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ABSTRACT

This paper discussed experiences in organizing a single purpose institution, Washington Technical Institute, for effective management. Emphasis is placed on the total conceptual framework required, specifications of vocational objectives, provisions made for effective management, organization of a work program for each of the academic administrative units, the spending plan permitted by cross reference, and the full participation required to implement an effective system. (MJM)

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ORGANIZING A HIGHER EDUCATION INSTITUTION FOR EFFECTIVE MANAGEMENT

By Cleveland L. Dennard
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The following paper was presented by Dr. Dennard at the 1974 NACUBO Annual Meeting in Boston. The theme of the meeting was "Management and Financing of Higher Education," and Dr. Dennard's paper discusses experiences in organizing a single purpose institution for effective management.

Rarely in the history of the last 200 years of economic thought have theories and projections appeared as insufficient for today's problems as those evidenced by the financial plight of postsecondary education in America in 1974. Economists will remember 1974 for many things, among them the squeeze on energy and the breathtaking rise in prices. Mainly, however, they will remember 1974 as the year the forecasters blew the estimates. Yields and appreciations on higher education endowments created havoc and 27 percent of all bond issues for public institutions failed to gain voter approval.

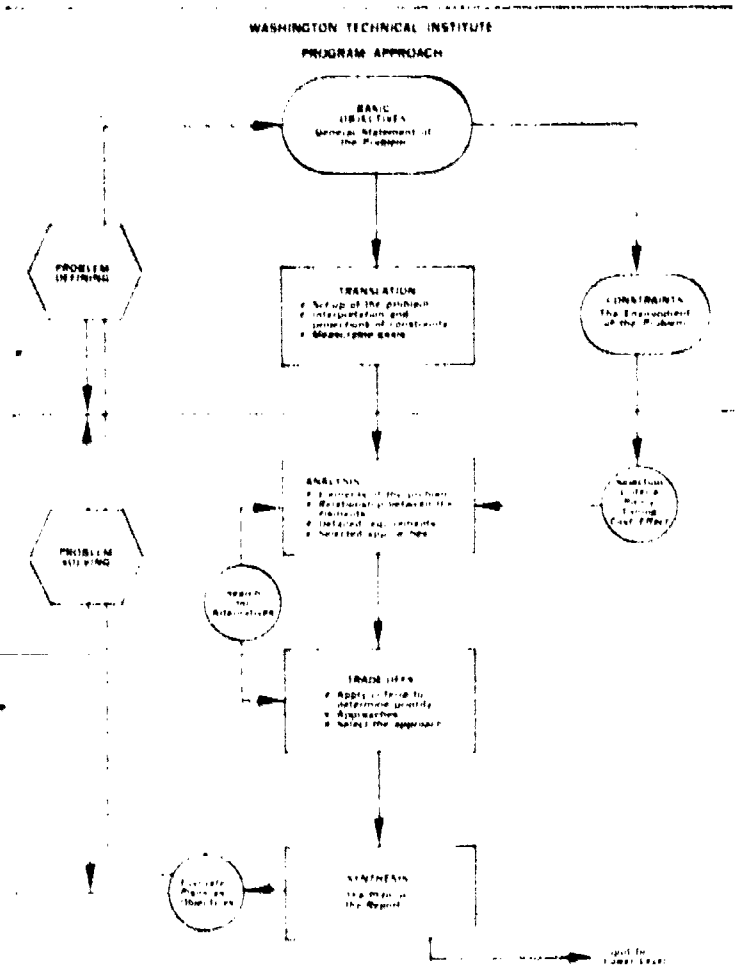
The 200th anniversary, in May 1974, of the publishing of Adam Smith's *The Inquiry into the Nature and Causes of the Wealth of Nations* provided an appropriate benchmark for a critical re-examination by college and university scholars of the assumptions undergirding the American free enterprise system. Inherent in that examination is the relationship of the purposes and goals of higher education to the procurement and management of its fiscal resources. More than 4.6 percent of the nation's population was provided private and public higher educational opportunities in academic year 1973-1974, utilizing an average 12.7 percent of state budgets in public higher education alone. The concept of product supply and demand, as well as the quality of the process and product as a basis for establishing attainable goals requiring fiscal commitments, provides an appropriate framework for a serious discussion of the management and financing of higher education. It is in this context that this discussion is presented, relative to experiences at Washington Technical Institute (WTI) of the District of Columbia in the organization of an institution for effective management.

The nation's capital, Washington, D.C., existed for 189 years without a public land-grant college. The District is larger in population than ten states, with more students enrolled in the public schools than there is population in the cities of Little Rock, Arkansas; Berkeley, California; or New Haven, Connecticut. However, it was not until 1966 that the Congress of the United States chartered land-grant college provisions for the citizens of the District through the enactment of Public Law 89-791, thereby creating Washington Technical Institute and Federal City College to meet the specific needs of residents of the nation's capital. For nearly a century, high school graduates were systematically denied comprehensive public postsecondary educational opportunity. Only the economically affluent and extraordinarily talented were assured of such opportunity.

Total Conceptual Framework Required

The creation of the Institute required a total conceptual framework, including a program approach to development and operation. Inherent in the developmental approach was a concern for consistency of human behavior in two large areas, problem identification and problem solving. This approach was conceptualized to meet the needs of developing an institution as well as to keep it operating through its first decade.

Plans that allowed ten months to prepare for initial teaching, scholarship, and extension had to meet many requirements. Included were those of Congressional actions for appropriations in both the House and the Senate, legislative actions for District of Columbia appropriations, policy formulation for the board of governance, Middle States regional accreditation, curricular accreditation, General Accounting Office auditing, state and municipal auditing, private sector auditing, organized research indirect cost auditing, faculty teaching effectiveness, student learning achievement, cost factoring analysis, and faculty rank profiles for continuing contract. The concern was to develop an institutional program approach that was geared to problem identification and problem solving.



President Johnson had authorized program budgeting for the federal government in 1965, based on a working paper prepared by Charles Hitch (University of California) while he served as a deputy to Secretary McNamara of the U.S. Department of Defense. Careful examination of the nature of the problem-identification and problem-solving processes led to adoption of a modified version of the six-step program developed by Mr. Hitch (Exhibit 1) which was, in effect, an application of the scientific method that many students learn in their first course in general science in the average American secondary school. This is the standard Campbell or Terabian approach for thesis development, dissertation development, or the critical path method used in the construction process for achieving specific objectives.

It was assumed from the beginning that an institution of higher education, to be effective, should have a discernible behavior since it is first an organizational gestalt composed of many distinct stimuli requiring timely responses, the aggregate of which produces the locomotion of the institution in pursuit of its goals. Defining the problem of organizing an institution included a two-fold effort: first, establishing the objectives, and second, translating the objectives into achievable language, while taking into account the constraints imposed by time, people, money, and materials.

The approach to the solution of the problem included an analysis of the elements of the problem, their relationships and specific detailed requirements, and a series of selected approaches that could be viewed as alternatives which, in the context of predetermined criteria, provided for a selection of the solution approach in a non-eclectic manner. Having selected the approach, the next step was to synthesize a plan of action that could be implemented by the planner or delegated to other personnel for more precise implementation. With the conclusion that the processes of inductive and deductive reasoning permitted a comprehensive- or system-oriented view of problem solving, it became necessary to test the program approach against the Institute's definition of societal needs.

Vocational Objective Specified

The Congressional charter creating WTI specified that the program should be vocational in objective and technical in content, requiring demonstrated scholarship on both a credit and a non-credit basis for residents of the District of Columbia. The presidentially appointed board of trustees, upon its appointment, exhaustively examined the phenomenon of student unrest on American college campuses in the spring of 1967. The trustees sought definitions that would form the basis of their interpretation of societal needs around which they could establish attainable goals related to specific time frames.

An examination was made of Bureau of the Census decennial data for the period 1900-1960, with extrapolations through 1967 and chi-square projections through 1977. This analysis became the basis for an econometric model of those occupations in the metropolitan Washington area that were growing as fast as the population, faster than the population, and slower than

Cleveland L. Dennard has been president of Washington Technical Institute since its formation in October 1967, when he was selected by the board of trustees (which was appointed by President Lyndon B. Johnson) to plan, organize, and administer the first land grant institute in the District of Columbia. Prior to his tenure as president of the Institute, Dr. Dennard served as Deputy Commissioner for Human Resources for the City of New York, and as principal of the Carver Vocational and Adult Schools of the Atlanta public schools. He received his master's degree from Colorado State University and his doctorate from the University of Tennessee.

the population, with the resulting implications for higher education curricula in the life and agricultural sciences, mathematics, physics, engineering sciences, engineering technologies, behavioral sciences, human and community resources, and the applied arts and humanities. Those occupations which were growing slower than the population were automatically excluded from capital requirements of land, facilities, and equipment on the assumption that internships, through cooperative education arrangements, could adequately satisfy those needs. Occupational clusters were grouped according to the learning experiences required to meet the market place demand and were classified as curricular offerings, ranging from aerospace to oceanography. The offerings reflected the phenomena of the District of Columbia having 12 percent of its land area covered by the Anacostia and Potomac Rivers, and 3.2 percent of its labor force engaged in aviation, serving Washington National, Dulles, and Friendship Airports, and Andrews Air Force Base. This approach provided the basis for formulating educational policy in the areas of instruction, organized research, and public service.

The trustees' governance design consists of five elements—policy formulation, program designations, program structures (budgeting, accounting), measurement procedures, and outcomes (criteria, format, and meaning).

Provisions Made for Effective Management

As an effective operating management tool, the WTI program approach provides for: (1) stating clearly what is to be done, (2) stating clearly what has been done, and (3) stating clearly the extent to which the accomplishments were equal to, less than, or greater than the original plan.

Administratively, effective program organization at the Institute involves an annual market analysis of the societal needs of metropolitan Washington, translated as an econometric model into the learning experiences that are described in the academic year catalog. This document becomes the first of a set of formal documents required for achieving the educational policies approved by the board of trustees in any given year.

Work Program Organized

The catalog is then translated into a work program for each of the academic administrative units by instructional terms, by months, by weeks, and by days. The program plan is summarized into a time sequence analysis for the academic year, indicating the points in time that the various events are to occur. A minipert critical path highlights the events and their sequences. Each administrative division of the table of organization —academic affairs, resources management, student affairs, and research and development—delineates the planned activities on a quarterly basis. The resources required to execute educational policies established by the board of trustees for the operating academic year are allocated in a formal document titled "Program Budget." The program budget is composed of two parallel structures—the program budget structure and the program accounting structure. The program budget structure is divided into two categories reflecting the WICHE approach to planning budgetary allocations by program elements. The primary programs are instruction, organized research, and public service, and are coded for allotments designated as 100, 200, and 300. The secondary program activities are academic support, student service, institutional support, and auxiliary enterprises, and are coded 400 through 700 (Exhibit 2).

The program accounting structure is a distribution of main objects: personnel compensation, personnel benefits, transportation of persons and things, rent, postage and communication, printing and reproduction, supplies and materials, equipment, other services, and grants and subsidies, with 72 sub-objects delineating the varying details described for each program activity. The program budget lists sources of revenue by allotments

100 through 700 and revenue budget allocations by program allotments for each program activity (chart of accounts) associated with each program category allocation.

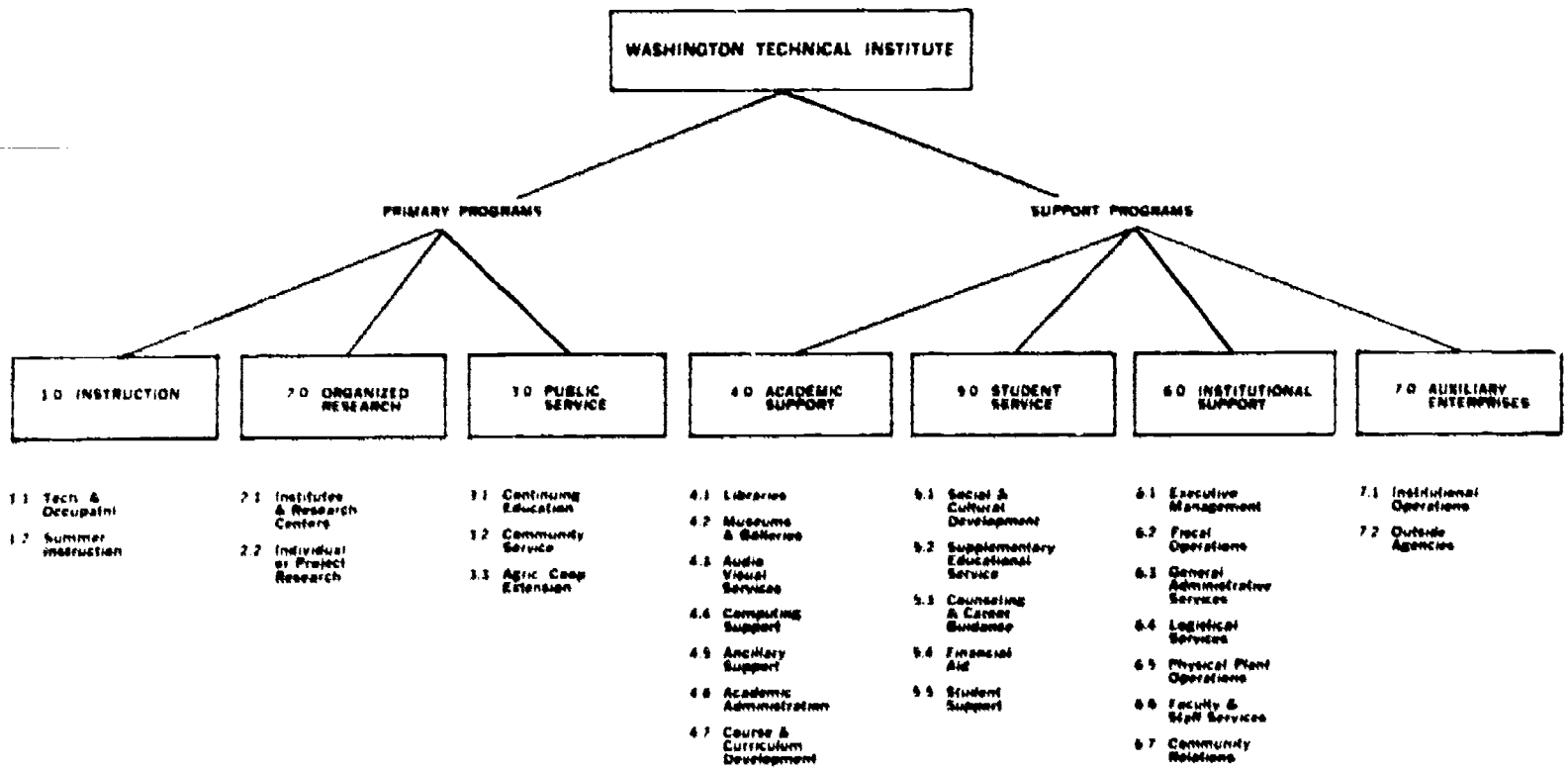
Spending Plan Permitted by Cross Reference

The program budget is then translated into a realistic "Program Fiscal Management Plan." This plan distributes the fiscal resources supporting academic program activity into twelfths from July 1 through June 30 to establish monthly spending rates, including negotiated indirect cost recapture. Each month's spending plan reflects a planned percent expenditure of the aggregate budget and, subsequently, reflects a measurement point for controlling the on-line accounting system. This real-time spending plan permits a daily, weekly, monthly, or quarterly analysis of cost by way of a trial balance of the relationship of the program objectives as delineated in the program plan to the program budget. This cross reference forms the basis for the integration of the management information system (MIS) and its subsidiary analytic studies.

The fifth formal document is the "Revenue Source Manual," which provides a comprehensive in-house narrative of the source of all revenues for the academic year and the fiscal year. This publication includes the costing factors that make up the resource requirements for each program activity. The manual was developed by using the *Digest of Educational Statistics* of the U.S. Office of Education and a statistical report on land-grant colleges, finding the median cost for each program element, and quartiling each of the data elements, then arbitrarily establishing the revenue format at the eighty-ninth percentile of other comparable institutions in the United States. Subsequently, an income strategy was developed for closing the percentile gap to the 100 percent level. The effective management of resources presupposes that there is in operation a management reporting system which identifies both internal and external reporting requirements.

The Institute's sixth formal management document is the "Management Reporting System." The two critical sets of academic institutional data, of course, are the academic records and fiscal records. The academic records are numerically structured into a series of mne-

PROGRAM CLASSIFICATION STRUCTURE



monic sub-routines called the Student Information Subsystem. This subsystem includes application processing, admissions decisions, registration, grade reporting, student directories, and academic advisement. The fiscal-records side of the MIS in the parallel budget and accounting subsystem includes the personnel subsystem and the administrative subsystem for administrative control of equipment inventories, supplies, and space utilization data.

Subsystems Controlled by Common Denominator

These subsystems are controlled by a common numeric denominator for the MIS. This three-digit numeric activity code is also the accounting code of the chart of accounts assigned to each program activity in the program budget allotments. Once a month, the administrative divisions summarize, by organizational units, an assessment of the implementation of planned activities through the "Monthly Activity Report." Projections are delineated also for the ensuing month's activities. Any modifications to the program plan are indicated and immediately updated on the minipert graphic.

The basis of the planning is summarized in the "Board Policies," which authorize the primary program activities of instruction, organized research, and public service. These policies represent the resolutions that translate the purposes of the institution into operational language, and are shared with each employee as common knowledge. The process of policy formulation is the historic reciprocity relationship between the faculty association (senate) and the board of trustees, as well as between students and staff.

The "Program and Fiscal Coding Manual" describes the numeric characteristics of the coding of program activity in the parallel budget and accounting system, excluding the numeric coding structure for academic courses. The documents "Institute Campus Specs" and "Facilities Specs" represent campus specifications and specialized utilization requirements for academic facilities that are essential in conducting operations research.

Policies and Procedures Cited

An "Administrative Procedures Manual" cites the policies and procedures for administrative organizational structure, general accounting, accounts payable, cashiering and accounts receivable, trust funds, payroll, procurement, contracts and grants, internal auditing, business services, maintenance and operations, faculty and staff services, and program budgeting in a how-to-do-it format for the implementation of activities described in the program plan.

At the heart of the organizational structure is the "Faculty Staff Classification Manual" which classifies personnel positions of faculty and staff by levels of complexity. This document follows in large measure the format of the WICHE manual, with appropriate modifications peculiar to a technological institution. A "Faculty Handbook" and a "Student Handbook," are formal handbooks concerning the organizational structure of the Instructional Resources Center, which includes conventional library resources, instructional television, and audio-visuals.

The foregoing documents provide an intellectual, programmatic, and resource utilization basis for the effective managing of an educational enterprise. The planned utilization of $66 million in fiscal year 1975 has been developed through this approach, representing a $230,000-per-day, $57,000-per-hour operation on an eight-hour-day basis of 261 working days in the fiscal year.

Full Participation Required

Functioning in the context of knowing both the process and the anticipated product of their efforts at any time during the operating year requires that each operating administrative unit participate fully in the planning and implementation of program activities. The greatest challenge, as for any institution, is to be able to rise above the minutiae of each of the elements of the subsystems to ascertain the extent to which goals have been clearly stated, accomplishments indeed documented, and evidence on the status at any time made immediately retrievable. The planning process is an ongoing program, implemented by the entire staff rather than by an office of planning.

Operation research is performed by an analytic studies group which is dependent on the integrity of the numeric system of the chart of accounts for performing cost analyses on each level of activity conducted during the course of a year. Such data are fed into the planning process for the ensuing year as program priorities in order to make appropriate allowances in real time (in time) for adjustments in the management process. The implementation is possible, the development is difficult, but it represents one of the most exciting ventures in developing an effective program organizational structure for financing and managing a higher education enterprise in an urban environment.

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