DOCUMENT RESUME

ED 201 295 HE 013 780

AUTHOR Groff, Warren H.
TITLE Key External Data Required in Strategic Decision-Making: A New Role for Management Systems.
PUB DATE [80]
NOTE 17p.

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Accountability; Administrator Attitudes; *College Planning; *College Role; Decision Making; Delivery Systems; Economic Factors; *Educational Trends; Education Work Relationship; Enrollment Trends; Federal Regulation; Futures (of Society); Government School Relationship; Health Services; Higher Education; Information Needs; Long Range Planning; *Management Systems; *Postsecondary Education; *Social Change; Technological Advancement; Trend Analysis
IDENTIFIERS *Strategic Planning

ABSTRACT

Influences on postsecondary education, the planning function, and the challenge to management systems for postsecondary education for the 1980s are considered. It is suggested that if postsecondary education is to remain viable in the future, it must be knowledgeable of societal forces, trends, and effects as they occur in the college context and service environment. The way in which an institution is responsive to societal needs is largely a function of its sophistication in planning. Among the institutional planning efforts that occurred in the 1970s to deal with declining enrollments are an elaboration of the systematic and informed collegial (Agency for Educational Development) approach and a project that used societal trends and societal values as a way of planning futures and bringing planning assumptions into focus (American Association of State Colleges and Universities). A list of planning practices and college personnel attitudes about planning is presented, along with a chart illustrating the planning process in higher education. It is suggested that planning processes in postsecondary education are shifting from operations and project planning to strategic, information-based planning models, including an assessment of the external environment. Categories of information used in strategic planning include social expectations, economic trends, demographic trends, governmental planning, technological advances, changes in the workplace, energy requirements, and value shifts. Planning efforts related to health delivery systems are described as illustration. It is suggested that the impact of social expectations for better and more economic health care, as translated in federal regulation, upon management systems of universities with teaching hospitals has been demonstrated. (SW)

# KEY EXTERNAL DATA REQUIRED IN STRATEGIC DECISION-MAKING

## A NEW ROLE FOR MANAGEMENT SYSTEMS

by

Warren H. Groff, Ed. D.

Vice President for Academic Affairs

North Central Technical College

Mansfield, Ohio 44901



ABSTRACT

Management information systems in the past have tended to focus on data elements relating to internal operations of the institution such as registration, scheduling, class rosters, space utilization, grade reporting, student aid, payroll, budgeting, and other administrative applications. Strategic decision making as a part of the higher education planning process, however, is becoming increasingly more dependent upon data elements external to the institution. This issue is so important that the American Association for Higher Education launched a trend-awareness project in 1978 and the American Vocational Association adopted a resolution at its 1979 Convention to create a task force to develop a mechanism for determining the directions of changes in vocational education. This paper will (1) analyze the context or environment or setting in which post-secondary education takes place, (2) examine the maturation of the planning function, and (3) discuss the challenge to management systems for postsecondary education for the 1980s.

> The future holds many unknowns. It also holds a range of already known choices that can be made by those making decisions about higher education....External, particularly market, pressures will not alone lead to the best results. Internal thought, resolution, and determination are needed to assure that higher education as a whole and institutions individually reach 2000 with capacity to perform undiminished or minimally diminished by the demographic depression. The surrounding environment in the next 20 years will create some special problems that we can already see. It does not, however, determine in advance how well these problems will be solved or how inadequately human choice, or absense of choice, will settle that. A downward drift in quality, balance, integrity, dynamism, diversity, private initiative, research capability is not only possible--it is quite likely. But it is not required by external events. It is a matter of choice and not just of fate. The emphasis should be on "managing of excellence."
>
> Three Thousand Futures: The Next Twenty Years for Higher Education Final Report, Carnegie Council on Policy Studies in Higher Education, Jossey-Bass, 1979.

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

As I began to develop the outline of this presentation, I was reminded of the story of the Chinaman asking his son, "Do you know who pushed our outhouse into the Yangtze River?" His son replied, "No." Again he asked his son, "Do you know who pushed the outhouse into the Yangtze River?" Again his son replied, "No." The Chinaman then told his son the story of George Washington cutting down the cherry tree and how his father did not spank him because George told the truth. At the conclusion of the story, the Chinaman again asked his son, "Do you know who pushed the outhouse into the Yangtze River?" This time the son replied, "I cannot tell a lie father, I did it." The Chinaman immediately spanked his son. The son was confused and asked his father why he was spanked for telling the truth and Geroge Washington was not. The Chinaman simply stated that George Washington's father wasn't sitting in the cherry tree when George cut it down. The principle that is involved in the story is simply - "Where you stand is where you sit."

From where I sit, it seemed logical to build the outline of this presentation around three limited but achieveable objectives.

1. To analyze the context or environment or setting in which postsecondary education takes place.
2. To examine the maturation of the planning function as it relates to keeping postsecondary education viable in the years ahead.
3. To discuss the challenge to management systems for postsecondary education for the 1980's.

The Context of Postsecondary Education

In the Fall of 1968, John W. Gardner, former secretary of Health, Education and Welfare, strode to the podium at the annual meeting of the American Council on Education and launched a double-barrelled assault on higher education for its lack of initiative in dealing with problems of urban life. He declared, "The colleges and universities of this country have not responded impressively to the urban crisis. They have been notably laggard...very few have pursued any aspect of the urban crisis with the intellectual rigor it requires. Even fewer have accepted the real world of the city on their doorstep as a laboratory in which they can advance their intellectual purusits."

Institutions of postsecondary education are "of society." That is to say, they are created to fill a role that society has deemed necessary as it related to its well being. Viewed in this light, postsecondary education takes its place alongside elementary and secondary education, human services government, housing, and transportation as it attempts to impact on the quality of life. Postsecondary education at one time stood as the giant oak as the primary source of knowledge/information generation and transmission. Postsecondary education had exclusive right on a monopoly. Since an early study published in 1961 by the American Council on Education, business and industry has become involved in education and training in a big way.[1] An

article in the October 1978 issue of the American Association of Higher Education Bulletin begins as follows:

> An extensive education and training system exists in private industry and government. The National Conference Board, for example, reports that in the single recession year of 1975 the nation's 7,500 largest private employers spent over $2 billion on employee education--as much as the recent annual totals of all contributions from all sources to colleges and universities. And while college and university-based education is stabilizing and/or declining, the training and development sector in business, industry, and government is expanding rapidly.
>
> Several years ago Kenneth Boulding gave us a warning by drawing an analogy between higher education and that other industry in decline--the railroads. The problem, he said, was that railroad managers did not view themselves as part of a larger transportation system, but simply as manager of an isolated segment, the railroads.

[3]

An article in The New York Times begins as follows:

> Last year the American Telephone and Telegraph company spent $700 million on education programs for its employees, or more than three times the $213 million annual budget of the Massachusetts Institute of Technology.
>
> Sixteen courses run by McGraw-Hill for its employees have been approved for college credit by the New York State Department of Education. At Honeywell, Inc., in Minneapolis more than 3,500 employees enrolled this year in 183 courses ranging from solar heating and cooling to women in business.

The introduction to an article in the May 1980 issue of the Training and Development Journal[4] is as follows:

> Industry spends on employee education more than six times the amount appropriated by all the states for all of higher education! If money is power, then industry occupies a power position in continuing education.
>
> Industry is not only a major consumer of continuing education provided by others, it is also a major provider of continuing education, with large "in-house" training staffs and facilities. If competition is conflict, then industry is a source of conflict in continuing education, competing directly with other providers and pitting provider against provider as bidders for its continuing education dollars.
>
> Robert Kost points out that industry's principal objective in continuing education is pragmatic: Continuing education should provide skills and knowledge that will improve employees' capabilities and be reflected in the quality of their performance and in their productivity. But industry is not so pragmatically profit-oriented that its concept of continuing education is totally restricted

> to task-related training; there is considerable support for Quality of Work Life programs, and the liberal arts as well as industrial arts.
>
> Industry, Kost says, wants to cooperate with educational institutions, yet is not receiving the response it expects from academic sources, which is surprising in view of the widely-held assumption that such sources are securing degree-granting accreditation.

An article in the September 1980 issue of the American Association of Higher Education Bulletin[5] states:

> A majority of adult Americans are getting their education outside college and university settings, and the financial resources devoted to this enterprise are staggering: 58.4 million adults each year are involved in some form of organized education, only 12.4 million of them in colleges and universities. Programs offered by business, government agencies, professional associations, other organizations, and the telecommunications field are responsible for educating nearly five times as many of these adults as are higher education institutions. The American Society for Training and Development estimates that American business devotes $40 billion annually to employee education exclusive of college programs.

The point that John Gardner was making is that if postsecondary education is truly doing its job, it has an impact on virtually every institution of society. If postsecondary education is to remain viable in the years ahead, it must be cognizant of societal forces, trends, and effects as they occur in the college context and service environment.

## Maturation of the Planning Function

The future of any institution, including postsecondary education, rests on the degree to which it meets the needs of the society of which it is a part. As society changes, so must postsecondary education change. The way in which an institution is responsive to societal needs is a function, for the most part, of its sophistication in planning. As critical as comprehensive planning is to an institution, however, only a small number "have effectively developed a plan based on sound data about themselves and their setting which is revised at least annually and upon which the institution's leadership acts daily."[6]

Institutional planning for postsecondary education during the post World War II years had a focus on acquiring more resources and building facilities for the increased numbers of students resulting from the equal right demand for access to higher education. The two-year college emerged as a primary means for responding to the demand of providing equal access to a quality postsecondary education at a reasonable cost. Planning in postsecondary education during the 1960s was undertaken in response to immediate needs with minimum regard for the future. Planning tended to focus on the need to build facilities, develop new programs, and secure operating funds to accomodate the unprecendented influx of "traditional" students, persons in the 18-24 age range going to college full time to acquire competencies necessary to obtain the first job.

During the early 1970s, the influx of traditional students began to stabilize. Enrollments continued to grow but at a decreasing rate. Four primary reasons contributing to the slowing in enrollment growth were (1) end of the draft, (2) sharply rising costs of college attendance due to inflation, (3) changes in the job market for college graduates, and (4) liberalization of college rules to permit deferred admissions and "stopping out" of students in the midst of college careers.[7] The focus of planning began to shift from the planning for growth described above to "the coming of middle age" characterized by stable or declining enrollment, tight money, lowering of public confidence in postsecondary education, and steadily rising costs.[8]

Many private and public senior institutions experienced the impact of these forces on their institutions in the 1970s. As a result, several organizations launched programs relating to comprehensive institutional planning. The Council for the Advancement of Small Colleges conducted an Institutional Research and Planning Project (1972-75), the Planning, and Data System Project (1975-83), and the Institutional Development Project (1976-80).[9] As a result

of these projects, William A. Shoemaker, former Vice President for Research for CASC developed a list of "College Personnel Attitudes and Planning Practices" which begins with status quo and incrementalism attitudes, moves through multi-year fiscal planning and institutional research practices, and extends to the systematic and informed collegial model.

A program conducted by John D. Millett, Executive Vice President for the Academy for Educational Development, is an elaboration of the systematic and informed collegial model. During the three calendar years 1975 through 1978, AED undertook a project to assist selected colleges and universities in the management of change. The model calls for specification of external environmental assumptions such as (1) social expectations, (2) economic trends, (3) demographic trends, and (4) governmental planning.[10]

A project by the American Association of State Colleges and Universities uses societal trends and societal values as a way of planning futures and bringing planning assumptions into focus. The project uses a cross-influence matrix of 12 societal trends and 12 values to determine goals in 10 areas. The 12 societal trends are population, government, global affairs, environment, energy, economy, science and technology, human settlements, work, life style, women and participation. The 12 societal values are change, freedom, equality, leisure, foresight, pluralism, localism, responsibility, knowledge, quality, goals, and interdependence. The 10 goal areas are finance, students, research and development, public service, facilities, faculty, curricula, administration, resources, and athletics.[11]

A recently completed doctoral dissertation about planning in two-year colleges indicates that the process has historically been characterized as ad hoc, informed, authoritative, and expansionary.[12] Conclusions about the principal characteristics of institutional planning systems are:

## COLLEGE PERSONNEL ATTITUDES AND PLANNING PRACTICES

1. ☐ Status-Quo - things are fine the way they are: the college, the programs, the teaching, the environment.

2. ☐ Incrementalism - we only have to do more or less of the same things.

3. ☐ Budgeting is Planning - analysis of budget in intricate detail and some selective incrementalism.

4. ☐ Anticipating Next Year's Crisis - some "pruning" of branches as awareness of selective resource allocation develops.

5. ☐ Multi-Year Fiscal Planning - 2 to 20 year budgets that attempt to match income and expenditures.

6. ☐ Single-Source Planning - done by the aggressive (or) intelligent (or) ambitious president, dean, or business manager. The "plan" is usually in his or her head.

7. ☐ Oligarchy Planning - the President's Cabinet, perhaps including token faculty and students, try to "look ahead" for the institution.

8. ☐ Institutional Research - the ad hoc collection of new analytic and planning information to make planning a little more rational.

9. ☐ Department Analysis - the development of some isolated academic and support department unit costs and productivity measures.

10. ☐ Comparative Data - moving from intra-institutional analysis to inter-institutional comparisons to "red flag" areas requiring further analysis.

11. ☐ Inter-Departmental Systems - recognition of the interdependence of departmental functions (e.g., admissions, programs, attrition).

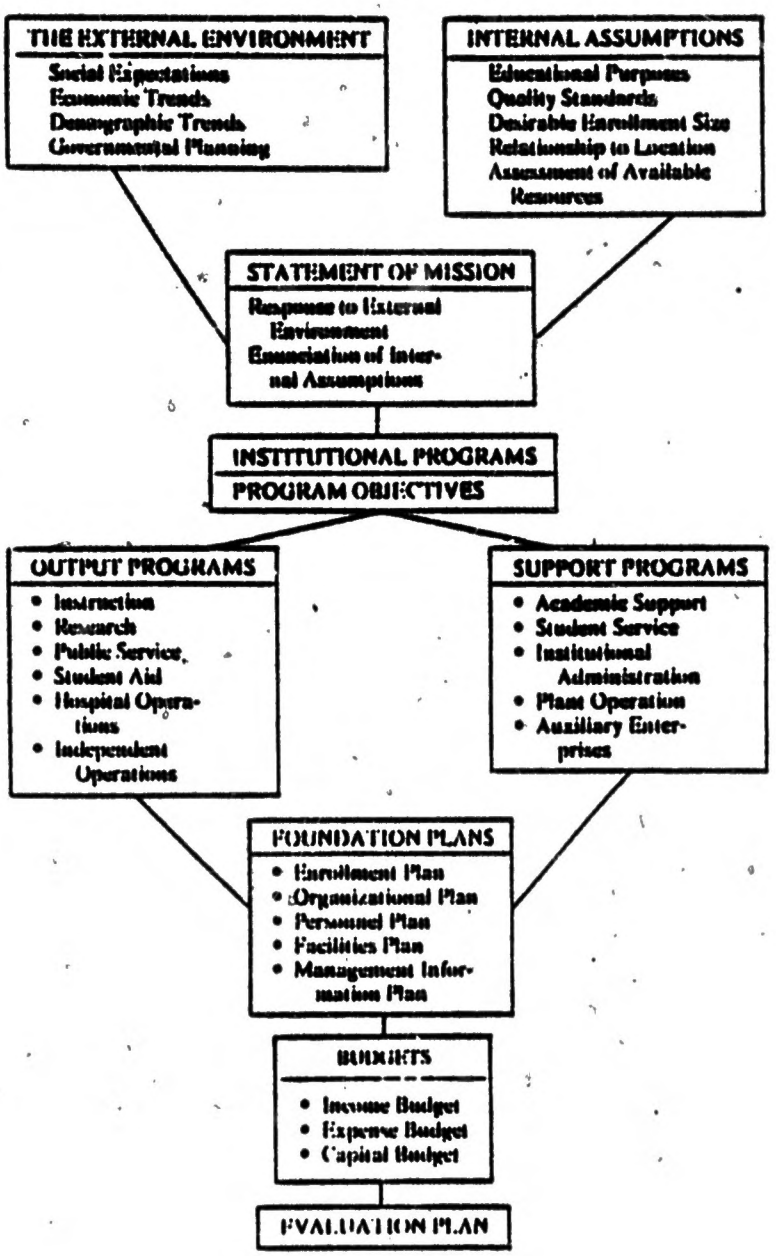
12. ☐ Comprehensive and Comparative Data - hard and soft information available on each critical area and function, and comparative wherever possible.

13. ☐ Program Objective Concept - departmental accountability for department and institutional goal attainment, resource use, and productivity.

14. ☐ Systematic and Informed Collegial Model - broad participation in organized departmental and institutional planning process producing multi-year (5-year) budget that is reviewed annually.

William A. Shoemaker
CASC Vice President for Research
September, 1977

## THE PLANNING PROCESS IN HIGHER EDUCATION



1. Planning systems are in a state of evolutionary development.
2. Planning processes are becoming more formal and structured.
3. Planning systems tend to be centrally controlled.
4. Planning systems are becoming more information based.
5. Faculty, students, and trustees are demanding greater participation in the planning process.
6. Institutional planning systems are becoming more comprehensive.
7. Planning is influenced more and more by resource considerations.
8. Planning results in a formal written plan.
9. Written plans contain some basic elements.
10. The influence of state boards and legislatures is growing.

Challenge to Management Systems

Planning processes in postsecondary education are shifting from operations and project planning to strategic, information-based planning models including an assessment of the external environment. In addition, these processes are shifting from almost exclusive intramural models to models which include something in extramural or intermural planning. These shifts are occurring in both the voluntary cooperation mode and in the involuntary coordination mode. Management information systems in the past have tended to focus on data elements relating to the internal operations of the institution such as registration, scheduling, class rosters, space utilization, grade reporting, student aid, payroll, budgeting, and other administrative applications. Data have been collected and grouped in files labeled student, personnel, financial, and space. Sometimes the data elements are similar for various reporting agencies and occasionally the independent files can be integrated to produce meaningful reports on topics such as program cost analysis and student longitudinal studies. Occasionally independent file reports or integrated file reports are synchronized with decision points in the annual planning/budgeting cycle but usually stops short of strategic planning.

Time will not permit a detailed discussion of strategic planning processes which includes how trend analysis can be incorporated in such processes in either the institutional or consortial contexts.[13] It does appear,

however, that some corporate planning is at a more advanced stage than planning in postsecondary education. In 1967, the Institute of Life Insurance conducted a Future Outlook Study to assess significant social and political trends because it seemed clear that reactive styles were not appropriate in times of rapid change. One result of the Future Outlook Study was a call for an ongoing mechanism to be established by which the business could keep abreast of emerging ideas and social changes that might affect its operating environment. In 1970, an early-warning system called the Trend Analysis Program (TAP) was designed and put into place. TAP continues to operate as a program of the American Council of Life Insurance, formed in 1976 by a merger of the Institute of Life Insurance and the American Life Insurance Association.[14]

The issue of trend analysis is of such importance that the American Association of Higher Education launched a trend-awareness project in 1978 and the American Vocational Association adopted a resolution at its 1979 Convention to create a task force to develop a mechanism for determining the directions of changes in vocational education.[15]

Categories of information used in strategic planning include (1) social expectations, (2) economic trends, (3) demographic trends, (4) governmental planning, (5) technological advances, (6) changes in the workplace, (7) energy requirements, and (8) value shifts. An example that cuts across several of these categories and touches each one of us is health care. The Hospital Survey and Construction Act of 1946 was one of the first major efforts to bring a rational and systematic planning focus to health delivery system. For the past thirty plus years there has been continual refinement in the federal legislation planning requirements relative to health care and education. The "Health Planning and Resource Development Act of 1964" (P.L. 93-641 and P.L. 96-79 in 1979) charges this nation's 210 Health Systems Agencies to collect

and analyze data in order to respond to the social expectation of equal access to quality health care services for all persons at a reasonable cost. As a result, the HSAs have collected and analyzed mountains of data about the health status of persons and the health care delivery system in each of the 210 geographic districts and aggregated at state levels. A Board of Trustees, the majority of which are consumers, for each HSA interpret these data and set forth long range goals, objectives, and recommended actions to meet identified problems and concerns. This Health Systems Plan serves as a guide for the enhancement of the population's health status, the development of the area's health resources, and the education and involvement of the general public in matters pertaining to health and health care. The PSP also provides the basis for the Board of Trustee's review of proposed health systems changes, the provision of technical assistance and the development of an Annual Implementation Plan which establishes short range objectives to be achieved in a given fiscal year.

The impact of social expectations for better and more economic health care, as translated in federal regulation, upon the management systems of universities with teaching hospitals is quite clear.[16] Data will be required about human, equipment, and fiscal resources necessary to justify any additional expenditure in a "certificate of need" application. Under "appropriateness review," areas to be examined "shall at least consider the need for the service, its accessibility and availability, financial viability, cost effectiveness, and the quality of service provided.[17] The categories of services to be reviewed include psychiatric, mental health, alcoholism, and home health along with primary, secondary, and tertiary institutional care categories such as radiation therapy, open heart surgery, and others.[18] By now it should be quite clear that these governmental regulations have implications for each institution, the strategic planning function and management

system, that has programs to prepare persons for careers in the medical health, and human service occupations.

Health manpower, however, is not the only area worthy of examination. Changes in the workplace and trends in worker dissatisfaction,[19] productivity,[20] worker underutilization,[21] and investment in research and development[22] are worthy of our analysis, as is a discussion of the rights movement. The social expectation of the right to work carries with it the right to training. In a recent issue of Education Update, the AFL-CIO indicated that "One of the most pressing problems in labor education is to determine educational needs of union members.[23] At the first Business-Higher Education Forum conducted by the American Council on Education it was concluded that "Universities and colleges lack sensitivity to the product and manpower needs of industry and business."[24] This weakness was stated by the head of the American Association of Community and Junior College as follows:[25]

> An awareness of the needs of persons in the college area requires a stance unfortunately sometimes lacking in educators or provided for in institutional structures. One of the biggest problems facing education may be a reluctance (or inability) for people in education to relate on a regular basis with people in business, industry, the unions, and agriculture. A note sounded repeatedly as one talks with people about educational needs is that they perceive schools and colleges as 'self-contained enclaves of educators'.

Kenneth E. Boulding suggests we are moving "Toward a Vintage Society."[26] He writes:

> The maturation of our society, for good or for ill, will dominate change during the next decades. In biological organisms, senescence or death is inevitable when the biological potential of the original cell is exausted. This does not have to happen in social organizations, or even total societies, because these structures are capable of a kind of social recombinant DNA. One sure sign of impending death for an organization or society is a fixed, uncritical worship of old ideas and ways that prevents adjustment to new situations. A society can restore its potential by replacing the old with the young in role structures and by developing "visions," renewals, and expansions of its original ideas.

## FOOTNOTES

1
Oscar N. Serbein, Educational Activities of Business (Washington, D.C.: American Council on Education, 1961).

2
Carolyne Davies and Austin Dougherty, "Our 14,000 Colleagues in Business, Industry and Government," AAHE Bulletin, October 1978, p. 7.

3
Stan Luxenberg, "Business Is Big In Education Too," The New-York Times, January 7, 1979, Section 13, p. 15.

4
Robert J. Kost, "Competition and Innovation in Continuing Education," Training and Development Journal, May 1980, pp. 48-67.

5
AAHE Bulletin (Washington: American Association of Higher Education, October 1980) p. 11.

6
L. Richard Meeth, Quality Education for Less Money (San Francisco: Jossey-Bass, Inc., 1974), p. 2.

7
Carnegie Foundation for the Advancement of Teaching, More Than Survival (San Francisco: Jossey-Bass, Inc, 1975), p. 31.

8
Earl F. Cheit, "The Coming of Middle Age in Higher Education," Address to Joint Session of the American Association of State Colleges and the National Association of State Universities and Land Grant Colleges, November 13, 1972, Washington, D.C.

9
The first of these three projects was supported at $1 million and established an Office of Institutional Research at 15 CASC colleges; many of these colleges now have comprehensive institutional planning processes. This project indicated the need to develop management tools. The Planning and Data System Project initial phase, 1975-77, developed management tools in 11 areas: college goals and climate, student recruitment, student financial aid, student attrition, instructional program analysis, faculty activity, library costs and services, personnel and compensation, fund raising, a marketing approach to program development, and student learning outcomes. A second phase started in 1977 included the dissemination of these tools for data collection and analysis and for generation of comparable data for the small college in the first nine areas listed above. The Carnegie Corporation supported a third phase for $198,000 to support expansion of the data bases for the individual PDS modules and the preparation of a comprehensive planning manual. This phase should be completed by 1983 and brings total Carnegie support for the project to $792,400. The Institutional Development Project provided technical assistance to approximately 50 colleges in (1) planning, research and evaluation; (2) enrollment, development, retention, and financial aid; (3) program development - academic and student services; (4) college personnel management and development; and (5) financial resources management and development. The project provided each college an opportunity to diagnose where it was in the developmental sequence and obtain technical assistance in these areas. It represented a way of reducing the lag between R and D and implementation of new knowledge as it relates to institutional development.

10
John D. Millett, Higher Education Planning: A Report of Experience and A Forecast of Strategies for Change (Washington, D.C.: Academy for Educational Development, 1978).

11
A Futures Creating Paradigm: A Guide To Long-Range Planning From the Future For The Future (American Association of State Colleges and Universities, Resource Center for Planned Change, 1978).

12
Steven LeRoy Van Ausdle, Comprehensive Institutional Planning Systems in Selected Two-Year Colleges (Columbus: The Ohio State University, 1980).

13
Warren H. Groff and Robert B. Fox, "Data as an Institutional Resource in a Planning, Management, and Evaluation System", a paper presented at College and University Systems Exchange, December 15, 1978. (Published in Proceedings and July 1979 issue of CAUSE/EFFECT).

Warren H. Groff and Robert B. Fox, "Key Data Elements in a Planning, Management and Evaluation Syllogistical Mode," a paper presented at the 25th Annual College and University Machine Records Conference, May 4-7, 1980. (Published in 1980 Conference Proceedings).

Warren H. Groff, "Trend Analysis As A Component of Comprehensive Institutional Planning", a paper presented at the workshop on Comprehensive Institutional Planning sponsored by the National Alliance of Postsecondary Education Institutions/Districts of the National Center for Research in Vocational Education, September 14-15, 1980.

Warren H. Groff, "Environmental Trend Analysis and Strategic Decision Making: A New Role for Collegiate Cooperation," a paper presented at the Council for Interinstitutional Leadership, Greater Cincinnati Consortium of Colleges and Universities, October 26-28, 1980.

14
AAHE Bulletin, November 1978, p. 11.

Update, January 1980, p. 16.

15
How TAP Works (Washington, D.C.: American Council of Life Insurance, 1978). TAP has produced reports on Aging and the Aged; The Employee; The Life Cycle; The International Scene; Frontier Technologies: Part One - Science and Health; Frontier Technologies: Part Two - Information Science; A Culture in Transformation: Toward A Different Societal Ethic; Transportation; Changing Residential Patterns and Housing; Planning; Death, Dying and Life Extension; and The Changing Nature of Work.

16
Changes in the amendments of 1979 extend "certificate of need" reviews to include major medical equipment and institutional health services and capital expenditures.

17
P.L. 96-79, Sec. 118 (a) (2) (b) (1) Section 1513 (g) (3).

18
The schedule for appropriateness review in Ohio is as follows: Radiation Therapy, Open Heart, Cardiac Catheterization, Emergency Room, Computed Tomography, Obstetric, Neonatal, Pediatric, Psychiatric, Mental Health, Long Term Care, Alcoholism, General Acute Care, Home Health, End Stage Renal disease.

19
"New Breed of Workers," U.S. News and World Report, September 3, 1979, pp. 35-38. Daniel Yanekelvich, "The New Psychological Contracts at Work," Psychology Today, May 1978, pp. 46-53.

20
"The Productivity Pinch," Time, August 27, 1979, p. 36. Productivity in the Changing World of the 1980s: The Final Report of the National Center for Productivity and Quality of Working Life, 1978. Work in America: The Decade Ahead, Work in America Institute Series, 1979.

21
"Changing Employee Values: Deepening Discontent?", Harvard Business Review, January-February, 1979.

22
National Patterns of R & D Resources: Funds and Personnel in the United States (Washington, D.C.: Superintendent of Documents). "The Sad State of Innovation," Times, October 22, 1979, pp. 70-71.

23
Education Update, September 1979, p. 5.

24
T. M. Stauffer, "Summary of The First Meeting, Business-Higher Education Forum" (Washington: American Council on Education, January 26-27, 1979).

25
Edmund J. Gleazer, Jr., The Community College: Values, Vision, and Vitality (Washington, D.C.: American Association of Community and Junior Colleges, 1980), p. 6.

26
Kenneth E. Boulding, "Toward a Vintage Society, "Technology Review, August/September, 1980, pp. 4-5.