ABSTRACT
              This paper defines a conceptual model for
institutional research in the community college and identifies
sources of information, programs, and services that provide data
necessary for implementation of the model. The model contains four
specific subsystems: goal setting, program development, program
review, and cost effectiveness. Each subsystem distinctively relates
to planning and decision making and each has component data fields
that identify and organize information into subject categories. The
data fields include community, students, programs, and resources. In
order for research in any subsystem to be valuable and an effective
determinant in policy making, it must take into account the various
aspects of all data fields. Translation of research data into
planning concepts and alternatives is the crux of the research
enterprise. After program outcome data have been collected,
management guidelines are necessary to the translation process.
Establishing guidelines involves setting up systemwide priorities and
requires administrators to formulate some decision apparatus for
converting data into action. A list of programs, services, and
resource materials for the four subsystems is provided and includes
such items as measurement instruments and reference works. (TR)

A Conceptual Framework for Institutional Research in Community Colleges

Richard L. Alfred
Director of Planning, Research and Development
New York City Community College

Stephen H. Ivens
Director of Program Services
The College Board

2

The College Board is a nonprofit membership organization that provides test~
and other educational services for students, schools, and colleges. The membership
is composed of more than 2,000 colleges, schools, school systems, and e ducation
associations. Representatives of the members serve on the Board of T ,stees and ad-
visory councils and committees that consider the programs of the College Board and
participate in the determination of its policies and activities.

Introduction

Emerging research trends in the two-year colleges indicate that three
major developments are now beginning to take place. These develop-
ments have come about primarily in response to a need for assistance
in institutional decision making and have closely paralleled the in-
creased emphasis on accountability that has become the hallmark of the
seventies. Perhaps the most significant development is a renewed em-
phasis on applied rather than theoretical research, which has led to
an increase in usable rather than abstract models. The steady
increase in the number of research projects devoted to specific prob-
lems rather than general investigation clearly reflects this shift in
emphasis.

A second development is the redefinition of functional objectives
in institutional research. The focus is now shifting to such matters
as enrollment projections, outcomes in career programs, economic im-
pacts of the college on the community, cost effectiveness, administra-
tive organization, institutional goals, college governance, instruc-
tional effectiveness, community needs, and many related topics.
Studies that merely tabulate student characteristics no longer fulfill
the information needs of potential users. Needed now are studies that
concentrate on specific areas and individual needs, rather than
general student characteristics. In addition, surveys are required to
determine the educational needs of particular segments of the popula-
tion such as rural and urban groups, ethnic minorities, elderly cit-
izens, and women.

Finally, institutional research has become more sensitive to the
need for empirical information on whether community colleges meet the
expectations of the communities they serve and the requirements of
legislative agencies. A premium is placed on information related to

the quality of impacts produced by the college as contrasted to those
imposed on it by the individuals and groups using its services. This
development is clearly reflected in the number of recent studies con-
ducted to determine student outcomes in the educational process.

Research Conceptualized

Given this emphasis on the practical aspects of research and the in-
formation needs of faculty and administrators, research can be defined
as a process designed to assist institutions in: (1) defining their
goals and purposes; (2) identifying programs and policies that meet
these goals; (3) evaluating programs to find out whether they are use-
ful to the institution; and (4) mapping the flow of resources to de-
termine the cost effectiveness of college programs.

There are many sources of data, ranging from the expressed needs of
community subgroups to the published requirements of state agencies.
The value of such resources for a particular organization depends on
the efforts of many to collect, organize, and apply the data when
decisions are made. At their best, research data are a constructive
tool for management to use in making key decisions and in implementing
change; at their worst, they can be just window dressing for decisions
that have already been made. To be constructive, research should have
a direct effect on decisions concerning institutional goals and pur-
poses and should affect the methods by which these decisions are made.
For research to have such an effect on decision making it must meet
three essential conditions. First, it should help faculty and admin-
istrators establish institutional goals and objectives; second, it
should play an integral part in planning; and, third, it should pro-
vide the means for evaluating institutional programs and activities in
relation to stated goals.

There are several assumptions upon which these conditions are based:

■ Facing an uncertain future, administrators are sensitive to the need for research to assist in the formulation or modification of institutional goals where necessary.

■ Research, as an integral part of the decision-making process, both precedes and follows the establishment of institutional goals.

■ Research, as a pivotal element in goal setting, plays a key role in planning for the long-range development of the institution.

■ A recognized apparatus exists in every institution for the conversion of research findings into planning concepts and decision alternatives.

■ Comprehensive data systems, once organized, will be used by faculty and administrators to assist in the development and guidance of individual students, and to guide the further development of the institution through variable internal and external conditions.

If these conditions and assumptions are accepted, a conceptual foundation for research will be established and a system designed for its organization into data fields. The purpose of this paper is to define a conceptual model for institutional research in the community college and, where possible, to identify sources of information, programs, and services that can provide data needed to support the implementation of the model.

Institutional research in the community college can be described in a model that contains four specific subsystems: goal setting, program development, program review, and cost effectiveness. Each subsystem has a distinctive relationship to planning and decision making, and each has component data fields that identify and organize information into subject categories. These data fields are: community, students, programs, and resources. Within larger community colleges, the last

data field may be expanded into facilities, finance, and staff, but since these three tend to operate together, the model is more simply served by the single data field--resources. Figure 1 is a diagram of the model just described, showing the four subsystems and the four data fields with their relationship to institutional research and the planning process.

Before discussing in greater detail management's use of research data for planning and decision making, it may be helpful to describe more fully each of the four subsystems of the model and the types of data that are incorporated into each of the four data fields. The descriptions that follow are meant to be illustrative and not exhaustive.

Goal setting

Most two-year colleges have a general set of goals based on a philosophy formulated at an early point in their development. Such goals, once developed, may receive little attention except in relation to visits from regional accrediting associations when an attempt may be made to relate them to descriptive data, collected after the fact, to demonstrate that the goals are indeed being met. Unfortunately, these goals normally are not defined in a way that makes them effective in guiding institutional development, nor do they receive regular review and evaluation by faculty and administrators to help make them a vital force in management.

Every institution should collect data that can become a source of direction for determining the types of goals to be pursued. It is not enough for a college to commit itself to offering career programs simply because this is an objective usually set by a comprehensive community college. Ideally this goal should be determined in accord
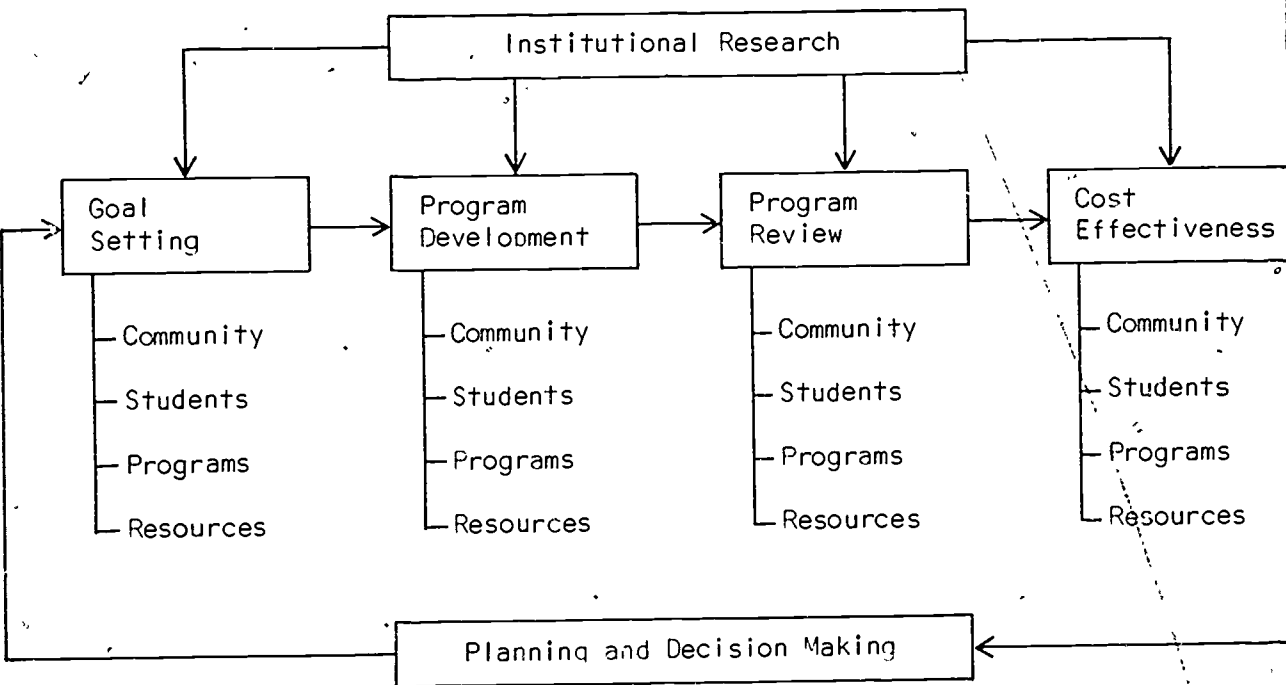
Figure 1: Conceptual Model for Institutional Research

with data describing regional and local needs for career programs. It
should be stated in terms of the total percentage of enrollment to be
served by such programs, the relationships of these programs to man-
power needs of the community, and the total number of positions
available to program graduates. Similarly, a goal concerning guidance
services should identify through research the kinds of needs students
have for such services as well as the anticipated results. Obviously,
the formulation of goals based on research data will not be easy in
many areas, but the effort must be made if goals are to serve as a
yardstick for institutional development.

Within each of the four data fields, the following areas of concern
in the goal-setting subsystem serve as examples that need to be ad-
dressed by community college research.

I. Goal Setting

A. Community

1. Geographical characteristics of the region served by the
   college region, including the size of the area, zoning
   characteristics, and natural barriers to campus development.
2. Demographic characteristics of the region, including popula-
   tion density and characteristics, migration patterns, and
   transportation facilities.
3. Industrial/occupational characteristics, including manpower
   distribution and projected needs, number and types of busi-
   nesses and industries, rate of unemployment, and prospect of
   "growth vs. no growth" occupations.
4. Regional and state statutes regulating institutional goals.

B. Students

1. Individual and group perceptions of college goals.
2. National and regional enrollment patterns, including intended
   fields of study and degree goals.

C. Programs

1. Opportunities for postsecondary education within the area, in-
   cluding number and types of postsecondary institutions, goals,
   primary clientele, and articulation policies and procedures.

D. Resources

1. Potential sources for outside or supplemental support for in-
   stitutional goals.
2. Staff inventory of special abilities and specific areas of ex-
   pertise.
3. Facilities both on and off campus available for institutional
   use.

Program development

The program development subsystem describes specific actions taken by
the community colleges to achieve the previously stated goals. The
data fields of program development, although overlapping with those of
goal setting, tend to concentrate on the specific educational needs of
the community.

The development of programs based on objectives that reflect re-
search on community needs carries forward the process through which
the institution's goals are created. If the objectives are properly
stated, they can enable faculty and administrators to appraise pro-
grams according to their use of current resources and measure their

effectiveness against a series of immediate and long-range yardsticks.
The types of institutional research needed in support of program de-
velopment can be summarized as follows.

II. Program Development

A. Community

1. Educational needs and characteristics of secondary school, stu-
dents and the adult population of the region served by the
college.

2. Local employers' perceptions and needs, and manpower projec-
tions at the local, state, and federal levels.

B. Programs

1. Professional, state, and regional regulations affecting pro-
gram development.

2. Specific program offerings in other postsecondary institutions
in the region.

3. Program strengths and weaknesses in feeder secondary schools.

C. Students

1. Enrollment projections.

2. Educational needs and characteristics of potential students
and enrolled students.

D. Resources

1. Projections of program costs and revenues.

2. Projections of staffing requirements.

3. Projections of amount and type of facilities required.

Program review

The third subsystem in the institutional research framework is program review or, to give it a more formal and potentially threatening name, program evaluation. This subsystem is perhaps the single most routinely examined area in community college research today with the focus of the research generally on student outcomes.

Figure 2 shows the use of the concept of "outcomes" to describe the progress of students in relation to programs. In this diagram, background characteristics of entering students, objectives of the program, and descriptive measures of the college environment are considered "input." The "outcomes," observed throughout the program function, are measured and related to the "inputs" in order to obtain indices of program effectiveness.

Programs can be measured at three different intervals: at the time of initial student enrollment (input); during the period of enrollment (functioning); and after termination of study (outcomes). Some of the studies typically conducted in this area are the following.

III. Program Review

A. Community

1. Economic impacts of the college on the community.

B. Students

1. Characteristics of enrolled students, including demographic, intellective, and perceptual-attitudinal.

2. Attrition follow-up for both course and college withdrawal.

3. Transfer follow-up.

4. Graduate follow-up, including employment, satisfaction with
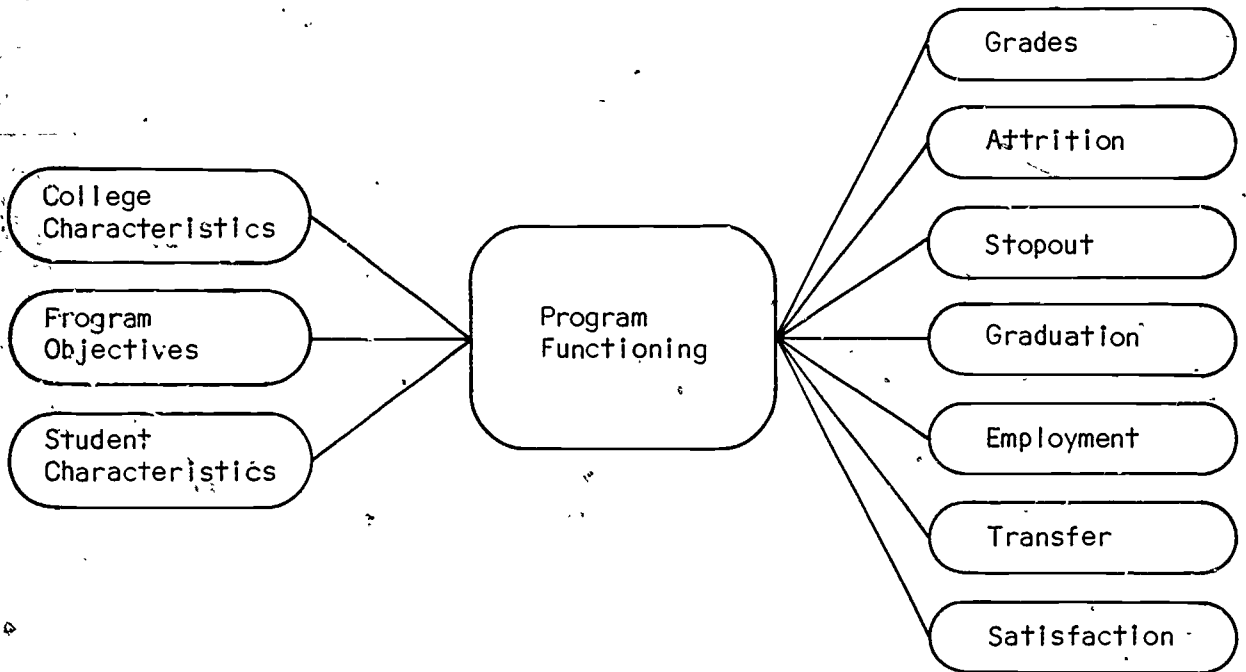
Grades

Attrition

Stopout

Graduation

Employment

Transfer

Satisfaction

College Characteristics

Program Objectives

Student Characteristics

Program Functioning

Figure 2:   Input-Outcome Model of Program Functioning

13

education and employment, and certification/licensure results.

5. Perceptions of college.

C. Programs

1. Course and program demand, including longitudinal analyses.

D. Resources

1. Faculty perceptions of college.

2. Space utilization, including library facilities.

Cost effectiveness

The fourth subsystem in institutional research responds to the need of community college planners for a gross quantitative measure of the cost effectiveness of present programs, for an analysis of the major consequences of present programs, and for an estimate of the major consequences of possible alternative programs. Since only enrollment-based information currently meets the criterion of credibility, cost effectiveness analyses have been limited to data relating only to numbers of students. At most, this type of analysis produces a unit cost for each operation and should more appropriately be labeled "cost analysis."

Some of the studies that have been conducted in this area provide the ingredients of unit cost:

IV. Cost Effectiveness

A. Community

1. Federal, state, and community funding levels across institutions and programs.

B. Students

    1. Enrollment analyses, including headcount, full-time enroll-
       ment, credit-hour production by college, division, department,
       course, and section.

C. Programs

    1. Costs of materials and supplies.

D. Resources

    1. Faculty and staff salaries and benefits.

    2. Energy and maintenance costs.

    3. Facility costs/depreciation.

Planning and Decision Making

The translation of research data into planning concepts and alterna-
tives to current plans is the crux of the research enterprise. Manage-
ment decisions do not simply follow from the existence of research
data. There is a great need to increase management's awareness of the
value of converting past, present, and future research data into
planning concepts. When data on program outcomes have been collected,
management guidelines are necessary for their translation into plan-
ning alternatives. Establishing guidelines involves setting up
systemwide priorities and requires that administrators formulate some
kind of decision apparatus for converting data into action.

    Many administrators fail to attend to this need for a decision
apparatus and lapse into lethargy when they realize that they must
assume a leadership role if planning is to be successful. The absence
of a decision-making system allows the accumulation of a core of
unanswered questions that plague educational planners: What are the

uses of research data in community colleges? What procedures should
be used for the conversion of data into planning? Who should be re-
sponsible for assessing the implications of various data trends and ad-
vising management of alternative decisions to be made on the basis of
research data? What is an appropriate balance between politics and re-
search in the planning process? How can research data be used to im-
prove management decisions? What is the value of planning in an insti-
tution if political concerns often override planning alternatives?
Questions such as these must be answered if two-year colleges are to
conduct useful research programs.

Figure 3 presents a decision diagram that depicts the environment
for converting research findings into planning concepts. This schema
shows the potential for conflict in competing staff interests, a
situation that has proven so dysfunctional for community colleges.
Ideally, planning should be a graduated process that involves making
decisions that strike an even balance between political considerations
and research data. Too often, political expediency has been the dom-
inant force in decision making, and research has been a superficial
adjunct to the process. This tendency is most evident when adminis-
trators manipulate research findings to fit a framework congruent
with their own value expectations when they make decisions affecting
the direction of the institution.

Institutional constituencies, depending on their size and internal
cohesiveness, bring different value perspectives to the decision-
making process. To the extent that these value perspectives are
identified and understood, research can be effective as a guide to in-
stitutional development. By presenting faculty and administrators
with different alternatives based on research findings, the research
model can be used to forge decisions regarding long-range development.
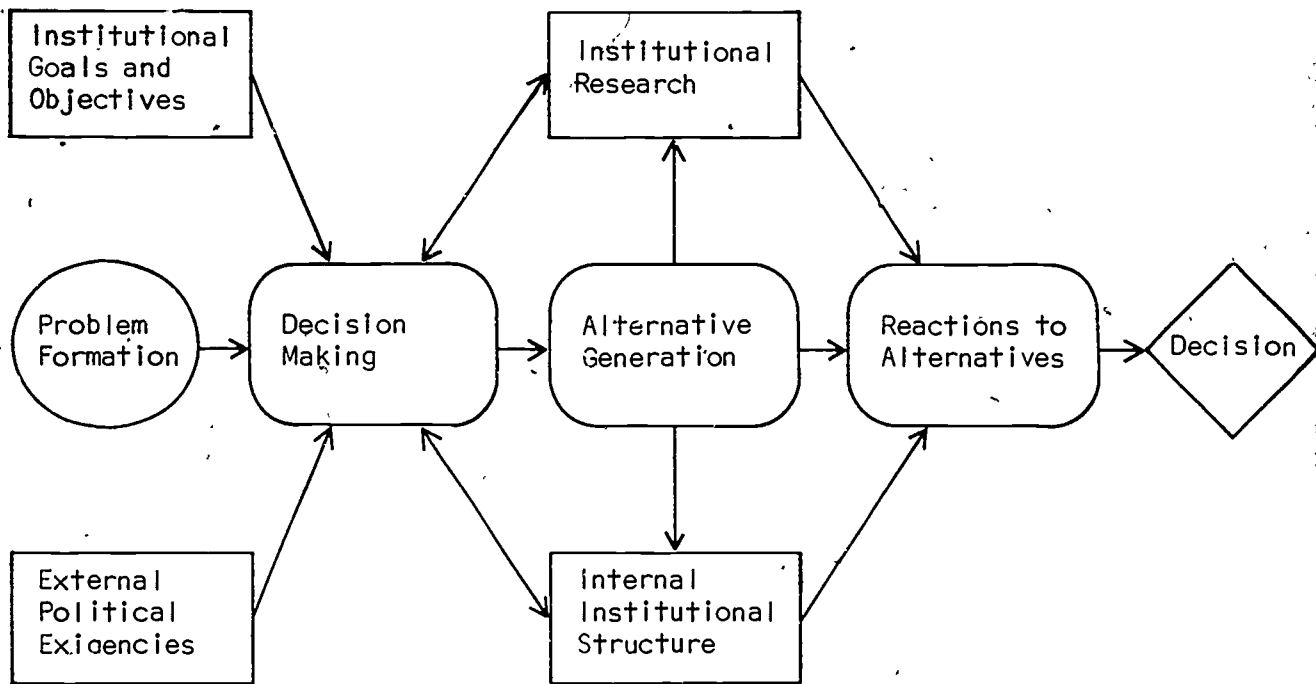
Figure 3: Decision Process Diagram

Using available data in combination with stated institutional goals
and staff input, decision alternatives can be constructed. These al-
ternatives can range from a solution that is purely political to a
data-based approach to long-range planning. The most acceptable solu-
tion is likely to lie somewhere in the middle, but by identifying
potential alternatives faculty and administrators can begin to estab-
lish criteria for future planning.

In the absence of a decision-making system to convert research data
into planning concepts, research already completed is often of limited
value. A decision model should be developed that is sensitive to the
political climate in which an institution functions as well as
flexible enough to allow time for the development of decision alter-
natives. It should not be assumed that the values and interests of
college constituencies will always be compatible with research data,
but that administrators will ultimately be able to achieve consensus
on an objective base for planning if they are given accurate and
meaningful information.

The following annotated list of programs, services, and resource
materials for the four subsystems is provided to assist readers in-
terested in implementing components of the model described here.

Annotated List of Programs, Services, and Resource Materials

I. Goal Setting

1. Institutional Goals Inventory (IGI), Educational Testing Service

   An instrument to aid institutions in defining their goals, IGI
   should be specially useful in the planning and evaluation process.
   Results are reported for groups, not for individuals.

2. Occupational Outlook Handbook, 1976-77 edition, U.S. Department of
   Labor
   A standard reference for vocational guidance information covering
   job descriptions, required training, working conditions, and job
   prospects. See also, Occupational Handbook Quarterly and Occupa-
   tional Outlook for College Graduates, 1976-77 edition.

3. Oregon Career Information System (CIS), 247 Hendricks Hall, Uni-
   versity of Oregon, Eugene, Oregon 97403
   The CIS is a developing system for states that provides current
   labor market and educational information for individuals, schools,
   and social agencies. The purpose is to improve career choices and
   training opportunities.

4. State Postsecondary Education Profile Handbook, 1977 edition, Edu-
   cation Commission of the States
   A compendium of information, by state, that describes the educa-
   tional structure, presents descriptive statistics, and lists annual
   and biennial reports issued by state agencies, and special reports
   and studies currently under way or being planned.

5. The Condition of Education, 1977 edition, National Center for
   Educational Statistics
   A statistical report that delineates the context and climate for
   education and describes educational activities, the institutions
   that offer them, and the persons who participate. The 1977
   edition repeats very little data from the 1975 and 1976 editions.

II. Program Development

1. Academic Unit Planning and Management (AUPM), National Center for
   Higher Education Management Systems
   AUPM is intended to help in the identification and organization of

data about academic unit functions, the availability and alloca-
tion of human and physical resources, the sources and uses of
funds, and the planning and assessment of outcomes.

2. Admissions Testing Program Summary Reporting Service, The College
   Board
   Summary reports describing the characteristics of approximately,
   one million high school seniors are produced each year by the
   College Board. Companion reports are also produced for schools,
   postsecondary institutions, and states on students who partici-
   pate in the Admissions Testing Program.

3. Adult and Career Education Survey (ACES), The College Board
   ACES is a questionnaire under development to assist industry and
   postsecondary institutions in assessing local community needs for
   educational programs and services.

4. Higher Education Enrollment Forecasting, National Center for
   Higher Education Management Systems
   This document discusses the use of specific forecasting techniques
   and procedures that are applicable in a wide variety of situations.
   Illustrations of the most widely used techniques are provided.

5. Student Financial Aid Management Services, College Scholarship
   Service of the College Board
   This is a flexible array of services designed to assist post-
   secondary institutions in many phases of the financial aid
   process. Included are questionnaires to document student expenses
   and resources, and software programs to manage financial aid
   awards.

6. Student Outcomes Questionnaires, National Center for Higher Educa-
   tion Management Systems
   This is a series of questionnaires, with supporting materials, that

can be administered to entering, current, graduating, and nonre-
turning students, as well as recent and five-year alumni. The
questionnaires were designed to support the collection of longitu-
dinal data as well as collections for one-time use.

7. Student Search Service Volume Projection System, The College Board
   This system allows institutions to make projections of various
   market volumes using an interactive computer system and the files
   of the Student Search Service.

8. Survey of Plans for Education and Careers (SPEC), The College
   Board
   SPEC is a questionnaire designed for local and statewide use to
   assess the plans of high school students for further education and
   for the world of work. This document is especially helpful for
   determining local educational needs of the graduating secondary
   school population.

III. Program Review

1. A Manual for Conducting Student Attrition Studies in Institutions
   of Postsecondary Education, National Center for Higher Education
   Management Systems
   This manual provides educational planners with the tools necessary
   to investigate and analyze decreasing enrollments caused by stu-
   dents who permanently leave institutions, those who leave and plan
   to return, and those who transfer to other institutions.

2. The College Board--Programs and Services
   a. Advanced Placement Program (APP). A program of instruction
      and examination in 13 academic areas to assist students in
      obtaining credit for college work done in secondary schools.

b. Career Skills Assessment Program (CSAP). A program of guidance, instruction, and assessment utilizing six separate self-assessment measures, designed for instructionally relevant clusters of career skills.

c. College-Level Examination Program (CLEP). A program of five general examinations and 47 subject examinations designed to assist students in demonstrating college-level proficiencies.

d. Comparative Guidance and Placement Program (CGP). A comprehensive collection of instruments designed to assist postsecondary institutions in curricular guidance and course placement for entering students.

e. Descriptive Tests of Language Skills (DTLS). A developing program of diagnostic tests and curriculum guides in reading comprehension, logical relationships, vocabulary, usage, and sentence structure, designed primarily for use in postsecondary institutions.

f. Descriptive Tests of Mathematics Skills (DTMS). A developing program of diagnostic tests and curriculum guides in computation, elementary algebra, intermediate algebra, and elementary functions.

g. Student Descriptive Questionnaire (SDQ). A 63-item biographical questionnaire covering topics such as educational history, extra-curricular activities, self-assessed abilities, and future educational plans.

h. Test of Standard Written English (TSWE). A multiple-choice test intended to assist postsecondary institutions in English course placement, especially useful for students who need additional instruction in written English usage.

i. Testing Academic Achievement (TAA). A program consisting of recent AP Examinations and CLEP General Examinations and other College Board Achievement Tests, for institutional use in placement, exemption, credit and guidance decisions.

j. Transfer Information Service (TIS). A service designed to support colleges and universities in their efforts to make their admissions, financial aid, and placement services responsive to the needs of transfer students.

3. Educational Testing Service--Programs and Services

   a. College and University Environment Scales (CUES II). An instrument designed to enable an institution to find out how its students perceive its intellectual-social-cultural climate.

   b. Institutional Functioning Inventory (IFI). An instrument that assesses perceptions of faculty, administrators, and students about administrative plans, teaching practices, and types of programs.

   c. Student Reactions to College (SRC). A questionnaire designed specifically to enable two-year and open-door college students to express views about their college experiences.

   d. Student Instructional Report (SIR). An instrument designed to give faculty members an opportunity to have students evaluate courses and instruction in a systematic and anonymous way.

IV. Cost Effectiveness

1. A Fact Book on Higher Education, Issues 1-4, American Council on Education, 1977
   This series of publications compiles data from documented sources and presents them in a consistent and longitudinal format. The four issues each year cover demographic and economic data,

enrollment data, and information about institutions, faculty, staff, and students, and earned degrees conferred.

2. Faculty Activity Analysis, National Center for Higher Education Management Systems (three manuals and supporting software)
   These manuals provide techniques for collecting data that will serve as a foundation for allocating faculty salaries to institutional programs, and procedures for analyzing faculty activities.

3. Halstead, D. Kent, Higher Education Prices and Price Indexes, U.S. Department of Health, Education, and Welfare, 1975
   This book provides current measures of inflation in higher education and will be particularly valuable to financial planners in postsecondary institutions.

UNIVERSITY OF CALIF.
LOS ANGELES

JUL 7 1978

CLEARINGHOUSE FOR
JUNIOR COLLEGES

2₄