term, mid-range, and long-range goals that enhance the strategic plan of the CTA. This enhancement focuses on three primary concentrations. These concentrations include a return to traditional values concerning individual treatment of, concern for, and interest in personal and professional achievements.

A second concentration would include the professional development of individuals to improve equitable career opportunities and job enhancement.

The third area would include a plan to influence the organization's transition to a more global perspective of visionary practices in the management of the organization.

Appendix C

CTA Progression of Goals and Objectives

GOAL 1	JAN 94 - JUL 94	JUL 94 - DEC 94	JAN 95 - JUL 95
	Phase 1 - Understanding commitment and quality management systems.	Phase 2 - Improvement teams and customer service.	Phase 3 - Process improvement and advanced methods.
Objective 1	X		
Objective 2	X		
Objective 3		X	
Objective 4		X	
Objective 5		X	
Objective 6			X
Evaluation	HRD Specialist hired DOE and WSI contacted for training program support	I. D. Technology needs Have list of employees to upgrade Functional area training programs on line	Guides developed Functional area mentors named
Budget	Annual Salary - $40,000 Visits to WSI - $500 Reproduction Costs - $1,000	Training development - $2,500	Guides - $1,000

Costs do not include additional man hour figures.

Appendix D

CTA Progression of Goals and Objectives

GOAL 2	JAN 94 - JUL 94	JUL 94 - DEC 94	JAN 95 - JUL 95
	Phase 1 - Understanding commitment and quality management systems.	Phase 2 - Improvement teams and customer service.	Phase 3 - Process improvement and advanced methods.
Objective 1	X		
Objective 2	X		
Objective 3		X	
Objective 4			X
Objective 5			
Objective 6			
Evaluation	Communication committee established Employee care committee established Interpersonal skills training in place	Job openings circulated to all departments 30 days prior to fill date	Employee recognition program established
Budget	No cost - all resources available	No cost	Financial rewards - $1,000

Costs do not include additional man hour figures.

Appendix E

CTA Progression of Goals and Objectives

GOAL 3	JAN 94 - JUL 94	JUL 94 - DEC 94	JAN 95 - JUL 95
	Phase 1 - Understanding commitment and quality management systems.	Phase 2 - Improvement teams and customer service.	Phase 3 - Process improvement and advanced methods.
Objective 1	X		
Objective 2	X		
Objective 3		X	
Objective 4			X
Objective 5			X
Objective 6			X
Evaluation	Manager's participation in Goal 1 and 2 objectives Manager's attendance in interpersonal skills training	Management's reorganization of functional areas support	Manager's participation in committee meetings Employee participation in strategic planning Employee participation in contract renewal strategies
Budget	No cost	No cost	No cost

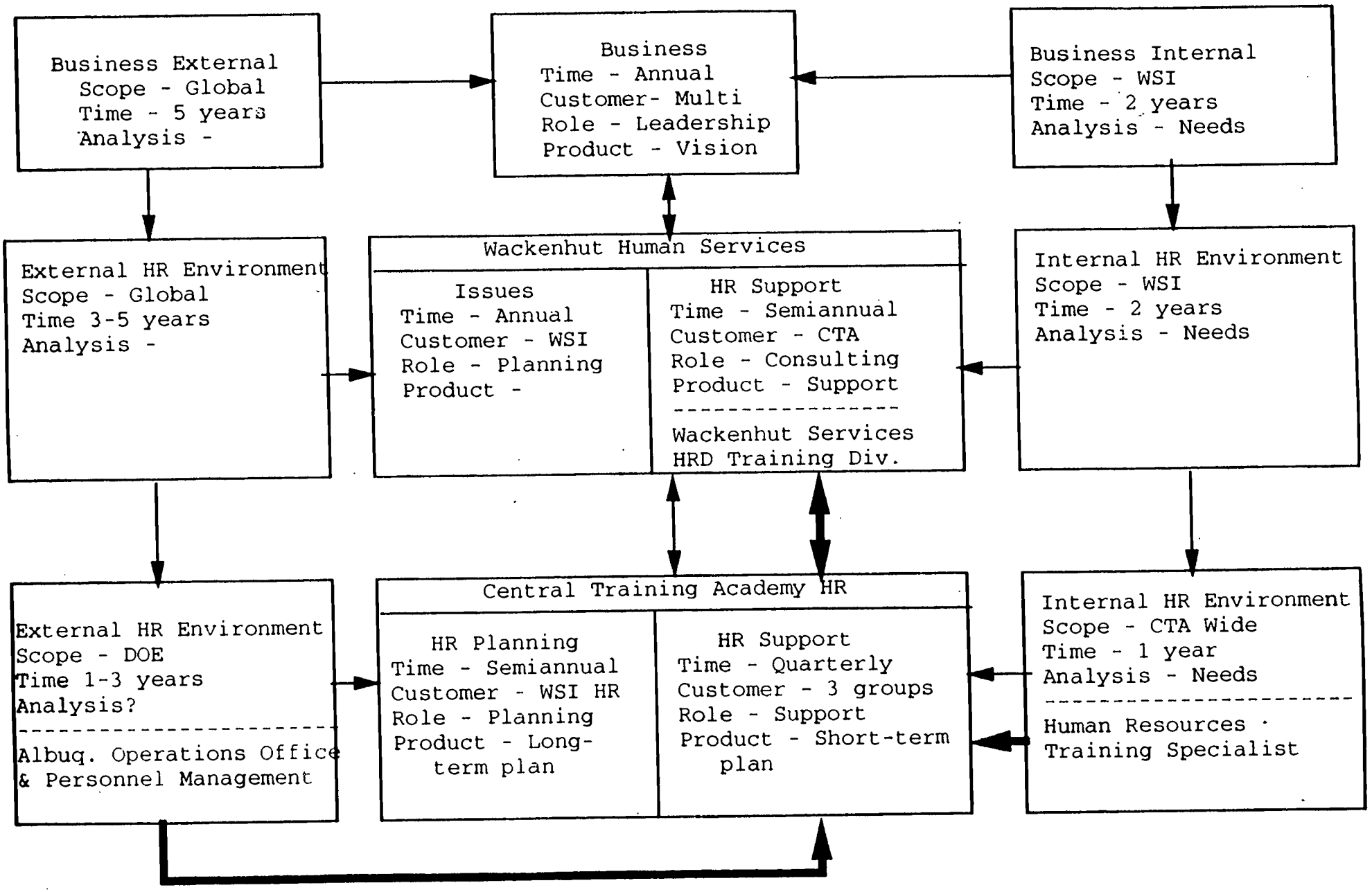
Costs do not include additional man hour figures.

Appendix F

New Era Relative Skills

New Era	Skill Area	Management	Employees
Rethinking	Managing change and ambiguity	Versatility	Adaptability
	Thinking	Innovation	Creativity
	Future focus	Vision	Mission and purpose
Restructuring	Teamwork	Collaboration	Interpersonal
	Empowerment	Courage	Initiative
	Diversity	Global Citizenship	Cultural tolerance
Revitalizing	Learning	Developing others	Learn how
	Personal effectiveness	Courage and integrity	Self-management and dignity
	Business practice	Ethics	Honesty
(Cohen, 1991)			

Appendix G
CTA 'Just-in-Time' Planning Model



(Topical Law Report, 1993)

January 6, 1994

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2812 Alcazar Street NE
Albuquerque, NM 87110

Dr. Warren Groff
1531 Peabody Avenue
Memphis, TN 38104

Dear Dr. Groff,

Thank you for the opportunity to share my paper. Please use this letter as authorization to use my paper, or any part of my paper, in any manner you choose.

Thank you,

James R. Frazier

APPENDIX E

The Creation of Functional and Discipline Specific Remote Computer Labs for the Implementation of Computing and Information Technology Across the Curriculum at Chandler-Gilbert Community College - Wayne G. Gautreau

THE CREATION OF FUNCTIONAL AND DISCIPLINE SPECIFIC REMOTE COMPUTER LABS FOR THE IMPLEMENTATION OF COMPUTING AND INFORMATION TECHNOLOGY ACROSS THE CURRICULUM AT CHANDLER-GILBERT COMMUNITY COLLEGE

Human Resources Development

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A seminar paper presented to Nova University in partial fulfillment of the requirements for the degree of Doctor of Education

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December, 1993

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

INTRODUCTION

Chandler-Gilbert Community College (CGCC) is one of ten community college sites in the Maricopa County Community College District (MCCCD). CGCC offers a wide range of certificated programs as well as an Associate of Arts and Associates of Applied Science degree programs.

In many ways, CGCC has a typical student profile in comparison with the other nine campuses (North Central Accreditation Self-Study Report, 1990). The educational objectives of the student body at CGCC range from employment related "skill" improvement to the completion of baccalaureate degree program's. Currently 13% or 384 students are enrolled in employment related skill improvement courses, 71% or 2095 students are baccalaureate degree oriented while the remaining 16% or 472 students have not decided on their educational objectives (North Central Accreditation Self-Study Report, 1990).

Problem

Since World War II, the implementation and the performance capabilities of computers have been doubling every few years (Dede, 1989). Yet, large numbers of students are achieving diplomas and degrees without the proficiencies needed to become productive employees in this computer and information technology age (Cawelti, 1989).

The corporate world is increasingly aware of the link between the quality

of its work force and industry's competitiveness in the international market. This has resulted in the articulation of a new set of skills needed by secondary and post-secondary graduates (Carnevale, 1988). Still few institutions have made concerted attempts to look at all the technological needs of their faculty, staff and students (McNeil, 1989).

CGCC has a clear and publicly stated mission that evolved from the initial statement of institutional purposes. Two of these stated purposes are, "to provide state-of-the art career training in vocational and technical areas, in response to community needs, and leading to certificates, associate and baccalaureate degrees" and "to meet the training needs of the business community and high technology industries" (North Central Accreditation Self-Study Report, 1991, p. 24).

Continuation of the current paradigm at CGCC, which determines the type of computer and information technology courses being offered and the required literacy level that each student must obtain for degree conferral, will not provide the student with the competencies being demanded (Gautreau, 1993). Even when this current literacy level requirement is coupled with the sporadic and isolated incorporation of computing and information technology in the curriculum by a "few" farsighted faculty members, the end result is still insufficient in achieving the required competency levels for all CGCC students.

In order to achieve the above stated purposes and provide the student with the necessary technological competencies, CGCC must infuse computer and information technology across the curriculum (Gautreau, 1993). To this tenet,

CGCC will need to redefine the purpose and vision of the central computer information center (CIC) and establish ten functionally specific remote computer labs (Gautreau, 1993) (see Appendix A).

Different kinds and sizes of computer labs require different levels of planning (Kinnaman, 1993). Idealism must be tempered with logic. Reason must prevail to separate that which is "desired" from that which is achievable under a given set of constraints. The complexity of lab planning coupled with other "external" constraints such as, funding, committee member time constraints, etc., dictates that planning all ten labs in a three year time period is not an achievable task. Therefore, the implementation process will be divided over a 10-year time period with three labs being designed and opened every three years.

This sequential planning and lab initiation format will require a consensus by the "planning" committee as to which labs to plan and initiate in each three year cycle. The decision process must be based on the following criteria; one, the necessity of computing and information technology application for course transferability or job skill requirement; two, the required use of the computer according to the nature of the course; three, the percentage of students that would be exposed to computing and information technology as a result of lab initiation; four, physical space requirements; five, budgetary constraints; six, the potential for shared lab situations.

Rational

Computer literacy requirements have skyrocketed during the past three years according to the Olsten Corporation survey (Leckonby, 1993). On the average, 71% of the companies now require computer literacy for managers and supervisors, up from 36% three years ago. Requirements changed dramatically for professionals, from 42% to 75%. More companies also expect their secretaries to be computer literate (from 74% to 91%) and more demand that clerical/support staff have computer skills (from 66% to 90%).

Evolving information technologies will continue to transform the nature of work, and this transformation will in turn affect the design and content of the school curriculum. As jobs change, schools must shift in response (Dede, 1989). Providing the CGCC student with the required competencies being articulated by business and industry, necessitates the complete acceptance and implementation of computing and information technology across the curriculum by all of the faculty and staff (Gautreau, 1993).

To this tenet, the following goals need to be achieved in order for Chandler Gilbert Community College to attain this "new" vision.

GOALS FOR THE IMPLEMENTATION OF COMPUTING AND INFORMATION TECHNOLOGY ACROSS THE CURRICULUM

Different sizes and types of computer labs require different levels of planning. Still, there are many common elements of the planning procedures associated with every computer and information technology lab (Kinnaman, 1993). The following goals and related objectives have been designed with this premise in mind and are applicable to the total process as well as to the planning of the individual labs.

Goal #1: The learner will be provided the opportunity to apply computer and information technology in all discipline and vocational courses taken at CGCC.

Often, technology use is isolated rather than schoolwide (Ray, 1992). The vast majority of faculty and administrators simply have no sense of the implications or the possibilities of using computer and information technology to teach, counsel, and administer. They either ignore technology or stubbornly resist its use other than for isolated applications (McNeil, 1989). It will be imperative to remove these barriers of social organization so that computing and information technology can aid in the restructuring efforts for attaining the new vision at Chandler-Gilbert Community College.

Goal #2: To develop a new set of objectives for the central computer information center that focuses on faculty and staff development training, open entry/open exit skill improvement courses, and administrative computing needs.

If the faculty does not know how to use computing and information

technology, fears it, or misconstrues its uses, it will be used poorly or not at all. If faculty perceives the machine as master, not servant, its potential will never be realized (Callister, 1993). To this end, the central computer and information center, along with its current open entry/open exit courses and administrative computing useage, needs to be charged with identification and implementation of all faculty and staff training needs. The centralization of this function will; first, provide a more efficient method for the indentification of training needs; second, place the responsibility of program design and implementation with computing and information technology specialists; third, eliminate the "hap-hazzard" sporadic approach to computing and information technology training that is currently in place.

Goal #3: To design and set up three of the functional and/or discipline specific remote computer labs every three years for the next 10 years. Machines are tools, valuable only when human intelligence organizes their support and use productively (Callister, 1993).

METHODOLOGY

The broad implementation of technology across the curriculum requires the following considerations; one, careful planning for the acquisition of physical space for the computing and information technology labs; two, restructuring of course content; three, initial start-up and annual funding

considerations for each lab; four, identifying the type of labs needed; five, creating the objectives for each lab; six, selecting the appropriate hardware and software to meet the labs objectives; seven, identifying faculty and staff training requirements; eight, designing and implementing training programs (Cawelti, 1989). To address each of these considerations and achieve the above stated goals over the 10-year time period, the following objectives must be accomplished (see Appendices B, C, D and E).

First Year

The Initial Planning Objectives

During the first year of the ten year implmentation process, the following objectives need to be accomplished. One, survey the businesses and industries, in CGCC's service area, as to the types of courses that are needed to upgrade employee technology skill levels. Two, identify administrative computing requirements. Three, Identify those courses that require computing and information technology application for transferability and course offering. Four, prioritize discipline areas based on the State of Arizona Full-Time Student Equivalence figures. Five, survey faculty for current use and knowledge of computing and information technology. Six, require that each discipline area submit two potential computing and information technology lab applications that require the use of concepts and skills from multiple disciplines.

The achievement of these objectives during the first year will aid the

planning committee in; one, prioritizing the sequence of lab development; two, identification of the business community and faculty training needs; three, the potential opportunities for shared technology lab resources; four, focus on the potential applications of technology; five, perpetuate the acceptance of technology; six, provide the basis for the establishment of an environment which will provide the learner with an opportunity to see the application of computing and information technology and interdependence of disciplines; and seven, provide the initial data to be used in the selection of hardware and software (Cawelti, 1989).

Objectives For A Three Year Cycle

Year One

Objective #1: Establish the size, kind and physical location for each one of the thee remote computing and information technology labs. Academic computing labs can be divided into three categories: public access labs, limited access labs, and computer classrooms (Kinnaman, 1993).

Objective #2: Identify the primary users for each of the computing and information technology labs. In the vast majority of labs, students are the major constituency. Before implementing a lab, the type of "user" needs to be identified. This will have significant impact on the type, objectives and size of each lab (Kinnaman, 1993).

Objective #3: Clarify each lab's goals and objectives based on the

submitted potential applications. Whenever possible, a computer lab should not be viewed as an isolated entity, but as part of a department-wide or campus-wide computing in line with the vision statement of the college (Kinnaman, 1993).

Year Two

Objective #1: Select the hardware and software that can best meet the lab's overall objectives, population and location requirements. The institution must decide what the technology will be used for. The planning committee must decide which technology is best to achieve the lab's objectives (McNeil, 1989).

Objective #2: Review faculty and staff surveys for developmental and curriculum implementation training needs. Restructuring schools requires that educators unlearn much of what they know about what school has been like (Ray, 1992).

Objective #3: Calculate initial start-up costs and annual funding for each lab (see Appendix F). Setting up a lab, including electrical modifications, furniture purchases, and so on, can easily cost half as much as the computer equipment used in the lab (Kinnman, 1993).

Objective #4: Initiate procedures to acquire funding for each lab from both Traditional and non-traditional sources. If technology is just an interesting "add-on", funds will always be too short to invest in it (Rose, 1992).

Year Three

Objective #1: Order required hardware and software and schedule appropriate conversion and set-up time.

Objective #2: Develop evaluation tools designed to measure lab useage, performance outcomes, user satisfaction of software and hardware, and potential technological improvements. Educational institutions must continually evaluate and improve the ways technology can support the directions they have already identified (Ray, 1992).

PROGRAM EVALUATION

Technology is changing so fast it is almost impossible to plan what type will be available in three to five years, or how it will transform the nature of work, and in turn, affect school curriculum. It is essential to measure potential technological improvements so that long-term plans may not tie CGCC into the use and purchase of out-dated software or hardware (See, 1992).

Determining the patterns of lab useage by faculty and students is vital in order to continually evaluate needed changes in lab size, type, staffing, hours of operation, user accessibility and annual funding requirements. Measuring the level "user" satisfaction is essential for the continual curriculum implementation process. The success of the curriculum restructuring efforts

must be outcome based (Cawelti, 1989). When technology is viewed, by the "user", as an enriching enhancement to the educational process, further creative applications of the technology will be developed and the implementation process will continue to flourish (Simon, 1990).

SUMMARY

Faculty must reach the point where they feel, that if all these technical applications are available and they can use them to help them teach, maybe they can use them to help them change what they teach and how they teach it (See, 1993). Only a concerted effort will achieve this end for Chandler-Gilbert Community College.

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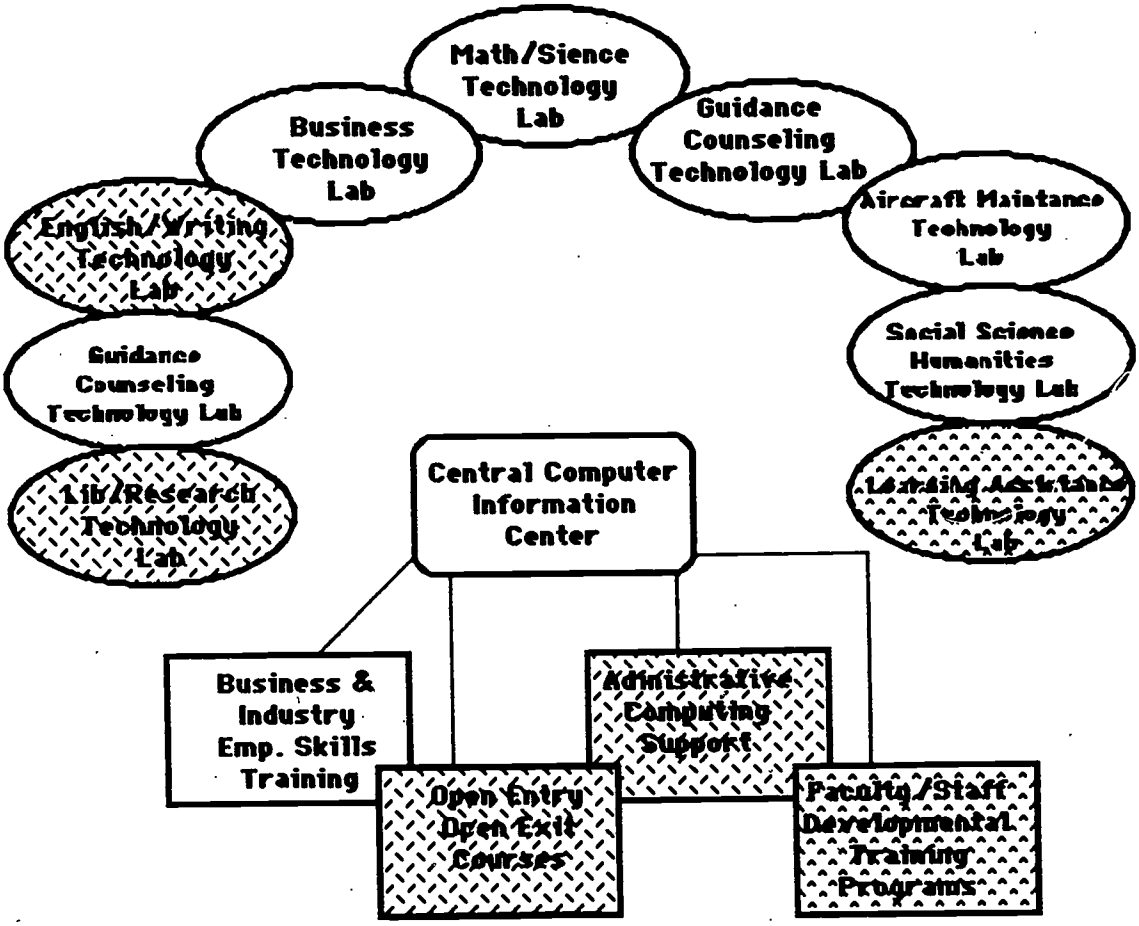
APPENDIXES

Appendix A

The following diagram illustrates the remote computing and information technology labs and the functions of the central information computer center as it will appear after the 10 year time span.



Legend

Lab or function currently not in existance or being administered to

Lab or function currently in existance but not in line with the new new vision statement

Lab or function that is partially being achieved

Appendix B

This diagram demonstrates the relationship of the first year objectives to the three goals necessary for the implmentation of computing and information technology across the curriculum at CGCC.

GOALS	To provide the learner with the opportunity to apply computer and information technology in all discipline and vocational courses taken at CGCC	Develop a new set of objectives for the central computer infromation center that focuses on faculty and staff development training, OE/OE skill improvement courses and Administrative computing needs	Design and establish three fundtional and/or discipline specific remote computer labs every three years for the next ten years
OBJECTIVES	Survey the businesses and industries in CGCC's service area, as to the types of courses that are needed to upgrade employee technology skill level	Identify aministrative computing needs	Identify those courses that require computing and information technology application for transferability and necessity for course offering
	Survey Faculty for degree of use and knowledge of computing and information technology		Rank discipline areas based on State of Az Full-Time Student Equivalance figures
			Require each discipline to submit two applications of computing and information technology for each subject area.

Appendix C

This diagram shows the relationship between the three goals and the objectives of the first year for any three year implementation cycle.

GOALS	To provide the learner with the opportunity to apply computer and Information technology in all discipline and vocational courses taken at CGCC	Develop a new set of objectives for the central computer infromation center that focuses on faculty and staff development training, OE/OE skill improvement courses and Administrative computing needs	Design and establish three fundtional and/or discipline specific remote computer labs every three years for the next ten years
OBJECTIVES		Identify the primary users of the central computer information center	Identify the size, kind and location for each of the three remote computer labs
			Identify the primary user for each computer and information lab
			Clarify each lab's goals and objectives based on the submitted application of computing and information technology

Appendix D

The following diagram shows the objectives for the second year in a three year planning cycle and their relationship to the three objective for implementing computer and information technology across the curriculum at Chandler-Gilbert Community College.

GOALS	To provide the learner with the opportunity to apply computer and information technology in all discipline and vocational courses taken at CGCC	Develop a new set of objectives for the central computer infromation center that focuses on faculty and staff development training, OE/OE skill improvement courses and Administrative computing needs	Design and establish three fundtional and/or discipline specific remote computer labs every three years for the next ten years
OBJECTIVES	Initiate proceedures to acquire outside funding to offset budgetary constraints.	Review faculty surveys for developmental and curriculum implementation training need.	Select the hardware and software that can best meet the lab's overall objectives, population, and location.
			Calculate initial start-up costs and annual funding for each lab

Appendix E

This diagram represents the relationship between the three goals and the objectives for the third of any three year implmentation cycle.

GOALS	To provide the learner with the opportunity to apply computer and Information technology in all discipline and vocational courses taken at CGCC	Develop a new set of objectives for the central computer infromation center that focuses on faculty and staff development training, OE/OE skill improvement courses and Administrative computing needs	Design and establish three fundtional and/or discipline specific remote computer labs every three years for the next ten years
OBJECTIVES	Develop evaluation tools designed to measure, lab useage, performance outcomes, user satisfaction of software and hardware, and potential technological changes.		Order required hardware and software and scedule appropriate conversion set-up time

Appendix F

The following spreadsheet example is designed to calculate the initial start up costs for one for one of the ten proposed remote computer and information technology labs.

MATH/SCIENCE TECHNOLOGY LAB

EQUIPMENT	DESCRIPTION	QUANITY	COST EACH	TOTAL COST
COMPUTERS	Dell 486DX2 66mhs	15	$1,350.00	$20,250.00
	15-Mac Quardra 610	15	$1,999.00	$29,985.00
MONITORS	Sony Triniton	15	$495.00	$7,425.00
PRINTERS	Apple laser jet 330	1	$695.00	$695.00
	HP Laser Jet	1	$725.00	$725.00
	HP Dot matrix	1	$299.00	$299.00
	Color Graphics Plotter	1	$1,200.00	$1,200.00
SOFTWARE	Derive	15	$495.00	$7,425.00
	MacNumerics	15	$530.00	$7,950.00
	MS Works package	30	$375.00	$11,250.00
	Math CAD	15	$950.00	$14,250.00
WIRING			$950.00	$950.00
DESKS	standard	30	$175.00	$5,250.00
CABINETS	standard	2	$200.00	$400.00
CHAIRS	standard	31	$75.00	$2,325.00
		TOTAL COST		**$110,379.00**

Wayne Gautreau
2555 W. Nopal
Mesa, AZ 85202

June 29, 1994

Dr. Warren H. Groff
1531 Peabody Ave.
Memphis, TN 38104

To Whom It May Concern;

This letter is to acknowledge that I Wayne Gautreau give Dr. Warren H. Groff my full permission to include any or all of my third Human Resources Development paper, dated December 1993, in his report to Nova Southeastern University.

Respectfully Yours,

Wayne Gautreau

APPENDIX F

Action Plan Towards Development and Implementation of an Interactive, Multimedia Computer Program - Karen E. Hoblit

ACTION PLAN TOWARDS DEVELOPMENT AND IMPLEMENTATION OF AN INTERACTIVE, MULTIMEDIA COMPUTER PROGRAM

Human Resource Development

Karen E. Hoblit

Glendale Community College

Warren H. Groff

Phoenix Cluster

A seminar paper presented to Nova University in partial fulfillment of the requirements for the degree of Doctor of Education

Nova University

November, 1993

TABLE OF CONTENTS

INTRODUCTION

The community college is entering a new era. Ever increasing numbers of students are choosing to attend the low cost two year institutions in lieu of going directly to the more expensive four year universities. This has caused an enrollment boom at the same time that a budget crunch is hitting many community college systems. There is fast becoming a shortage of funding to support the hiring of much needed additional faculty (Schrof, 1993). In addition, older buildings on campuses are in need of repair and expansion to accommodate the multitude of students (Kelly, 1991).

Administrators are perplexed at how to resolve this problem. A way of accommodating more students with the same number of faculty and less space requirements should be devised. A computerized, interactive course that would be open entry, open exit would solve the problem of classroom space especially if the student was able to do the course work via a modem from his or her home or office. This format would give the student much needed flexibility in study time as well (Fisher, 1987). Ultimately, fewer instructors would be needed to supervise additional

computer course students since lecture preparation and classroom time would be cut dramatically.

In summary, an interactive computerized form of instruction could resolve some of the current problems with under staffing and limited space. This idea will be discussed and an action plan for its implementation at Glendale Community College (GCC) will be outlined in this paper.

VALUES, PRINCIPLES AND BELIEFS

GCC is committed to providing a wide variety of innovative learning opportunities to students (Glendale Community College, 1992-1993). They have especially emphasized the value of both using and creating technology as instructional aids in their programs over the course of the last ten years. This supports Plummer's (1989) idea that as this nation progresses into this new era of technology, values will lean more towards active technological orientation rather than passive technological receptivity.

It is also one of GCC's beliefs that one can obtain a high quality education without necessarily having to attend traditional lecture style classes. Instructors are encouraged to develop new approaches to teaching through the use of their own custom designed

computer programs. This is a trend that more and more colleges seem to be following, especially those that are members of the League for Innovation in the Community College (Wilson, 1992).

Many students report that they enjoy learning by computer. It is flexible and can be easily integrated into their busy schedules. Student satisfaction is high on the list of committments of GCC. The student is the basis of the business of learning.

RATIONALE

Kiplinger and Kiplinger (1989) report that the education structure will change in this decade. More and more instructors will use computers to enhance the usual classroom method of teaching. A flow of ideas, including assignments, corrections and comments will go out, via modems, over telephone systems.

With these predictions come a resposibility on the part of institutions for devising ways to keep pace with the demand for this style of learning. This action plan will move GCC towards this future scenario, by recreating the way courses are delivered.

GOALS AND OBJECTIVES

Four goals are envisioned for this project (see appendix a) beginning with the primary goal, that is,

to develop an interactive, technology based, learning environment for students in psychology. The following objectives must be carried out to achieve this goal:

1. Technology products must be analyzed.

2. The developer must be trained in software authoring.

3. A content sponsor must be retained.

4. The program must be designed and developed.

A second goal, which should be approached concurrently with goal one, is to change the infrastructure of the present learning environment in order to accommodate this new approach. Its objectives are:

1. District approval for the new curriculum must be obtained.

2. Departmental approval to base the program in the psychology computer lab must be obtained and expenses must be approved.

3. Several instructors must be solicited, that are willing to monitor the course.

4. An evaluation tool for the course must be developed.

Once goals one and two have been accomplished, the third goal is to develop human resources on the

implementation and evaluation of this new style of teaching. The objective is to hold workshops with prospective faculty and student assistants to increase awareness.

And finally, once faculty members are trained, the ultimate goal is to provide the student with a more stimulating and challenging interactive learning experience by providing them with, (a) program access, (b) on site technical assistance and (c) an instructor or tutor to give encouragement and mentoring both on site and on line.

METHODOLOGY

Research, development and evaluation methodologies will all be used to some degree in this action plan. Research must be done on which types of technology and human resources are available, as well as what funding resources are available for the project.

Once these potential problems are resolved, development of the program will begin. This will involve areas of technology, design and content.

After the program is developed, it must be evaluated by introducing it to a pilot group of students on a trial basis. These students and the

instructors in charge of the project will then give their suggestions towards improvement of the product.

One of the first questions one must ask when envisioning a new program is whether it can actually be created with today's existing technology. The programs and hardware currently on the market must be analyzed to see if the plan can realistically be developed.

If the technology is available, one must also ask if there is technological support and assistance available for the developer. Even if technicians are on hand, the developer will most likely require additional training to create the desired program. The training and technical support could be a major expense of the project.

At GCC there is a technical support team already in place. Specialists in graphic design, hardware and media productions are on hand to provide assistance to faculty developers. While much of the needed software has already been purchased, new versions and site licenses must be bought for the production of this project.

The goal of developing an interactive, multimedia, psychology program cannot be achieved without content. The next objective towards achieving this goal needs to

be aimed at recruiting a publisher to sponsor the project by supplying the content and copyright permission. This would include a text, video laser discs, test bank, transparencies and any other supplements they might have. All these forms of media would then be loaded into the program template. The developer could then begin to work on the programming.

However, the primary goal of developing the program is of no value unless there is mutual support obtained from within the institution. The present physical and social infrastructure must concurrently be revised to accommodate the new style of learning. The idea must be presented to the governing body of the institution to gain funding and curriculum approval for the project.

Although most hardware is in place, funding is needed for additional equipment to be installed in the present computer lab. For instance, CD ROMs are not currently installed. Once the physical needs are accommodated, the curriculum must then be changed to allow the computerized course to be offered for credit.

A summary of how this project would support the mission of the institution as well as how it would benefit the student should be prepared. Of primary

interest to the governing board in these times of budget constraints would be a cost analysis in terms of expenses versus savings (see appendix b). According to Conklin (1979), cooperation is readily obtained when one can show profits for all concerned. Initial costs must be offset by future gains in finances, time and student satisfaction.

Approval and support from the psychology department chairperson and other psychology faculty members is also necessary. The best interactive computer program is useless if it simply sits on a shelf. Faculty members must volunteer to use it.

The third goal of developing human resources comes into play at this point. Training of faculty as well as computer lab assistants must include workshops on how to use the program as well as how to use the various hardware required to run the program. Computer literacy is a problem on numerous campuses (Vancouver, 1984; Byrne, 1983; Dellow, 1985). Many faculty members are intimidated by technology. Thus, designing a program which is easy to use will be an important determinant as to whether or not the program will be successful.

The final goal of providing a more challenging and stimulating learning environment will be reached when the final product is completed and offered as a course to the student body. Ideally, the computer lab will be provided for students that don't have home computers. The lab should be complete with trained assistants and faculty to provide support and encouragement in the use of the new product.

EVALUATION

Once implemented, evaluation of the program will begin. When the first students have completed the course, they should evaluate it. They will be given an opportunity to hand in a personal evaluation with their final assignment. Their suggestions will then be used to improve the program design, method of delivery and content.

Also, the instructors that oversee the project will be given the opportunity to express their ideas on how the program can be improved. Ideas on how to cut down on costs and time will be looked at, along with general observations about student performance. The goal is to make the program a model to be used in other areas across the curriculum.

BUDGET

Developing multimedia programs can be quite costly in the first year. Included in start up expenses will be hardware, software, personnel training and production. However, the initial cost will be offset by the money it will save the institution over the long run (see appendix c).

CONCLUSION

As the technological revolution advances, more and more colleges are going to develop and implement computer based learning programs. By developing a model for one course in psychology, a basic design can be established for courses across the curriculum. It is the eventual goal to be able to offer any course in any subject on computer.

The streamlining of human resources will enable the institution to operate on a limited budget while offering high quality educational delivery to its students. This action plan, if carried out, will set a model from which other colleges may pattern themselves.

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APPENDIXES

Appendix A

Action Plan

ACTION PLAN

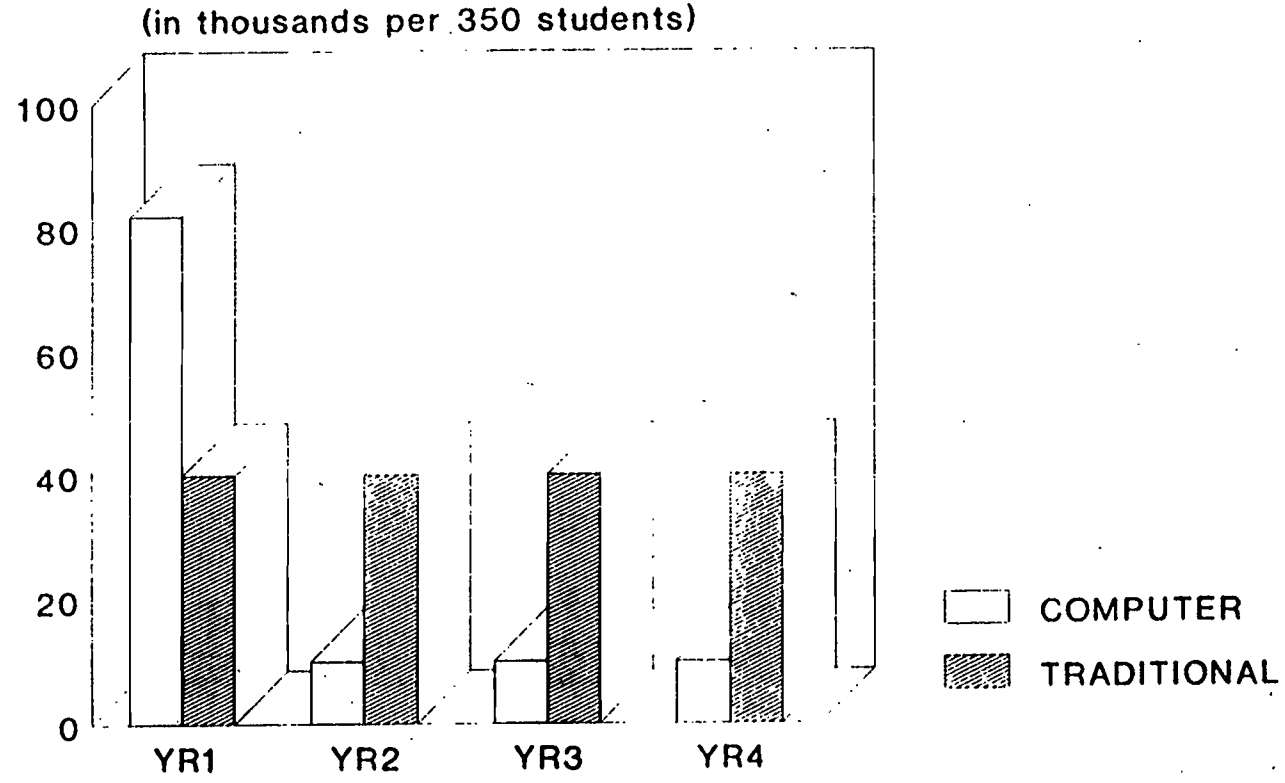
GOALS	STAGE 1 UNDERSTANDING	STAGE 2 COMMITMENT	STAGE 3 DEDICATION
1. To Develop an interactive computer course	analyze technology train developer	obtain content sponsor	design and develop program
2. To change current infrastructure of learning environment	create evaluation tools	district & dept. approval	instructor volunteers
3. To develop human resources	faculty workshops		
4. To provide students with an interactive learning experience	technical assistance	access to program	mentoring

Appendix B

Cost Analysis

COST ANALYSIS

COMPUTER vs TRADITIONAL



Explanation of Cost Analysis

The total estimated start up costs for the computer project are comprised of hardware, software, training, production and instructional expenses. Costs for all but the instructional portion come to about $42,000.

The instructional portion of the first year is based on the average salary of a faculty member whose teaching load is approximately 5 classes per semester @35 students per class. This would be an annual total of 10 classes with 350 students. This salary is estimated at $40,000.

The costs for the traditional program are based on one faculty member's salary of $40,000.

The first year, both the traditional program and computer program accommodate 350 students each. The number of students allowed to go into the computer program are kept at a standard amount (350) in order to test the program and give the instructor experience.

TOTAL COSTS YR ONE	TRADITIONAL COURSE	$40,000.
@350 students	COMPUTER COURSE	$82,000.
TOTAL LOSS		$42,000.

The second and ensuing years would see an increase in the number of students enrolling in the computer program. Also the start up costs would no longer be applicable. The cost analysis chart is based on a conservative figure of about four times the amount of students in the computer course (1400) as compared with the standard amount in the traditional course (350). Both courses would still employ only one instructor.

TOTAL COSTS YR TWO	TRADITIONAL COURSE	
	@350 students	$40,000.
	COMPUTER COURSE	
	@1400 students	$40,000.
	@350 students	$10,000.

PROFIT FROM COMPUTER COURSE.....$30,000.

Losses from the first year would be recaptured within the first two years with profits thereafter.

Appendix C

Budget

DEVELOPMENT HARDWARE	START UP COSTS
Macintosh Centris 610 14" Color Monitor 8MB RAM, 230MB Hard Disk CD ROM, System 7.1, 68040/32MHz	$2,900
SyQuest Media Drive (sound/animation)	$ 500
Microphone, Speakers	$ 200
SuperMac Video Spigot	$ 500
66MHz, 486DX based PC (DOS Platform) 16MB RAM, 1GB Hard Disk Super VGA 14" Monitor CD ROM Drive	$5.000
CD ROM Player/Sound Board	$ 850
Microphone/Speakers (use Mac)	---
Midi Keyboard	$ 350
Digitizing Tablet	$ 400
Color Scanner	$1,500
Camcorder/Tripod	$1,000
Video Capture/Delivery Board	$1,500
Pioneer Laserdisk Player	$ 900
Laser Printer (Dual Platform)	$1,500
TOTAL DEVELOPMENT HARDWARE.....	**$17,100**

SOFTWARE	START UP COSTS
Macromedia Authorware Prof. 2.0 for Macintosh	$5,000
Annual Upgrades	$1,100
Annual Telephone/Tech Support	$ 700
Macromind Director 3.1	$1,000
Adobe Photoshop	$ 700
Omnipage	$ 700
Super Paint	$ 140
Filemaker Pro	$ 200
Microsoft Word	$ 250

SOFTWARE cont.	START UP COSTS
Macromedia Authorware Prof. 2.0 for Windows	$5,000
Photo Finish	$ 125
Corel Draw	$ 400
Word Perfect for Windows	$ 275
Drivers for Media Devices	$ 100
Utilities	already in place
TOTAL DEVELOPMENT SOFTWARE.....	**$14,590**

CLASSROOM HARDWARE	START UP COSTS
28 IBM or Compatible PCs	already in place
28 Laser Disk Players	already in place
28 Color Monitors	already in place
28 CD Drives/Players @300ea	$8,400
TOTAL CLASSROOM HARDWARE.....	**$8,400**

PRODUCTION	START UP COSTS
CD Master Copy (in house)	$ 1
Additional Copies 100 @.50 ea	$ 50
Royalties Due To Authorware @.50 ea	$ n/a
TOTAL PRODUCTION COSTS.....	**$ 51**

TRAINING AND PERSONNEL	START UP COSTS
Authorware Workshop	$1,000
Other Software Training for Developer	already trained
Technical Support	already in place
Instructor Training (to be done by developer)	no charge
TOTAL TRAINING AND PERSONNEL.....	**$1,000**

TOTAL ESTIMATED START UP COSTS.....$42,241