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ABSTRACT

A feasibility study conducted by the California Postsecondary Education Commission to evaluate alternative means of developing cost-of-instruction data is presented. Five areas of legislative interest in cost-of-instruction information are identified, and issues pertaining to the comparability of cost data and to the accuracy of the data in representing specific educational activities are examined. Results of surveys on other states are analyzed in terms of how the states develop cost-of-instruction data, and how costs are determined, aggregated, and used. The involvement of California's legislative and executive branches in cost-of-instruction studies since 1961 is reviewed, and the impact of program budgeting upon state support for public postsecondary education is considered. The concept of costing, the National Center for Management Systems (NCHEMS) costing system, and four specific cost-of-instruction methodologies are examined. The limitations and assumptions used in developing cost-of-instruction alternatives are described, along with six specific cost-of-instruction alternatives for California. The origin and characteristics of the California Fiscal Information System is examined, and comparisons are made between this program and other alternatives. Two alternatives that represent the optimal cost/benefit relationships, and an alternative that is costly but provides the best data quality and quantity are identified. Various supplementary materials, such as an overview of the NCHEMS classification structure, are appended. (SW)

Determining the Cost of Instruction in California Public Higher Education

A Feasibility Study of Alternative Methods

July 1980

California Postsecondary Education Commission

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CHAPTER I

THE LEGISLATIVE CHARGE AND CONCEPTS OF COSTING

INTRODUCTION

This first chapter reviews the Legislature's interest in information on the cost of instruction. It provides a brief discussion of the factors precipitating the legislative request for such information and documents the directive to the Commission. A procedure for developing a costing system that will be responsive to the Legislature's interest is presented.

THE LEGISLATIVE CHARGE

In his 1979-80 Analysis of the Budget Bill, the Legislative Analyst recommended that the Commission develop comparable cost-of-instruction data for the three public segments. The full text of the Legislative Analyst's comments follows.

> We recommend that the California Postsecondary Education Commission (CPEC) be directed to develop comparable costs of a) instruction, by major disciplines and level of instruction, and b) support services, in the three public higher education segments, and submit a preliminary report to the Legislature by March 1, 1980.
>
> There have been a variety of attempts in recent years to secure comparative data on the cost of higher education programs:
>
> (1) In 1965, SCR 51 directed CPEC's predecessor, the Coordinating Council on Higher Education, to develop an annual report comparing salary levels and benefits of California institutions with those in other states. This indirectly facilitated comparisons between the two California segments then in existence.
>
> (2) In 1971, SCR 105 directed the Council to report uniform data on costs of instruction for the three segments of higher education. This was only partially complied with and eventually suspended due to methodological problems.
>
> (3) In 1978, supplemental language to the Budget Bill directed CPEC to develop common definitions for reporting graduate FTE. A preliminary report has been distributed.

In spite of these efforts, the Legislature still lacks the data necessary to make intersegmental program cost comparisons.

In addition to the historical concern, the emergence of the community colleges as the single largest item of state support for higher education raises new questions about the equity of funding between the segments. In the next section of this analysis we are recommending the inclusion of community colleges in the annual CPEC report on salaries and benefits. The inclusion of salaries paid at community colleges will provide one important source of comparative data. However, much additional information is necessary to assist the Legislature in evaluating the allocation of state support between the three segments of higher education, the distribution of support within each segment, and the merit of requests for program increases.

Because of the variability found between programs, levels of instruction, and support services, we recommend that separate cost and staffing factors be developed for each of these elements. This task logically falls to CPEC, the agency created specifically to foster an intersegmental approach to higher education. The development of comparable cost and staffing factors is basic to any attempt to interrelate the segments, and thus should be given top priority by the agency. A deadline of March 1, 1980, would provide sufficient time for the agency to develop preliminary factors that could be reviewed in hearings on the 1980-81 budget.

Subsequent discussion before legislative committees and with the Legislative Analyst's staff resulted in an agreement that the Commission would undertake a feasibility study to examine the usefulness of cost-of-instruction data for California. Under this agreement the Commission was to develop a feasibility study that would:

1. Identify alternative programs capable of generating cost-of-instruction data;

2. Discuss the "usefulness" of such data in planning, management, and budget review; and

3. Document the cost of implementing each alternative.

RESPONDING TO THE CHARGE: DEVELOPING A "COSTING SYSTEM"

The key requirement of any costing system, whether designed for education, government, or private industry, is that the system must respond to the needs of those who will use the cost information. The costing system developed in this report is intended to respond to the Legislature's perceived interests, with considerations provided for the interests of the segments and the Commission. Inspection of prior legislative directives, interpretation of the Legislative Analyst's recommendation, and a review of the manner in which similar cost data are employed in other states, suggested to Commission staff that the Legislature's interests lay in the development of cost data that would meet some or all of the following objectives:

1. Document, to a greater extent than presently possible, the expenditures associated with specific educational activities;

2. Permit inter- and intrasegmental cost comparisons between similar educational activities using comparable measures of costs;

3. Employ comparable measures of cost to ensure appropriate levels of funding for similar activities among and between segments;

4. Predict, with greater certainty than presently possible, the impact of changes in State-level educational policy upon segmental funding needs; and

5. Aid in the development of new student charges where such charges are based upon the cost of providing educational support to students.

These objectives are by no means all inclusive, nor are they necessarily consistent with those pursued by other states that have developed cost-of-instruction information. While detailed information regarding the motives of other states has been difficult to obtain 1/ the available literature suggests that:

1. Some states have developed cost-of-instruction information for decidedly different reasons than those identified for California.

2. Some states use cost-of-instruction information for different purposes than those envisioned for California.

3. Some states embrace the concept of inter- and intrasegmental cost comparisons while others specifically reject this notion.

4. Some states develop cost-of-instruction data with the primary intent of utilizing the data in state-level budget preparation and review, while other states employ the data for campus-based planning and management purposes only.

5. Some states claim success in establishing inter- and intrasegmental cost comparability standards while others appear to have abandoned hope of doing so.

Clearly, the factors influencing the development of cost data, the purposes for which the data are employed, and the degree to which the data are utilized in inter- and intrasegmental/campus comparisons vary dramatically among those states that have implemented cost-of-instruction programs. The experiences of other states do, however, appear to be consistent on a number of points.

1. Few states appear to have realized all of their original objectives in employing cost-of-instruction data.

2. Nearly every state that has developed cost-of-instruction data has experienced some level of difficulty in establishing comparability standards.

3. Most states have found that the development of cost-of-instruction information has taken much longer than originally anticipated.

The five areas of perceived Legislative interest in cost-of-instruction information are founded on the validity of one or both of the following assumptions:

1. that cost-of-instruction data can be developed in a manner that accurately represents specific educational activities; and,

2. that measures can be developed to permit the use of the comparable cost data in inter- and intrasegmental comparisons.

These are two exceedingly important points. If accurate cost data cannot be developed, or if comparability standards cannot be established, some or all of the Legislature's interests will not be addressed. The remainder of this chapter is devoted to an examination of the issues of accuracy and comparability.

The Pursuit of Accuracy: Resolving Methodological Differences

Differences in cost data among campuses/segments may arise because different procedures are employed in the preparation of data. Such differences are termed methodological differences. They emerge when individual judgments are exercised on issues such as:

1. Substituting surrogate data where actual data are unavailable;

2. Establishing instructional cost objectives and activity structures;

3. Assigning costs to particular activities;

4. Translating costs from one accounting system to another; and

5. Implementing faculty time and effort reporting systems.

In the last decade the National Center for Management Systems (NCHEMS) has developed standardized procedures for developing cost-of-instruction data. The NCHEMS system has received substantial publicity, evaluation, and, in many states, acceptance as the costing system that most effectively minimizes methodological differences.

Subsequent chapters will describe the NCHEMS costing methodology in greater detail; however, the NCHEMS procedures for developing cost-of-instruction data at the campus level can be summarized in the following five steps:

1. Campus expenditure data are translated from a campus-based accounting system into a state-level, standardized accounting structure called the Program Classification Structure (PCS).

2. Activity surveys are administered to faculty, and salaries, benefits, etc., are prorated among selected elements of the PCS (instruction, academic administration, etc.) based upon each faculty member's actual work pattern.

3. Campus "overhead" expenses (libraries, plant maintenance, executive management, etc.) are prorated among instructional, research, and community service activities, using formulas applicable to the particular overhead category. (For example, plant operation expenses are often assigned to specific instructional disciplines, based on the square footage utilized by each academic department.)

4. To develop the cost per student credit unit taught, the total cost of underwriting a particular academic discipline (the sum of steps 1 through 3) is divided by the number of credit units taught in the discipline (and if desired by level of instruction).

5. To obtain the cost per credit unit taken by student major (and if desired by level of student), the cost per credit unit taught by each academic discipline is distributed to student majors based on actual student enrollment records to obtain the cost per credit unit taken by student major (and if desired by level of student).

Of these five procedures, only steps 1, 2, and 3 are susceptible to methodological differences. The NCHEMS costing procedures established for each of these steps serve to minimize the potential for methodological differences in cost computations. The NCHEMS costing procedures, however, cannot guarantee complete accuracy because:

1. Some campus accounts cannot be readily or directly translated into a corresponding PCS account. In such instances the judgment of a campus administrator regarding selection of the appropriate account translation procedure may introduce methodological differences.

2. Faculty-activity survey instruments are usually administered on a self-reporting basis at a specific time during the academic year. Therefore, the potential exists for individual faculty to misreport their activities, intentionally or inadvertently, and thereby introduce errors in the allocation of their salaries to specific educational activities. Further, the "snapshot" nature of the survey procedure assumes that faculty activity during the period in which the survey is administered accurately represents the faculty member's activities for the entire academic year. This assumption creates the potential for misapplication of a faculty member's salary to his/her actual activities throughout the academic year.

3. The formulas employed to distribute institutional "overhead" costs to instruction, research, and community service are usually general in nature, and may not be precise enough to ensure that each educational activity receives its "fair" share of institutional overhead. The potential exists for one or another academic department, research center, or community service program to be assigned either more or less than its actual share of the campus's overhead costs.

In sum, while the NCHEMS procedures have done much to ensure the precision of cost-of-instruction computations, the potential exists for certain methodological differences to creep into the process, affecting the accuracy of the resultant data. It should be noted, however, that methodological differences exist in all costing efforts.

The Pursuit of Comparability: Dealing with Functional Differences

Functional differences arise in cost data due to differences among institutions in thier instructional, research, and/or community service programs. Such differences are usually based upon differences in institutional "character"--differences that involve the "personality" of the campus. In general, functional differences at the campus level are difficult to describe and often impossible to quantify. These differences do, however, have the potential to influence the outcome of cost-of-instruction data to the point that comparisons of apparently similar activities of two campuses become questionable.

Functional differences may emerge in a variety of ways. Some of the more readily identifiable sources of functional differences are:

1. Institutional roles and missions,
2. Constituents and their attendant influence on campus services,
3. Degree of institutional "maturity",
4. Campus scale economics,
5. Geographic location,
6. Campus and/or segmental governance structures,
7. Program quality, and
8. Revenue sources and the availability of funds.

The elimination of methodological differences, while an arduous and painstaking process, can be achieved or, at the least, pursued to a high level of resolution. Functional differences are by definition irreconcilable and will be a factor in all attempts at cost comparability.

There are, of course, significant functional differences among California's three public segments of higher education. The

University of California emphasizes research and graduate studies. The California State University and Colleges is oriented towards undergraduate instruction and programs through the master's level. The California Community Colleges are committed to public service activities and two-year academic and vocational education programs.

These functional differences, established under the 1960 Master Plan, act as inhibitors to intersegmental comparability. This does not mean, however, that all educational activities supported by one segment are, by definition, noncomparable with those of the other segments. Comparisons of seemingly similar activities among segments should not be deemed inappropriate solely on the basis of differentiation of function, but rather as a result of close inspections of the activities to be compared.

The Usefulness of Cost Data in a Practical Setting

The NCHEMS costing literature 2/ suggests that methodological and functional differences can be ameliorated by providing a detailed program description for each set of program cost data that is employed in interinstitutional cost comparisons. NCHEMS further suggests that those responsible for making the comparisons should not attempt direct cost comparisons in those instances where programs differ significantly in scope and objective.

Given that both methodological and functional differences are present in all cost-of-instruction computations, how useful can the data be when viewed in terms of the five legislative objectives identified earlier? Unfortunately, the experiences of educators familiar with the costing procedures provide only limited guidance in responding to the question.

For example, Harold L. Enarson, President of Ohio State University observed 3/:

> Skepticism about the usefulness of student unit cost data extends from internal administration, to external use by state controlling boards, and state officials. As most public institutions face, at best, near stability (more typically, serious enrollment declines), the traditional student unit cost data appear to serve poorly. To use such data as the major building blocks for determining appropriation levels is to ignore reality and invite indefensible and intolerable cuts.

David Brown, Executive Vice President for Academic Affairs and Provost, Miami University, pressed the same point with even greater vigor. In speaking to the issue of planning and managing for the eighties 4/, Mr. Brown exhorted college officials to:

> Subvert all attempts to standardize cost data collection. . . . The utility of the college, as among many institutions, is its freedom, not its efficiency. . . . The collection of comparable interinstitutional data, beyond fundamental statistics such as enrollments and budgets, is (much like atomic energy), too risky to be worth doing.

Speaking to the same issue, but from a different viewpoint, George Weathersby, Commissioner for Higher Education in Indiana, noted that: 5/

> Both institutional and state-level staff in Indiana are fairly comfortable with the costing methodology being used, given that average cost information is being collected. Most of the comparability problems have been resolved, although it was felt that one more iteration of the cost study would be useful. A key action that helped resolve the comparability problems was to require reconciliation of the cost study data with institutional financial reports.

The New York Department of Education 6/ expressed a somewhat similar sentiment in its Fall 1979 issue of PS:

> Despite the problems of interpretation presented by these [cost-of-instruction] statistics, it can be valuable for both institutional and State-level planners. It can point to areas that deserve closer scrutiny, either as potential trouble spots or examples of effective practices. Regardless of its ultimate applications, this measurement reflects only one aspect of higher education. It is only in conjunction with other statistics and trends that it becomes a useful indicator of status and performance.

While educators will undoubtedly continue to deliberate the merits of gathering cost-of-instruction data for some time to come, there are some points on which most observers agree.

1. The primary requisite of cost-of-instruction data is that they must be accurate. To the maximum extent possible the data must be free of methodological differences.

2. Cost-of-instruction data provide only quantitative activity measures. They do not, nor can they be manipulated to, provide a qualitative assessment of educational activities.

3. Cost-of-instruction data describe only the cost portion of the cost/benefit equation. The presence of cost data in the absence of corresponding benefit data can lead to the assumption that educational benefits are all of equal quality.

4. Interinstitutional (or intersegmental) comparisons employing cost-of-instruction data as the primary unit of comparison must include an assessment of the functional differences between or among the institutions to be compared. Cost-of-instruction data are relatively meaningless unless tempered with a description of the characteristics of the institutions involved in the comparison.

5. The utility of cost-of-instruction data is somewhat limited by the inability of both laypersons and professional educators to understand the data properly and to view them in their proper perspective.

6. Cost-of-instruction data usually measure average costs. Many legislative and executive brancy decisions deal more with marginal cost considerations (e.g., how much additional money is required to fund a specific increase in one or another educational activity) than with average costs. To this extent, the availability of average cost data does not significantly aid those concerned with marginal cost decisions.

7. Cost-of-instruction data are something of a dual-edged sword. While data that are properly computed and appropriately used can provide valuable insights into selected educational activities, data that are not can have a substantial deleterious (and potentially lasting) effect upon the basic fiber of an institution and/or segment.

CHAPTER II

COST-OF-INSTRUCTION PROGRAMS IN CALIFORNIA

INTRODUCTION

This chapter traces the involvement of the legislative and executive branches in cost-of-instruction studies from 1961 to the present. The participation of the Coordinating Council for Higher Education in each study is also discussed. The concept of program budgeting is introduced and the impact of this concept upon State support for public postsecondary education is documented.

THE CALIFORNIA PUBLIC HIGHER EDUCATION COST AND STATISTICAL ANALYSIS

Two months after his appointment as the first Director of the Coordinating Council for Higher Education, Dr. John Richards reported at the Council's November 1961 meeting that Council staff was working closely with the public segments of higher education to develop uniform accounting and reporting procedures. Dr. Richards considered these activities essential if the Council were to make valid comments and recommendations on the general level of support sought for higher education. The Council unanimously adopted a resolution calling for the Regents, Trustees, and the State Board of Education to cooperate "with the Council in the development of accounting and reporting procedures which produce comparable data from the segments of public higher education for use by the Council."

The Council's 1962 Budget Report to the Legislature stressed the need for the formulation of new uniform definitions for such terms as "student," "FTE," "part-time student," and "computation of attendance."

In June 1962, Dr. Richards presented a progress report on the development of comparable systems of records for California public higher education. While he indicated some progress had been made, he advised the Council that it "was going to be a long and difficult task."

Finally, in September of that year, Dr. Richards reported to the Council that the segments had made substantial progress toward a comparable system of accounts. He recommended that the cost and statistical study which had been outlined for the Council begin immediately as the second step toward implementing a continuous cost and statistical analysis of public higher education. Director Richards described the magnitude of the task of an accounting and budget classification changeover for the then State Colleges from

the system employed by, and inherited from, the Department of Education. That system was patterned after the account structure recommended by the U.S. Office of Education for elementary and secondary schools. The new system was based on the classification of accounts as set forth in College and University Business Administration, Volume I. The changeover placed both the University and the State Colleges on a comparable basis of financial reporting, which was described as "the essential foundation stone to providing comparable functional presentations and meaningful cost data."

While resolutions were adopted by the Trustees in December 1961, and the State Board of Education, and the Regents in January 1962, to implement uniform definitions of budget terms and the use of identical systems of budget classification by all three segments, the State Board of Education continued to use its existing elementary/secondary classification for the Junior Colleges.

During the summer of 1963, forms for the California Public Higher Education Cost and Statistical Analysis were distributed by the Coordinating Council to each campus to obtain data for Fall Semester 1963 and Spring Semester 1964. The study was designed to examine the costs of higher education by level and by segment and to collect other kinds of relevant data. The purposes of the study, as announced by the Council, were:

> . . . to make available quantitative data in the general areas of instruction and research, administration and general, physical plant operation and maintenance, and physical plant utilization which would be useful in the development of a more economical and educationally effective operation of California's public institutions of higher education and which would facilitate the comparison, interrelation, and interpretation of expenditures and plant utilization--both intra- and inter-institutionally and among the segments of public higher education. 7/

The stated objectives of the Analysis included:

> The collection of data upon which to help determine out-of-state tuition, review facilities utilization standards, validate and improve assumptions concerning comparative costs, and assemble data relative to the operation of ancillary services. Conduct of the study has not been for the Council's benefit alone. Data collected will assist administrators in all segments as they make management decisions relative to their own institutions. In many instances the Analysis will make available comparative data of a sort never before provided. 8/

The results of the Council's study were distributed to the Department of Finance, the Legislature, and all campuses in June 1965. The study covered the existing sixteen State College campuses, five University campuses, and seventy Junior Colleges. It presented instructional cost data for each standard discipline derived through a faculty activity analysis; an inventory of classes; an analysis of costs of supplies, equipment, and clerical assistance; an analysis of supporting staff (counselors, departmental administrators, libraries and librarians) and institutional and student administrations. The data also provided the first statewide facilities inventory and facility-utilization data.

The Council described the Analysis as "an important example of an inter-institutional and inter-segmental cooperative effort toward developing more accurate and more valid management tools. It is an effort, once begun, which should not cease but should be continued so as to maintain a current, comprehensive body of data." 9/

PROGRAM BUDGETING

Although the Analysis represented the first major effort of any state to design and produce a comprehensive study of the costs of higher education in its public institutions, plans to continue the effort were dropped in 1966 when the Legislature and the Administration took a series of steps to place all of State government under a Programming and Budgeting System (PABS).

In 1962, the Assembly Interim Committee on Ways and Means sponsored a study by Griffenhagen-Kroeger Associates on the desirability of undertaking long-range budget planning for the State. In its report to the Committee in January 1963, 10/ the firm recommended an automated system of program budgeting as the best approach to long-range budget planning. The Ways and Means Committee held open hearings in June 1964 to review this subject. In 1966, stimulated by the spread throughout the federal government of the successful synthesis of program budgeting and cost-effective analyses in the Department of Defense, the Governor and Director of Finance issued a series of Management Memos 11/ directing the development of a programming and budgeting system throughout State government.

The Coordinating Council sought a new role in budget review in order to fulfill its charge under the Education Code to review the annual budget and capital outlay requests of the University and the State College systems. The Council determined that it should play a leadership, as well as a coordinating, role in the installation of a comprehensive program and performance budget and reporting system, and that it should simultaneously study and evaluate various program areas within the segments.

This change in role brought about many studies of academic disciplines, such as agriculture, engineering, environmental design, criminal justice, law, teacher education, and nursing. Other studies were directed toward institutional activities, such as continuing education, faculty workload, the Northeastern California Study, and manpower needs in specific areas.

The first step in the development of a PABS for higher education called for translating the mission of an institution into a program structure supported by statements of objectives, need, and authority, accompanied by a description of the elements of each program and program workload plans. A schedule for segmental implementaion of the system was developed by the Council in 1967. 12/ The Council noted that one of the major problems in applying PABS to public higher education was the quantification of purpose. In applying systems analysis to most organizations, the end product goals can be quantified. In higher education, the principal end products are educated students, additions to the fund of knowledge, and other institutional services used by the public.

After several years of trying to implement a PABS, the State (and the Council) reverted back to an annual line item budget, not only for higher education but for State government as a whole.

HOUSE RESOLUTION 376

House Resolution 376 (1968) directed the Council to undertake a study of highly expensive, specialized, limited-use academic programs and facilities, with the objective of concentrating such programs and facilities at strategic locations in the public segments, thereby effecting a reduction in total cost to the State. In particular, programs in engineering and the performing arts were cited in the legislation. The Council was to provide a preliminary report in 1970, and a final report in 1971.

The preliminary report, A Survey of Educational Offerings and Academic Plans (May 1969), was directed primarily to the question of identifying high-cost programs. The report examined existing instructional programs in terms of degrees awarded, student majors, and student credit hours produced. Proposed new programs in each of the "critical" subject fields were also examined. The report identified twenty subject areas that warranted further study in light of the data that were analyzed.

The final report in response to HR 376, Higher Cost Programs in California Public Higher Education (March 1971), examined the enrollment in every class section offered by the three public segments, as well as facility costs. The data clearly demonstrated

that small class size was the principal factor leading to high unit teaching costs. Almost 92 percent of the variations in unit teaching costs were due to variations in teaching assignments. A coefficient of correlation of 0.96 was found between unit teaching costs and the reciprocal of weekly student class hours. Unit costs in the same discipline varied among campuses by as much as 35 to 1, largely because of instructional assignments and class size. The report noted that by eliminating unnecessary proliferation of programs and classes and by establishing segmental policies that would eliminate small classes at the undergraduate level (nine or less students) an estimated savings of $35 million could be achieved. The report identified many subject areas in which there appeared to be unnecessary duplication. Finally, the report recommended and established new program review procedures for proposed and existing programs that are essentially those currently used by the Council's successor, the Postsecondary Education Commission.

SENATE CONCURRENT RESOLUTION 105 (1971)

Senate Concurrent Resolution 105 (1971) called for the University, the State University and Colleges, and the Community Colleges to advise the Coordinating Council annually of their full costs of instruction in a format determined by the Council. The Coordinating Council was to submit its first report on the cost of instruction in 1972.

The Council and the segments determined that the method should be consistent with the cost-finding principles and procedures being developed by the National Center for Higher Education Management Systems (NCHEMS) at the Western Interstate Commission on Higher Education (WICHE).

These cost-finding principles had their roots in the California Public Higher Education Cost and Statistical Analysis published in 1965 by the Coordinating Council. Although the Council discontinued its cost-of-instruction studies when the State launched its Programming and Budgeting System (PABS), the staff and its Director continued to promote and extend the system they had developed in the early 1960s. The NCHEMS' efforts developed as an outgrowth of the WICHE Management Information System program (MIS).

The "WICHE-MIS" Project had its inception in December 1966, when Council staff met in San Francisco with representatives of state coordinating agencies and others to discuss a proposed interstate exchange of higher education data and information. In January 1967, the WICHE Director of Special Programs met with Council staff to discuss the unit cost study being considered by the Council for California institutions in 1968. His letter to Council Director Willard Spalding stated in part:

> . . . we might bring these two elements (common definitions and procedures, and unit cost analysis) together by suggesting to other western states the possibility of conducting the unit cost study simultaneously with California using CCHE definitions and procedures. .

On March 23, a letter was sent from WICHE to interested state agencies describing conversations with the Council and the National Center for Education Statistics (NCES). The National Center was interested in seeing a unit-cost study develop, and recognized the need for extensive financing for such an effort. Eleven of the twelve western states responded affirmatively to WICHE's March 23 proposal for the study.

A task force was formed to initiate the design of an inter-institutional, interstate, higher-education cost/benefit analysis system. A brief statement of the objectives and guidelines for the project was developed and sent by WICHE to various foundations and federal agencies for possible funding. The project was originally funded for one-half million dollars, and since then supplemental funding approaching eight digits has been provided. Even though the project was based on Council-developed cost analysis procedures, it was too large an effort for the Council to guide and was appropriately placed in WICHE. The project office is now known as the National Center for Higher Education Management Systems (NCHEMS).

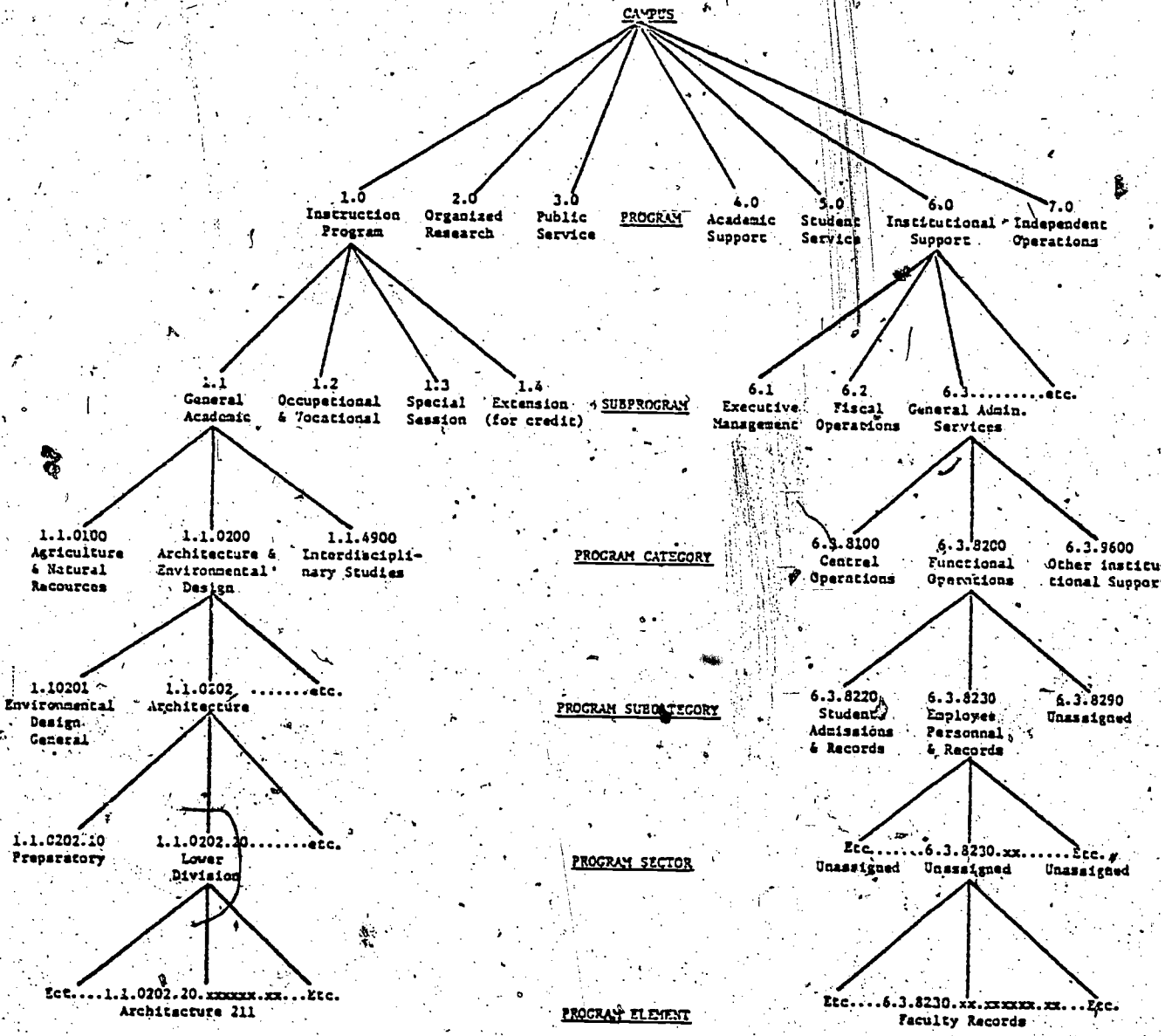
It was this system of cost-finding principles and procedures that the Council and the segments selected to use in responding to SCR 105.

The Council's first annual report in response to SCR 105 was published in October 1972. The report made cost assignments only to the sub-program level. (See Figure 1.) It stressed the need for campus reporting at lower activity levels for future reports. The first report did develop some costs at the program category level but these were at the segmental level only--not by campus.

The report concluded that the definitional problems of the mid-1960s continued to exist, and noted that the Community Colleges were still using the California School Accounting Manual, which was also used by the public elementary and secondary schools and, in the Council's view, not appropriate to higher education. A copy of the Council's "Findings and Conclusions" appears in Appendix A.

The second annual report in response to SCR 105 was published in March 1973. The report incorporated several improvements over the first report, but again did not break down costs further than the sub-program level and program category costs were developed at the segmental level only--not by campus. (See Figure 1.) The major

Figure 1. The Program Classification Structure Used in the Coordinating Council's 1972 Cost Study



improvements were: (1) inclusion of teaching assistants in the University's computation, and (2) inclusion of nonbudgeted funds in all segments, except for Atomic Energy Commission operations. Again, definitional problems, as well as the Community Colleges' use of the California School Accounting Manual, were cited as major obstacles that would have to be overcome in future reports before the intent of SCR 105 could be realized.

The "Findings and Implications for Future Reports" prepared pursuant to the 1973 study appear in Appendix B. Many of the concerns for methodological and functional differences discussed in Chapter I appear in this material, but are framed in terms of California's public system of higher education.

The third annual report under SCR 105, which was issued in February 1974, indicated considerable progress had been made by the University and State University systems in implementing the format of the Program Classification Structure developed by NCHEMS. However, the Community Colleges continued to use their old accounting structure, which was not comparable. The "Recommendations for Future Reports" (Appendix C) noted that the studies had gone as far as possible in determining the costs of instruction because of the limitations imposed by currently available data. It made several recommendations to the newly created Postsecondary Education Commission should it decide to continue the series of annual reports.

CHAPTER III

THE USE OF COST-OF-INSTRUCTION INFORMATION IN OTHER STATES

INTRODUCTION

This chapter summarizes the responses to questionnaires on costs of instruction sent to other states. It analyzes those responses to determine how many states develop cost-of-instruction data, how costs are determined, how the data is aggregated, and how the data is used.

THE SHEEO/NCES SURVEY

When Commission staff received the charge from the Joint Legislative Budget Committee to study the feasibility of conducting annual cost-of-instruction studies in California, it determined that an examination of these activities in other states was warranted.

The staff sought and received cooperation from the SHEEO/NCES Communication Project. SHEEO, the acronym for the organization of State Higher Education Executive Officers, and the National Center for Education Statistics (NCES) have established a communication network with representatives from each of the fifty states, and U.S. territories.

In March 1980, a questionnaire was sent to the State SHEEO/NCES Communication Network Representatives asking specific information on the extent to which each state has developed and utilized information on the costs of instruction. (A copy of the questionnaire is presented in Appendix D.) Thirty-one states responded to the questionnaire. All responses and enclosures were forwarded to the Commission for review and analysis.

ANALYSIS OF RESPONSES

In response to the principal question, does your state presently develop cost-of-instruction data for public and/or independent institutions:

Eighteen of the thirty-one states which responded (58%) indicated they did:

One state reported that its effort had just begun and that the data were too new and uncertain to be useful;

One state reported that its data were very rough and the study was being discontinued; and

One state reported it was developing a system.

Of this total of twenty-one states,

Eight reported that they collected data annually;

Four collected data biennially;

One would not repeat its data collection; and

Eight collected data aggregated to as few as six subject area classifications.

Of the remaining ten respondents, eight states indicated they did not develop cost-of-instruction data, the response from one was unclear (the enclosures related to budgetary formulas), and one reported it had attempted a study several years ago but was unsuccessful because of the wide diversity among its institutions.

Of the twenty states that currently compile cost-of-instruction data, two indicated their studies involved only four-year institutions. In two other states, data was collected independently by separate governing boards for community colleges and senior institutions.

Fifteen of the twenty states which had developed cost-of-instruction data, either annually or biennially, differentiated these data by level of student and/or level of instruction. One state used only three levels of instruction.

Nineteen of the twenty states indicated that their data were differentiated by discipline and/or program. While most (15) differentiated these data by the HEGIS taxonomy of instructional programs, one state aggregated data into six general areas of study, one used nine classifications, one used sixteen classifications, and one used thirty classifications.

USE OF COST DATA

Fourteen states (45% of the respondents) indicated that the cost data were used in the budget review process; two other states (6%) indicated they were used to develop subsidy formulas. Twelve states (39%) declared that these data were used in program review, and seven (22%) indicated the data were used for faculty staffing. Eight states used the information to determine tuition and fee levels.

One state developed costs of instruction as a projection of budgetary needs for its institutions.

One university system placed a caveat on its report, noting that cost data should not be viewed as the appropriate level of funding for quality education. One state specifically noted that its data were too new to be of value, except for possible internal institutional use. It cautioned the reader against any cost comparisons and cited six limitations of the data.

Twelve states reported that the data were employed by individual campuses, the various boards, and the legislative and executive branches of government. Two states reported that the data were used only for individual campus self-study purposes.

TERMINOLOGY

There appears to be some confusion about the meaning of the term "cost of instruction". There also appears to be wide differences of opinion on what should be included in instructional costs.

No less than twelve states responded to the questionnaire by enclosing budget formulas, budget allocation procedures, or similar documents that were used to generate resources. In general, those documents established staffing ratios by discipline and added predetermined percentages of total faculty salary costs for support, administration, libraries, general expense, student services (related to student headcount), and physical plant maintenance (related to square feet).

Some states computed "costs" on the basis of funds appropriated per FTE. Others computed only direct costs (faculty, fringe benefits and direct instructional support) per student credit hour. Only two of the thirty-one states computed full costs annually and a third derived full cost data biennially. The latter reported that the process was too complex and too costly for more frequent studies.

SYSTEMS DEVELOPMENT

From the respondents' enclosures, it was apparent that it had taken most states from three to five years to generate the data to develop a costing methodology. Some of those states cautioned against using the data in segmental or interstate comparisons. Comparable accounting systems and definitional problems appear to be the crux of the costing mechanics.

Computer hardware and/or software do not appear to present a problem in the development of a costing system.

The thirty-one states which responded to the SHEEO/NCES questionnaire were:

1. Alaska
2. Arizona
3. Colorado
4. Connecticut
5. Florida
6. Idaho
7. Illinois
8. Iowa
9. Kansas
10. Louisiana
11. Maryland
12. Michigan
13. Minnesota
14. Missouri
15. Montana
16. Nebraska
17. New Jersey
18. New York
19. North Carolina
20. Ohio
21. Oklahoma
22. Pennsylvania
23. Rhode Island
24. South Dakota
25. Tennessee
26. Texas
27. Vermont
28. Virginia
29. West Virginia
30. Washington
31. Wisconsin

A tabulation of the responses is presented in Appendix E.

CHAPTER IV

COST ANALYSIS IN POSTSECONDARY EDUCATION AND VARIOUS COST-OF-INSTRUCTION METHODOLOGIES

INTRODUCTION

This chapter traces costing from a generalized concept to a specific methodology capable of generating cost-of-instruction information. The NCHEMS costing system is explored and four specific cost-of-instruction methodologies are described.

DEFINING COSTS, UNIT COSTS, AND PERFORMANCE MEASURES

As with most major concepts, that of "cost" is difficult to define. Definitions of "cost" tend to depend upon one's viewpoint. For example, students generally view costs from a consumer viewpoint, as a fee or charge preceding matriculation. Financial analysts define costs as funds required to obtain various goods and services. Those concerned with the State budgeting process usually think of costs as the amount of State, federal, and/or local funds employed to underwrite last year's activities and the amount that will be needed to support next year's programs. Cost accountants interpret educational costs in yet another way, as financial resources applied to produce specific units of service.

The definition of "cost" is also influenced by the objectives sought and the manner in which costs are classified. Costs are often reported as:

1. Historical Costs - costs derived from past expenditure patterns;

2. Projected Costs - future expenditures estimated on the basis of past experience; or

3. Target Costs - standardized levels of expenditure established as a spending objective.

Costs may be alternately classified as:

1. Direct Costs - costs readily attributed to a specific activity or condition;

2. Indirect Costs - costs assignable to an activity which provides a support function for another activity; or

3. Full Costs - the total cost of supporting an activity or condition; the sum of direct and indirect costs.

Costs may be viewed in terms of their stability with respect to volume or activity. When considered in this manner costs are often categorized as:

1. Fixed Costs - costs that are stable with respect to a particular volume of activity;

2. Variable Costs - costs that are predictably dependent upon the volume of a particular activity; and

3. Semi-variable Costs - costs which are typically variable, but do not change in a linear relationship with changes in volume.

Considering costs from the viewpoint of their recurring nature often yields the following differentiation:

1. Operating Costs - costs incurred in the fiscal period in which the activity will take place;

2. Capital Costs - costs of property and/or equipment intended to last beyond a specific fiscal period.

The permutations and combinations of cost viewpoints (and therefore cost classifications) are endless. The determination of what a "cost" is, or is not, is also subject to various definitions. All cost definitions have a common heritage however, and that heritage is the intended use of the resultant data. The five legislative "objectives" for the use of cost data described in Chapter I can be employed to narrow the range of cost definitions and bring a measure of order to the manner in which costs are classified.

The legislative objectives suggest that "cost" should be defined in terms that relate segmental funding support to the levels of educational "service" provided, i.e., dollars should be linked to subsequent performance. Such a definition of "cost" permits the Legislature to look backward and determine the relationship between services rendered and funds provided. The same definition inextricably links costs to expenditures and permits the interchange of these terms without loss of meaning.

CLASSIFYING COSTS AND ACTIVITIES

The campus is the smallest unit in California's postsecondary educational enterprise that supports a full range of educational activities; therefore, the campus becomes the basic building block of any cost-classification structure.

Campus-based accounting systems have evolved to their present state in response to a variety of competing interests. One of the primary requirements of these systems is that they must support the day-to-day operation of the campus: they must facilitate the payment of receipts for various goods and services; ensure that faculty and staff receive regular, timely, and predictable salary payments, and provide a firm base for fiscal audit and management control. Institutional "size" and complexity, campus role and mission, the relative magnitude and variety of funding sources, and local, segmental, State, and federal reporting requirements, all play a role in the character of campus-based fiscal reporting systems. Segmental accounting systems tend to emulate their campus counterparts. While oriented more towards multi-campus planning and management than to day-to-day operation, segmental systems are, by necessity, designed to gather and report fiscal information along campus lines.

Existing campus and segmental accounting systems will not, in their present form, directly support the development of comparable cost-of-instruction information. Minor revisions to the systems used by the University of California and the California State University and Colleges must be effected. In the case of the Community College system, an entirely new accounting structure must be adopted.

The call for a uniform, State-level cost-accounting system is neither new nor unique. The Coordinating Council's 1972, 1973, and 1974 Cost Studies cited the absence of such a system as one of the major impediments to the effective use of cost-of-instruction data in institutional, segmental, and statewide planning. Both reports urged both four-year public segments to work closely with representatives of the legislative and executive branches toward development of a statewide accounting system.

Since these reports were issued, the University and the State University have, through their own efforts, and in response to executive branch directives, made considerable progress toward the development of a comparable, uniform, State-level fiscal-reporting capability. The system that has emerged in recent years has been used primarily to support the State's annual budgeting process. Under this system, segmental and campus fiscal information is published in summary form in the Governor's Budget, using the State-level fiscal reporting structure. An excerpt from the 1980-81 Governor's Budget that illustrates State-level data for the four-year segments appears in Figure 2.

While significant progress has been achieved in the use of a common, State-level accounting system by the University and the State University, the California Community Colleges have been largely

Figure 2. Examples of the State Level Cost Classification System Employed in the Governor's Budget

THE CALIFORNIA STATE UNIVERSITY AND COLLEGES

Source of Funds and Proposed Program Use—Fiscal Year 1980–81

Program Classification	General Fund	Student funds	Federal funds	Other funds	Totals, All Funds Amount	Percent	Budget Act Appropriations
INSTRUCTION:							$542,404,851
Regular instruction	$523,474,611	$18,930,240	–	–	$542,404,851	44.29	(542,404,851)
Special session instruction	–	5,561,139	–	–	5,561,139	0.45	–
Extension instruction	–	3,581,695	–	–	3,581,695	0.29	
RESEARCH:							$77,782
Individual or project research	–	–	–	77,782	77,782	0.01	(77,782)
PUBLIC SERVICE:							$458,302
Campus community service	–	–	–	458,302	458,302	0.04	(458,302)
ACADEMIC SUPPORT:							$104,604,074
Libraries	54,689,012	491,370	–	–	55,180,382	4.51	(55,160,123)
Audiovisual Services	10,623,541	34,123	–	–	10,657,664	0.87	(10,623,541)
Computing support	27,789,830	35,039	–	–	27,824,869	2.27	(27,789,830)
Ancillary support	11,030,580	–	–	–	11,030,580	0.90	(11,030,580)
STUDENT SERVICE:							$118,079,100
Social and cultural development	557,221	3,189,631	–	–	3,746,852	0.31	(3,746,852)
Supplemental educational services—EOP	12,864,593	–	–	–	12,864,593	1.05	(12,864,593)
Counseling and Career Guidance	4,793,069	14,707,457	–	–	19,500,526	1.59	(19,465,371)
Financial Aid	1,003,698	6,151,431	55,094,386	567,390	62,816,905	5.13	(62,816,905)
Student support	2,872,695	19,004,251	–	–	21,876,946	1.79	(19,185,379)
INSTITUTIONAL SUPPORT:							$220,210,660
Executive management	21,886,475	5,169,953	–	–	27,056,428	2.21	(22,843,364)
Financial operations	11,654,066	5,999,461	–	–	17,653,527	1.44	(16,219,952)
General administrative services	24,755,464	7,954,181	–	–	32,709,645	2.67	(32,534,757)
Logistical services	34,317,192	4,394,460	–	–	38,711,652	3.16	(34,317,192)
Physical plant operations	98,291,686	9,390,712	–	3,694,060	111,376,458	9.09	(101,985,746)
Faculty and staff services	8,846,782	–	–	–	8,846,782	0.72	(8,846,782)
Community relations	3,158,046	822,360	–	–	3,980,406	0.33	(3,462,867)
INDEPENDENT OPERATIONS:							$37,182,677
Institutional operations	–	407,792	–	18,637,954	19,045,746	1.56	(18,637,954)
Outside agencies	–	–	–	18,544,723	18,544,723	1.51	(18,544,723)
FOUNDATIONS AND AUXILIARY ORGANIZATIONS	–	13,100,000	39,400,000	116,600,000	169,100,000	13.81	–
TOTALS, SUPPORT BUDGET EXPENDITURES	$852,608,561	$118,925,295	$94,494,386	$158,580,211	$1,224,608,453	100.00	$1,023,017,446

UNIVERSITY OF CALIFORNIA

SUMMARY OF PROGRAM REQUIREMENTS

State Funded Programs

Instruction:	78–79	79–80	80–81	1978–79	1979–80	1980–81
General Campuses	12,358.35	12,327.46	12,571.22	$308,398,759	$360,573,124	$367,790,368
Health Sciences	3,975.70	4,663.90	4,770.28	136,725,592	158,874,041	163,985,491
Summer Sessions	355.85	360.02	360.02	5,214,477	5,659,396	5,659,396
University Extension	1,377.51	1,208.99	1,208.99	36,763,899	41,704,702	41,704,702
Research	3,012.71	2,630.03	2,630.03	73,118,027	84,718,721	86,243,521
Public Service	1,152.88	1,204.98	1,218.48	33,810,648	38,789,188	39,656,988
Academic Support:						
Libraries	2,250.91	2,183.38	2,193.88	57,097,053	67,066,510	67,273,060
Other	2,144.34	2,592.78	2,592.78	58,368,034	67,762,525	70,176,525
Teaching Hospitals	15,745.39	14,477.31	14,477.31	377,138,095	451,141,619	494,357,619
Student Services	2,766.01	2,850.76	2,850.76	66,087,937	70,620,597	71,442,597
Institutional Support	6,003.78	6,249.25	6,258.25	102,581,431	119,161,879	119,461,879
Operation and Maintenance of Plant	2,993	3,207.75	3,368.75	87,972,997	99,009,378	102,868,978
Student Financial Aid	–	–	–	33,134,567	31,982,939	32,063,939
Auxiliary Enterprises	2,130.08	1,709.62	1,709.62	72,082,640	87,267,395	91,736,395
Provisions for Allocation	–	−809	−949	–	23,564,125	38,333,738
Fixed Costs and Economic Factors	–	–	–	–	–	39,426,170
Special Regents' Programs	–	–	–	18,211,967	19,453,924	23,250,703
TOTALS, BUDGETED PROGRAMS	56,266.51	54,857.23	55,261.37	$1,466,706,123	$1,727,350,063	$1,855,432,069

Source: 1980-81 Governor's Budget

exempt from the process. The relatively recent separation of the Community Colleges from the Department of Education, and the historically close ties of districts to their local constituencies for the majority of their fiscal support, are but two of the reasons for their exclusion from the movement toward the use of a common State-level fiscal reporting structure.

As indicated earlier, one of the primary requisites of a program designed to develop cost-of-instruction information is the existence of a common framework for describing activities and reporting costs. The State-level fiscal structure currently used by the public four-year segments for budgetary review meets this requirement but suffers somewhat from intersegmental noncomparabilities 13/ and too high a level of data aggregation. The fiscal structure presently used by the Community Colleges is not only incompatible with that employed by the other two public segments but unsuited to the development of cost-of-instruction data. To facilitate the development of meaningful cost information--information that will promote the Legislature's objectives of comparability and uniformity--a new accounting structure and activity framework must be implemented for the Community Colleges. In addition, selective modifications must be effected to the accounting systems presently used by the University and State University systems.

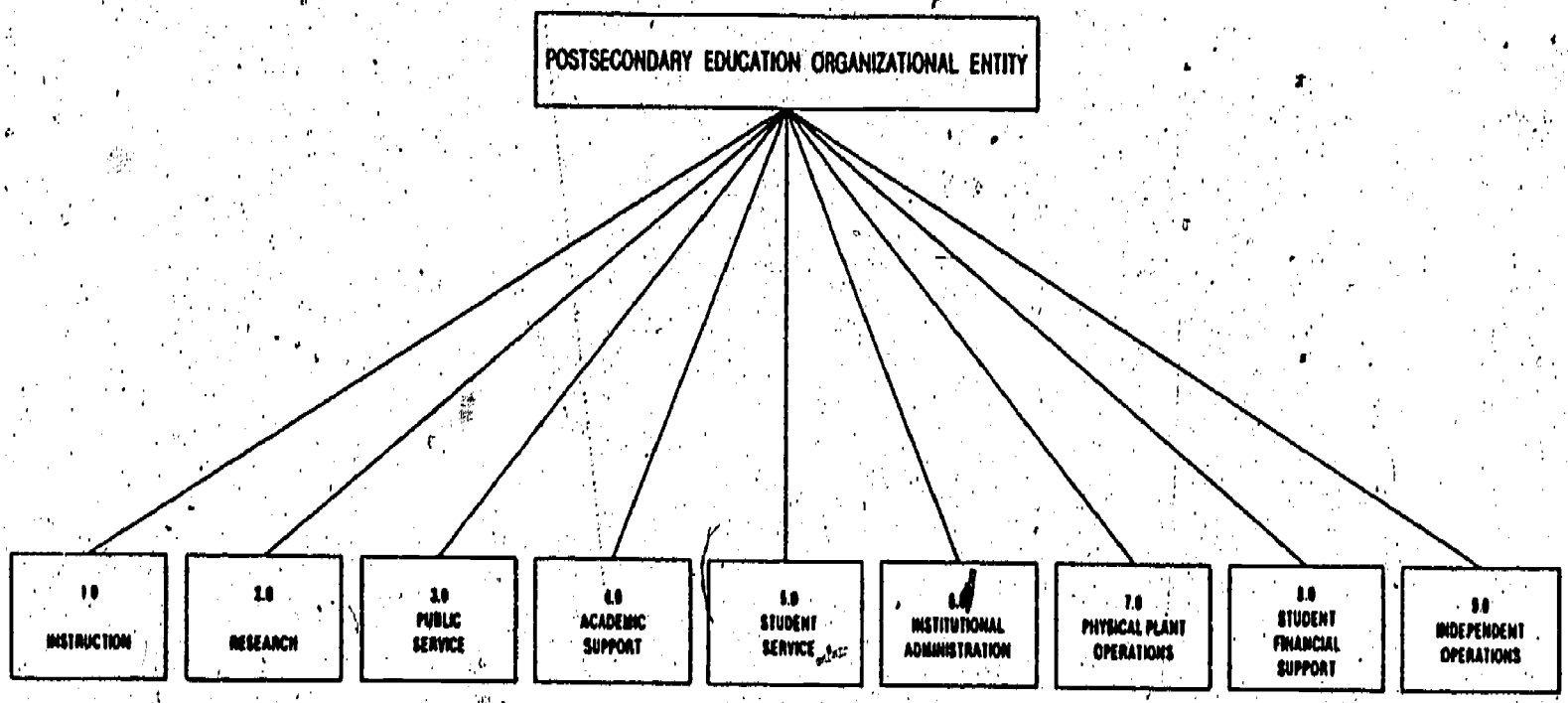
The Program Classification Structure (PCS) developed by the National Center for Higher Education Management Systems provides a method 14/ which can be used by the segments to classify program activities and identify program costs. The PCS is highly compatible with the State-level accounting structures presently used by the University and the State University. 15/ In addition, the PCS is the most widely used classification structure for the development of cost-of-instruction information. The national popularity of the PCS as the basic framework for the development of educational cost data provides an additional advantage to California because use of the PCS facilitates the interchange of selected cost information with institutions and segments in other states.

An expanded treatment of the PCS appears in Appendix F. An illustration of the PCS structure appears in Figure 3. This structure classifies all postsecondary educational activities performed at the campus or segmental level into one of nine major programs:

1. Instruction
2. Research

Figure 3

PROGRAM CLASSIFICATION STRUCTURE



1.1 General Academic Instruction (Degree-related)
1.2 Vocational/ Technical Instruction (Degree-related)
1.3 Requisite Preparatory/Remedial Instruction
1.4 General Studies (Nondegree)
1.5 Occupation-related Instruction (Nondegree)
1.6 Social Roles/Interaction Instruction (Nondegree)
1.7 Home and Family Life Instruction (Nondegree)
1.8 Personal Interest and Leisure Instruction (Nondegree)

2.1 Institutes and Research Centers
2.2 Individual or Project Research

3.1 Direct Patient Care
3.2 Health Care Supportive Services
3.3 Community Services
3.4 Cooperative Extension Services
3.5 Public Broadcasting Services

4.1 Library Services
4.2 Museums and Galleries
4.3 Educational Media Services
4.4 Academic Computing Support
4.5 Ancillary Support
4.6 Academic Administration
4.7 Course and Curriculum Development
4.8 Academic Personnel Development

5.1 Student Service Administration
5.2 Social and Cultural Development
5.3 Counseling and Career Guidance
5.4 Financial Aid Administration
5.5 Student Auxiliary Services
5.6 Intercollegiate Athletics
5.7 Student Health/ Medical Services

6.1 Executive Management
6.2 Financial Management and Operations
6.3 General Administration and Logistical Service
6.4 Administrative Computing Support
6.5 Faculty and Staff Auxiliary Services
6.6 Public Relations/ Development
6.7 Student Recruitment and Admissions
6.8 Student Records

7.1 Physical Plant Administration
7.2 Building Maintenance
7.3 Custodial Services
7.4 Utilities
7.5 Landscape and Ground Maintenance
7.6 Major Repairs and Renovation

8.1 Scholarships
8.2 Fellowships

9.1 Independent Operations/ Institutional
9.2 Independent Operations/ External Agencies

3. Public Service

4. Academic Support

5. Student Service

6. Institutional Administration

7. Physical Plant Operation

8. Student Financial Aid

9. Independent Operations

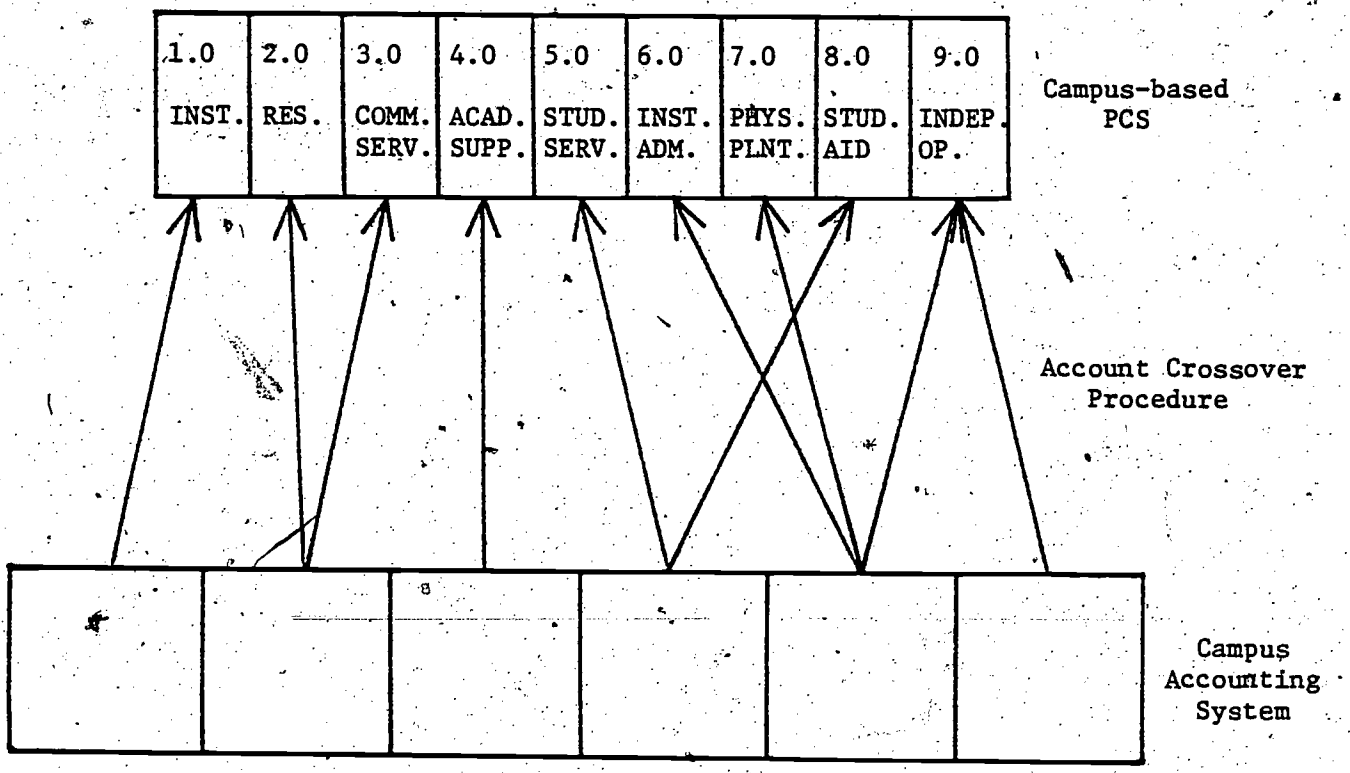
These nine programs, and associated subprograms, provide a comprehensive system for identifying institutional activities and their attendant costs. When conducted within the PCS, data collection may be undertaken on an interinstitutional basis without regard to differences in organizational structures, internal activities, or funding sources. In addition to serving as a basis for common data collection, the PCS's "universal" framework facilitates comparisons of selected cost-of-instruction data between and among institutions and segments.

Use of the PCS as a mechanism for gathering, reporting, and exchanging cost information is discussed in greater detail later in this chapter. It is worth taking a moment at this point, however, to examine the procedures used to construct a State-level PCS. Consider the illustration in Figure 4. Construction of a State-level PCS begins at the campus level. Campus "accounts" are inspected on an individual basis and assigned to an element within the PCS that most closely reflects the activity assigned to each account. For example, travel funds expended by a campus president would be assigned to PCS account 6.1 (Executive Management).

In those instances where a single campus account reflects an activity that is covered by more than one PCS account, the funds in the campus account are divided between the respective PCS accounts on the basis of activity data. For example, a campus account for the operation of a student counseling center might be prorated so that a portion of the funds were allocated to PCS account 5.3 (Counseling and Career Guidance) and the remainder assigned to PCS account 5.1 (Student Service Administration). The process of translating internal accounts to PCS accounts is referred to as the account-"crossover" procedure.

Note from Figure 4 that the account crossover procedure is executed at the institutional level. (Within the Community College system it would probably be necessary to effect account crossovers at the

Figure 4. Illustration of the Procedure Used to Construct a Campus Program Classification Structure



district level.) Once carried out at the campus or district level, the PCSs for individual instutions may be combined and integrated with a second PCS documenting the activities and costs of a systemwide office to yield a "segmental" PCS. Finally, segmental PCSs may be combined to yield a State-level PCS.

Translation of institutional and segmental activity and fiscal data into the PCS structure does not produce cost-of-instruction information. Construction of a PCS merely provides the framework within which to begin developing cost computations. Additional data collection, particularly faculty reporting (discussed in the following section), must be undertaken in order to develop the cost-of-instruction data.

ENHANCING THE QUALITY OF COST DATA: ADDING FACULTY REPORTING

Faculty 16/ are the principal asset of an institution and represent its most significant single cost. Faculty participate in a wide variety of institutional activities in the course of their normal work. As such, a lump sum assignment of faculty salaries 17/ to one or another element of the PCS using the account-crossover procedure described earlier would misrepresent the cost of their various activities. To ensure that faculty activities and their attendant costs are properly represented throughout the PCS, a survey of faculty activity must be performed. The results of the survey permit the assignment of faculty salaries to specific educational activities.

Faculty reporting is usually undertaken in one of two forms. In some states, faculty activity is reported by department chairpersons (using a survey instrument), based on their assumptions about the efforts expended by the faculty in their departments. When performed in this manner, faculty reporting is referred to as "Faculty Assignment Analysis." A second, and more widely used, method of gathering information about faculty activity is a survey instrument completed by each faculty member documenting his/her individual activities. This method of self-reported faculty data is usually referred to as "Faculty Activity Analysis." In addition to providing data useful for unit cost computations, both of these analytical procedures generate data capable of supporting a variety of performance measures.

While cogent arguments have been advanced supporting each procedure, Faculty Activity Analysis appears to be the predominant survey technique used in other states. The University of California is the only segment currently employing a faculty reporting system. The Faculty Time Use Study (FTUS) was instituted during the 1977-78 academic year to collect aggregate, Universitywide information on

faculty activities, which was to be shared with the State government. Each year approximately 1,000 University faculty from the regular ranks (and 300 from the irregular ranks) complete a questionnaire concerning their activities for a specific two- or three-day period. The reporting periods are staggered in such a way that data are being collected for each day of each academic quarter during the entire academic year. This methodology provides a composite picture of the way in which the University faculty as a whole spends its time. The reporting period of two or three days for each individual avoids the problem of asking faculty to estimate in retrospect how they spent their time over the previous week, month, or academic term. The principles of sampling yield a composite picture, but the validity of the data does not apply at an individual or disaggregated level. FTUS data are not disaggregated by campus, discipline, or rank. The data from the study are used only for reporting on faculty activities to the State.

The faculty activity reporting system recommended in this report was developed by the National Center for Higher Education Management Systems 18/ in 1972 and subsequently modified in 1974. The National Center's program supports the use of a Faculty Activity Analysis (FAA) survey instrument that is compatible with institutional accounting procedures, faculty workload considerations, and the PCS. A sample of the FAA survey instrument developed by NCHEMS appears in Figure 5. The instrument incorporates changes necessary to meet segmental variations and permits a detailed allocation of faculty salaries to specific PCS elements on the basis of workload information. An illustration of the use of an FAA to translate faculty salaries into a campus-based PCS appears in Figure 6.

FAA surveys may be administered in a number of ways. Some states require every faculty member to provide workload data each term. Others require a random sample of faculty to submit data on a periodic basis. Still others incorporate a random sample of faculty and request data only in alternate years. California's needs for faculty activity data are based upon the need for data to support cost-of-instruction computations. The FAA survey interval therefore becomes a direct function of the frequency with which educational cost data are required. While term-by-term data collection procedures result in the most timely generation of unit cost data, annual, biennial, or triennial surveys would probably be adequate for California's needs and would be less expensive to conduct.

The sample of faculty used and the frequency of the survey are important considerations. Well-drawn random samples of faculty have the advantage of reduced cost and improved timeliness. Random sampling does, however, preclude both the development of cost-of-instruction data below the segmental level and the computation of unit costs by academic discipline. Chapter V describes two cost-of-

Figure 5

NCHEMS Faculty Activity and Outcome Survey Instrument with Illustrative Data: Side 1

NAME _____ I.D. OR SOCIAL SECURITY NO. _____

FOR INSTITUTIONAL USE

ADDITIONAL INFORMATION BLOCK								FISCAL REFERENCE BLOCK						
INSTITUTION	TERM	TENURE	YEARS AT INSTITUTION	YEARS IN RANK	PRINCIPAL DEPARTMENT	ADMINISTRATION RANK	FACULTY RANK	REF. COL.	FTE	ACTIVITY	DEPARTMENT/ UNIT	FCS CODE	ACCOUNT NUMBER	SALARY DOLLARS
								A	.5	Admin.	Bus. Ad.	460506	1041121	3300
								I	.5	Instr.	Bus. Ad.	110506	1541121	3300

INITIAL ESTIMATE OF YOUR OVERALL AVERAGE HOURS PER WEEK: 65

SECTION A: TEACHING ACTIVITIES

A.1 SCHEDULED TEACHING

(a) HEGIS (Do not write in this column)	(b) DEPT. UNIT	(c) COURSE & SECTION #	(d) SECTION Enrollment	(d) SECTION Code R if Remedial E if Extension	(e) CREDIT HOURS	(f) METHOD OF INSTRUCTION	(g) FORMAL CONTACT HOURS	(h) OTHER CONTACT HOURS	(i) PREPARATION & ADMINISTRATION	(j) AVERAGE HOURS PER WEEK	(k) % STUDENT GROWTH AND DEVELOPMENT	(l) % DEVELOPMENT OF NEW KNOWLEDGE AND ART FORMS	(m) % COMMUNITY SERVICE AND DEVELOPMENT	(n) % INSEPARABLE COMBINATION OF (k) + (l) + (m)	(o) FISCAL REFERENCE DO NOT WRITE IN THIS COLUMN
	Bus.	458-10	53		3	A	3	2	7.5	12.5	75	15		10	I
	Bus.	458-12	39		3	A	3	2	7.5	12.5	75	15		10	I
	Bus.	459-10	28		3	D	3	2	7.5	12.5	75	15		10	I
	Bus.	548-10	1		3	E		.5	.25	.75	65	30		5	I
					SUBTOTAL					38.25					

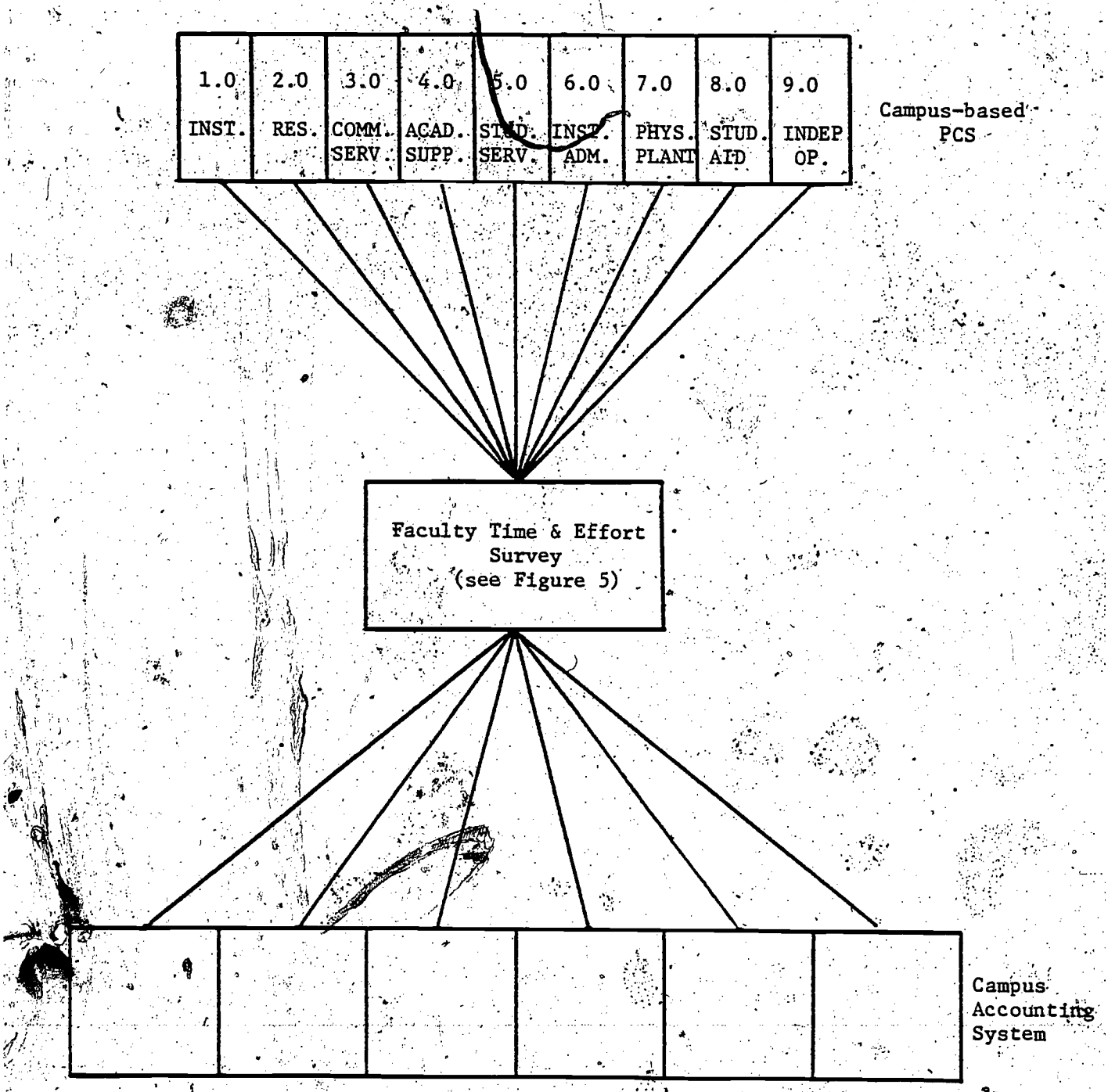
	(p) LEVEL	(q) ACTIVITY DESCRIPTION						
A.2 UNSCHEDULED TEACHING	F	Discussion with Colleagues	1	100				I
	D	Work with Marginal Students	1	100				I
A.3 ACADEMIC PROGRAM ADVISING	D	Advise Students	.5	100				I
A.4 COURSE AND CURRICULUM REV. & DEVELOP.	E	Explore New Courses	.5	100				I
	F	Develop Curriculum	.5	100				I
		SUBTOTAL	3.5					

Figure 5

NCHEMS Faculty Activity and Outcome Survey Instrument
with Illustrative Data: Side 2

(a) ACTIVITY	(b) ACTIVITY DESCRIPTION		(c) AVERAGE HOURS PER WEEK	PERCENTAGE DISTRIBUTION TO INSTITUTIONAL OUTCOMES (d)	(e)	(f)	(g)	(h)
				ARE OPEN TO GROWTH AND DEVELOPMENT %	ARE DEVELOPMENT OF NEW KNOWLEDGE AND SKILLS %	CONSUME NEW KNOWLEDGE AND SKILLS %	ENHANCE CURRENT KNOWLEDGE AND SKILLS %	(i) DEGREE OF DIFFERENCE FROM IDEAL IN THIS ACTIVITY
SECTION A: RESEARCH AND OTHER SCHOLARLY AND CREATIVE WORK ACTIVITIES	A.1 SPECIFIC PROJECTS	Writing Proposals	.5	30	70			A
		Supervising Research	.5	30	70			A
	A.2 GENERAL SCHOLARSHIP AND PROFESSIONAL DEVELOPMENT	Attending Professional Meetings	.5				100	A
		SUBTOTAL	1.5					
SECTION B: INSTRUCTIONAL SERVICES ACTIVITIES	B.1 STUDENT-ORIENTED SERVICE	Recommendations	.5	100				I
		Meeting with Parents	.5				100	I
		Personal and Career Counseling	.5	100				I
	(CHECK LEVEL)							
	B.2 ADMINISTRATIVE DUTIES 1	Administration Policies	8.0				100	I
	1	Assessing Faculty Course Loads	2.0				100	I
	1	Registrations	1.0				100	I
	B.3 COMMITTEE PARTICIPATION	Planning Committee	1.5				100	I
		Dean's Advisory Committee	3.0				100	I
		SUBTOTAL	17					
SECTION C: PUBLIC SERVICE ACTIVITIES	C.1 GENERAL PROFESSIONAL SERVICE ADVICE DIRECTED OUTSIDE THE INSTITUTION	Consulting	1.0			100		5
		SUBTOTAL	1.0					
		AVERAGE HRS/WEEK	61.25					

Figure 6. Illustration of the Use of a Faculty Time and Effort Survey Instrument to Distribute Faculty Salaries, Benefits, Etc., Into a Campus-Based Program Classification Structure



instruction alternatives based upon universal and random faculty samples in the FAA process. The differences in the qualities and quantities of cost-of-instruction data available under each alternative highlight the trade-offs between sampling methodologies.

THE EXPENSE OF DEVELOPING COST-OF-INSTRUCTION DATA AND THE PRECISION OF THE RESULTANT DATA

Cost-of-instruction data can be developed using four methodologies:

- Methodology 1
  Reporting costs by performing a "crossover" between segmental accounting systems and the NCHEMS Program Classification Structure (PCS);

- Methodology 2
  Reporting costs based on data obtained from a Faculty Activity Analysis (FAA);

- Methodology 3
  Reporting costs based on data obtained from an Instructional Work Load Matrix (IWLM); or

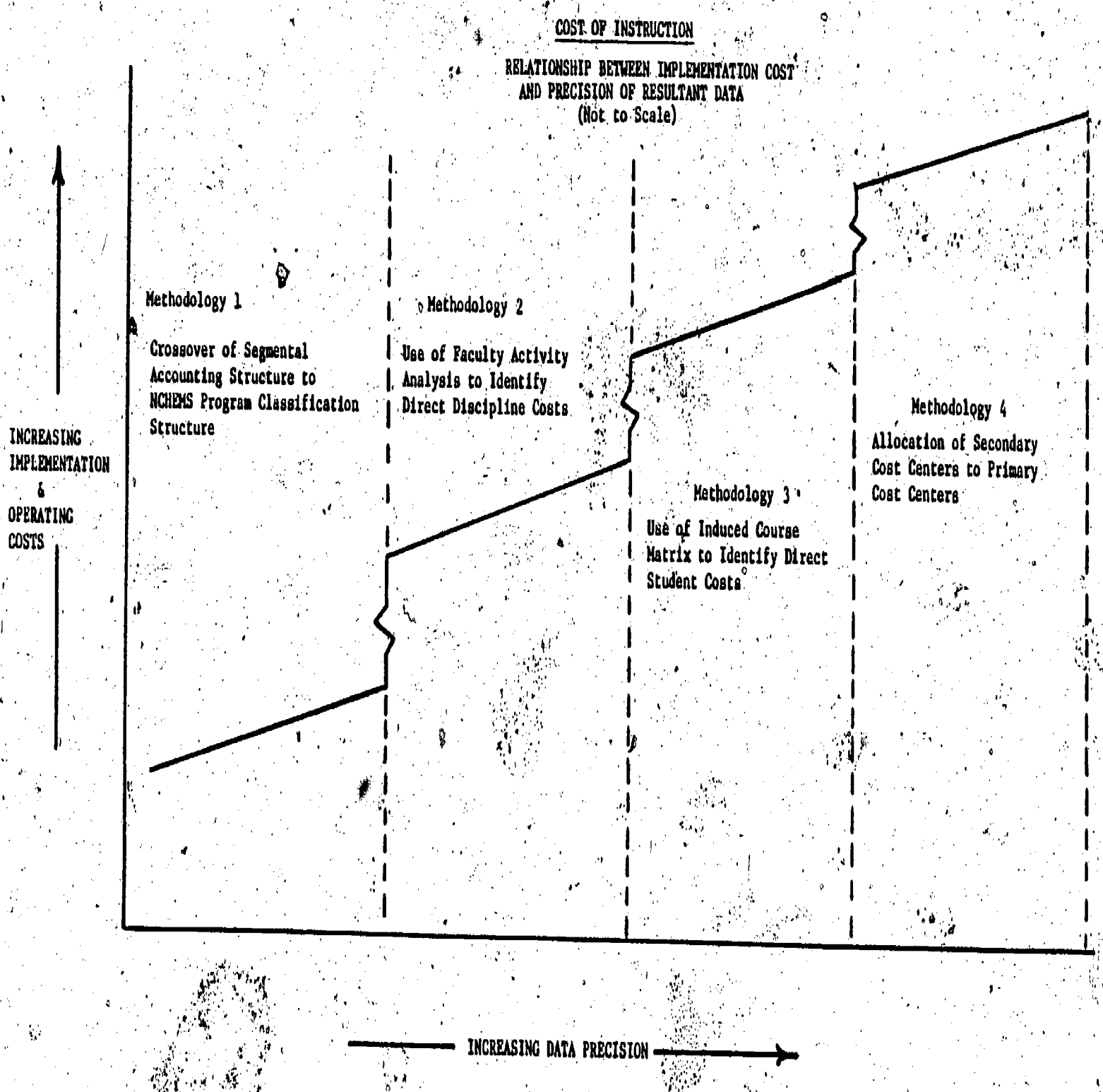
- Methodology 4
  Reporting costs based on the allocation of costs from secondary to primary cost centers.

In every instance, the precision of the cost data and the price tag associated with the procedures necessary to develop those data are assumed to increase: (1) within each methodology as data-reporting precision increases, and (2) between methodologies as different procedures and associated reporting instruments increase in complexity.

Cost increases within a methodology are considered to be linear. The amount of the increase varies, depending upon the precision of the data to be developed. Cost increases between methodologies are thought to be discontinuous, due to the large investment necessary to implement the particular cost-accounting procedures required by the methodology. The generally linear cost increase within a methodology, coupled with the discontinuous cost increase between methodologies, results in the "stair-step" cost graph illustrated in Figure 7. In all instances the precision of the cost data developed under one methodology is assumed to be transferable to successive methodologies.

An expanded discussion of the cost considerations associated with each methodology follows.

FIGURE 7


COST OF INSTRUCTION
RELATIONSHIP BETWEEN IMPLEMENTATION COST AND PRECISION OF RESULTANT DATA
(Not to Scale)
INCREASING IMPLEMENTATION & OPERATING COSTS
Methodology 1
Crossover of Segmental Accounting Structure to NCHEMS Program Classification Structure
Methodology 2
Use of Faculty Activity Analysis to Identify Direct Discipline Costs
Methodology 3
Use of Induced Course Matrix to Identify Direct Student Costs
Methodology 4
Allocation of Secondary Cost Centers to Primary Cost Centers
INCREASING DATA PRECISION

Methodology 1: Crossover Between Accounting Systems

Under Methodology 1, cost information is prepared by translating data from segmental accounting systems to the NCHEMS Program Classification Structure. The cost of such translations is relatively low and increases only slightly with increased emphasis on the precision of the resultant data. In Figure 7, the left side of the cost line for Methodology 1 represents accounting translations performed at high levels of data aggregation. Increasing refinements within the crossover procedure, particularly those resulting in increasing data disaggregation, result in only moderate cost increases.

As indicated in Chapter V, the translation of cost data between accounting systems is relatively inexpensive to perform but, unfortunately, yields cost data of limited value. 19/ While an extremely detailed segmental/PCS account crossover would provide more detailed fiscal information than presently available, it would not provide unit cost data on either a per-credit-taken or per-credit-taught basis. Recipients of such data might well attempt to derive unit cost information by combining selected accounts within the PCS and dividing by one or another form of credit unit consumption. The resulting unit cost data, however, would be of limited, and questionable, value. Methodology 1 is attractive because it is relatively inexpensive to perform, but it does not provide reliable unit cost information by either level of student or level of instruction.

Methodology 2: Use of a Faculty Activity Analysis Survey

Under Methodology 2, cost data are developed by combining information obtained from the exacting segmental/PCS account crossover with data describing faculty activity. Knowledge of faculty activity is obtained through a Faculty Activity Analysis (FAA) survey.

The information derived from an FAA is used to assign the costs associated with faculty salaries, benefits, and support costs--traditionally between 40 and 60 percent of a typical institution's total annual budget--to one or more specific elements within the PCS. If desired, the FAA survey instrument can be designed to capture the instructionally related portion of faculty activity on the basis of academic discipline(s). When administered in this manner, an FAA permits detailed allocations of faculty costs to specific academic disciplines.

As Figure 7 shows, the cost line within Methodology 2 varies with the frequency with which the FAA is administered, the number of faculty

surveyed, and the range of activities accommodated on the survey instrument. The cost of an FAA administered biennially to faculty in the Fall Term only, and designed to capture instructional activity at the two-digit HEGIS level, would appear on the left side of the cost line. An FAA employed each term, for faculty and administrators, that gathers instructional activity information at the four-digit HEGIS level would be considerably more expensive.

While a Faculty Activity Analysis survey is costly to implement and involves considerable ongoing operational expense, the precision of the resultant data is substantially improved over that available under Methodology 1. A properly administered FAA, when coupled with the data obtained under Methodology 1, yields cost data of sufficient quality and quantity to permit computation of unit costs by both instructional level and academic discipline.

Examples of data developed under this methodology appear in Figures 9 and 10 in Chapter V.

Methodology 3: Use of an Instructional Work Load Matrix

Cost information developed under Methodology 3 capitalizes on the investment made in data collection under the first two methodologies and expands the data to develop costs related to student credit "consumption." Program costs (cost per credit unit by major, etc.) are developed through the use of an Instructional Work Load Matrix (IWLM). To prepare an IWLM, institutions cross reference data on each student's course registration with the faculty activity data derived from an FAA survey. This cross referencing permits tabulation of student enrollments with course offerings. Once instructional costs by discipline and/or level of instruction have been computed, (the procedure utilized in Methodology 2), program costs on a per-student basis can be determined.

While the procedure used to develop student program costs (and the language used to describe the process) is complex, the procedures have been successfully used in other institutions, segments, and states. In sum, while arduous, the procedure works.

The primary improvement in the precision of the data developed under Methodology 3 over the data developed under the first two methodologies lies in the ability to identify student costs and to differentiate them, if desired, by level of student and by program. The primary drawback to Methodology 3 is its implementation cost. Not all campuses or segments, possess the data necessary to support even the most rudimentary IWLM procedure. In addition, substantial staff (and computer) time and effort are required to audit the results of the IWLM and FAA data merger.

Sample data developed under Methodology 3 appear in Figure 11 in Chapter V.

Methodology 4: Allocation of Secondary to Primary Cost Centers

To this point, all instructional and student costs have been developed using direct 20/ cost computations only. Under the first three methodologies, instructional costs are developed by reporting costs directly related to instructional activities. Cost centers outside the instructional enterprise remained with their principal activity and were not prorated or otherwise assigned to instructional, research, or community service activities.

Under Methodology 4, the secondary cost centers (items 4.0 - 9.0 in the PCS) are allocated across the primary cost centers (items 1.0 - 3.0 in the PCS) using one or more proration techniques. While the specific technique employed varies with the cost center to be allocated, the intent is to spread an institution's "secondary," or overhead costs across its primary activities and obtain data reflecting "full costs." Methodology 4 develops information describing the "full and complete" cost per credit taught and/or the cost per credit taken at various student/course and discipline/program levels.

The primary advantage of this methodology over its predecessors is that the costs associated with each discipline/program activity indicate more precisely the actual funds being expended to support that activity. Development of such data permits departments, schools, colleges, campuses, and segments to be more precise in determining the cost(s) of various institutional activities. These data are also beneficial in evaluating alternate funding proposals because they permit full cost comparisons.

The two major drawbacks to the extension of overhead costs to primary activities are: (1) the cost of performing the procedure, and (2) the differences of opinion that exist within the academic community regarding the proration formulas that should be employed for each cost center. For example, should the cost of a campus library be distributed amoung academic disciplines on the basis of the number of faculty employed in each department, the number of students enrolled in each major, library circulation statistics, or other factors? The procedures set forth in the NCHEMS Technical Reports, cited in Chapter V, for performing full cost computations, are assumed for the purpose of this study.

CHAPTER V

SPECIFIC COST-OF-INSTRUCTION ALTERNATIVES

INTRODUCTION

This chapter describes the caveats, limitations, and assumptions used in developing cost-of-instruction alternatives. In addition, the chapter also provides a description of six specific cost-of-instruction alternatives for California. Segmental estimates of implementation costs are provided for each alternative.

CAVEATS, LIMITATIONS, AND ASSUMPTIONS

The cost-of-instruction methodologies described in Chapter IV can be implemented in a variety of ways. To ensure timely completion of this study, a discrete number of alternatives were documented and their implementation costs established. In the following section, six specific cost-of-instruction alternatives are described. Each is based upon one or more of the four methodologies discussed in the previous chapter.

In order to assure the greatest possible clarity in evaluating alternate costing methodologies, a number of assumptions, limitations, and caveats have been applied to each alternative. The assumptions, etc., appearing below have been developed after a review of the experiences of other states and the relevant literature.

1. Costing Methodology

Each alternative employs the NCHEMS standard costing methodology as described in NCHEMS' Technical Report #65, Procedures for Determining Historical Full Costs. The NCHEMS Program Classification Structure (PCS) is used as the standard accounting system for all cost-reporting activities. The PCS is described in Technical Report #106. In those instances where faculty activity surveys are employed, NCHEMS Technical Report #54, Faculty Activity Analysis: Interpretation and Uses of Data, serves as the starting point for the development of California-based surveys.

2. Activities To Be Studied

The costing alternatives are limited to "regular" instructional activities in the three public segments. For the purposes of this study "regular" instruction is defined as courses and programs

funded in whole or part by the State General Fund, federal funds, etc. Courses and programs funded entirely by student fees are not considered part of the "regular" instructional program and therefore not included in this study. Activities specifically excluded from the scope of the study include self-supported extension, continuing education, and summer session programs. Medical schools and the operation of teaching hospitals are also excluded from the study, as are the California Maritime Academy and the Hastings College of Law.

3. Time Periods To Be Studied

In preparing alternate cost estimates for developing cost-of-instruction data, a full academic year is used as the standard time measurement. Cost information is prepared on an annual basis. Term-by-term cost information is neither collected or published. Cost data are, where necessary, weighted to accommodate differences in institutional calendars (year-round-operation, 4-1-4 institutions, etc.). As indicated in 2 above, summer session is excluded from the study in those instances where the program is not a part of an institution's "regular" instructional program.

4. Funding Sources

Cost information for <u>all</u> funding sources is reported: State General Fund, local funds, federal funds of all types, Regental funds, student fees, private bequests, etc. Sources employed to fund activities specifically excluded under 2 above are <u>not</u> considered in the study. Funding sources are divided into two categories: (1) restricted, and (2) unrestricted. In general, unrestricted funds are defined as State and institutional General Funds.

Operating expenses are the only funding reported; capital outlay is excluded from the cost-of-instruction feasibility study at this time.

5. Unit Costing Measures

In those instances where unit costing by either instructional or student level is employed, the standard unit measure for academic programs is the <u>student credit unit</u>. The unit-costing measure for noncredit programs within the Community Colleges is the <u>student contact hour</u>.

6. Instructional Disciplines

In those instances where cost data are developed by instructional discipline or student program, the HEGIS classification structure is employed.

7. Preparing Cost Estimates

For purposes of this study, costs associated with the development of a particular set of cost-of-instruction data have been computed on an incremental basis only. Costs currently borne by a segment in the development of data that proved to be either totally or partially compatible with a particular cost-of-instruction methodology have not been considered as a "new" cost attributable to implementing that methodology.

The cost of faculty time required to complete Faculty Activity Analysis surveys, if any, was not included in segmental cost estimates.

SPECIFIC COST-OF-INSTRUCTION ALTERNATIVES

Alternative 1: Translating Segmental Fiscal Information into the Program Classification Structure

Under this alternative, each segment documented the cost of performing an exacting segmental-to-PCS account crossover. Implementation of this alternative requires the public four-year segments to effect selective refinements to their existing State-level fiscal data to ensure comparability between segments and within the PCS structure. The Community College system is required to perform an accounting system crossover between the individual accounting systems currently employed at the district level and the PCS.

Account-crossover procedures for primary and secondary programs would be effected for operating-expense expenditure data only, at the two-digit level of the PCS. No PCS account mergers (e.g., combining items within a specific PCS element or combining elements themselves) would be undertaken as part of this alternative. Data would be arrayed in accordance with the PCS nomenclature and no unit-cost computations would be developed. All funding sources not specifically excluded in the caveats section of the report would be included in the account crossover. Data would be prepared on an institutional basis, (district level for the Community Colleges) with summaries provided at the segmental level.

An illustration of sample data developed using Alternative 1 appears in Figure 8. This is the current format for the Governor's Budget.

Alternative 2A: Prepare Instructional Unit Cost Data Based on Information Obtained From a "Universal" Faculty Activity Analysis Survey

Alternative 2A corresponds directly to Methodology 2, described in Figure 7. Under this proposal, each segment would perform the exacting segmental-to-PCS crossover described in Alternative 1. A Faculty Activity Analysis (FAA) survey covering all faculty and academic administrative staff would then be utilized to distribute faculty salaries to selected elements within the PCS. All faculty and academic administrative staff would be surveyed once a year at various times throughout the Fall Term. The combination of the account-crossover procedure and the FAA data would be used to develop accounting data identical to that described under Alternative 1, and to develop unit-cost information by both level of instruction and academic discipline. As in Alternative 1, data would be developed on a campus or district basis with segmental summaries.

Under Alternative 2A, each segment would perform an account-crossover procedure at the two-digit PCS level. No account mergers would be effected and data would be arrayed according to the PCS nomenclature. Unit-cost data would be prepared at the two-digit level using the HEGIS coding structure embodied in the PCS. Unit-cost data would be displayed for the following levels of instruction:

1. Lower Division (for Community Colleges only, differentiated by vocational and academic instruction)
2. Upper Division
3. Graduate I (first stage-master's)
4. Graduate II (second stage-doctoral)

Unit-cost information obtained as a result of this procedure would reflect faculty salaries, benefits, and instructional support costs only--campus "overhead" costs would not be included in these figures. While instructional-support costs would be prorated, based on the data obtained from the FAA, no proration of overhead costs centers to academic disciplines would be undertaken. All unit-cost information related to "academic" instruction would be prepared in terms of cost per student credit unit. Noncredit instruction that is not totally self-supported within the Community Colleges system would also be developed in terms of student contact hours.

Figure 8. Sample Data Developed Under Alternative 1

(all data are hypothetical)

	PCS Program	UC Expenditures ($000)	CSUC Expenditures ($000)	CCC Expenditures ($000)
1.0	Instruction	8.44	6.38	94.63
2.0	Research	4.20	5.24	83.92
3.0	Public Service	9.68	16.06	106.26
4.0	Academic Support	18.31	10.85	54.25
5.0	Student Service	1.20	2.29	9.21
6.0	Institutional Administration	16.93	26.62	75.66
7.0	Physical Plant Operation	7.76	7.44	23.93
8.0	Student Financial Support	4.23	9.86	10.28
9.0	Independent Operation	8.45	14.26	83.26

An illustration of sample data developed using Alternative 2A appears in Figure 9.

Alternative 2B: Prepare Instructional Unit Cost Data Based Upon Information Obtained from a Limited Faculty Activity Analysis Survey

Alternative 2B also draws upon Methodology 2 and is similar to Alternative 2A. The major differences between these two alternatives are:

1. Only 25 percent of all faculty, selected on a random basis, would be required to complete a Faculty Activity Analysis survey. (This procedure is similar to the faculty-time-and-effort reporting procedures presently used by the University of California.) The "limited" survey would be administered on a time-random basis during the Fall Term and would be employed to distribute all faculty salaries and instructional support costs to selected elements within the PCS.

2. Use of the limited survey would permit computation of unit costs differentiated by level of instruction only. The abbreviated sampling would preclude development of instructional-unit costs by academic discipline.

3. The restricted sampling procedure would permit the development of unit-cost data at the segmental level only. Campus and district unit-cost data would not be developed under Alternative 2B.

Alternative 2B is essentially a simplified version of Alternative 2A's method of computing instructional unit-costs. This alternative benefits from a reduced reporting burden upon the faculty (with a commensurate reduction in implementation and operational costs) but suffers from an inability to generate unit-cost information as a function of instructional discipline or campus/district. In all other respects, however, the benefits attributed to the implementation of Alternative 2A are applicable to this alternative.

An illustration of the cost data produced using this Alternative 2B appears in Figure 10.

Alternative 3A: Developing Unit Cost Information by Student Level and Student Program

Alternative 3A utilizes Methodology 3 to develop unit-cost information by student level and by student program (major). All proce-

Figure 9. Sample Cost of Instruction Data Developed Under Alternate 2A

Direct Cost Per Credit Unit Taught
By Academic Discipline and Instructional Level
(all data are hypothetical)

	Level Of Instruction			
	Lower Division	Upper Division	Grad I	Grad II
Agriculture	11.60	12.76	22.80	46.90
Area Studies	9.19	10.04	-	-
Biological Sciences	14.26	16.09	20.40	28.63
Social Sciences	6.15	7.08	9.42	-
Interdisciplinary Studies	8.10	11.46	-	-

Data available by campus and by segment

Figure 10. Sample Cost of Instruction Data Developed Under Alternative 2B

Direct Cost Per Credit Unit Taught By
Instructional Level
(all data are hypothetical)

	Level Of Instruction			
	Lower Division	Upper Division	Grad I	Grad II
University of California	23.08	29.42	46.40	52.19
State University	25.16	27.03	39.92	-
Community Colleges	22.86	-	-	-

dures identified under Alternative 2A are assumed to be in force and the data developed as a result of the prior alternative are available under this option. Data describing unit-cost information by student level and program would be developed by employing an Instructional Work Load Matrix (IWLM) at the campus level.

Under this alternative each campus would perform an Instructional Work Load Matrix computation in the Fall Term of each year. Data so obtained would be linked to information supplied by the Faculty Activity Analysis survey described in Alternative 2A. Student program information would be developed at the two-digit HEGIS level. Unit costs would be prepared for the following student levels:

1. Lower Division
2. Upper Division
3. Master's - (Graduate I)
4. Doctorate - (Graduate II)

Unit costs developed under Alternative 3A would reflect direct costs (faculty salaries, benefits and instructional support costs) only; proration of campus "overhead" costs to student programs would not be effected. Cost information would be developed in terms of student credit units. Unit-cost information for Community College noncredit instruction would be prepared in terms of student contact hours. Sample data generated under this alternative appear in Figure 11.

Note that Alternative 3A is a successor to Alternative 2A only. Alternative 3A cannot be implemented if Alternative 2B is employed.

Alternative 4A: Developing Full Cost Information

Alternative 4A would extend the costing procedures used in Alternatives 1, 2A, and 3A to include "full" costs of instruction. Under this proposal, campus "overhead" costs (items 4.0 - 9.0 in the PCS) would be prorated across instructional, research, and community service programs (items 1.0 - 3.0 in the PCS). The procedures supported by the NCHEMS costing methodology would be used to prorate overhead costs to these programs.

Unit-cost information developed under Alternative 4A would be published in a manner identical to that employed in Alternatives 1, 2A, and 3A. All unit-cost data would be prepared by both level of student and level of instruction in terms of the student credit unit. Program and instructional costs would be further differentiated, using the HEGIS coding structure at the two-digit level.

Figure 11. Sample Cost Of Instruction Data Developed Under Alternative 3A

Direct Cost Per Credit Unit Taken By
Student Program (Major) And Student Level
(all data are hypothetical)

	Level of Student			
	Lower Division	Upper Division	Masters	Ph.D.
Agriculture	11.60	12.76	22.80	46.90
Area Studies	9.19	10.04	-	-
Biological Sciences	14.26	16.09	20.40	28.63
Social Sciences	6.15	7.08	9.42	-
Interdisciplinary Studies	8.10	11.46	-	-

Data available by campus and by segment

Sample data appear in Figures 12A and 12B.

Note that alternative 4A can be implemented only if Alternatives 1, 2A, and 3A are employed.

Alternative 4B: Developing Full Cost Information by Instructional Level Only

This alternative is similar to Alternative 4A but differs in that it relies upon Alternatives 1 and 2B to supply the data necessary for unit-cost computations. Since Alternative 2B employs a 25 percent Faculty Activity Analysis sample, computation of unit-cost information by campus/district, academic discipline, student level, and student program would be precluded. Data describing "full" unit costs by level of instruction at the segmental level would be the only outcome of implementing Alternative 4B. Except for these two limitations, all other aspects of Alternative 4A are applicable to Alternative 4B.

Data developed using this alternative are illustrated in Figure 13.

THE COST OF IMPLEMENTING THE SIX ALTERNATIVES

In the course of developing the six cost-of-instruction alternatives, Commission staff requested each segment to submit estimates of the cost of implementing each alternative. The segments were requested to separate their cost estimates into:

1. One time, nonrecurring costs--those necessary to underwrite the development of new survey instruments; the creation, or modification of existing, computer systems, staff training, etc.; and

2. Annual, ongoing operational costs--those necessary for survey administration, computer system operation, key data conversion, data auditing, editing, etc.

The cost estimates provided by the segments appear in Figures 14 and 15. Cost estimates are grouped within each figure in the order in which they would logically be implemented, and further segregated to isolate major alternatives that are mutually exclusive. The cost estimates appearing on the upper half of each figure represent cost-of-instruction alternatives that utilize a universal faculty reporting system and generate cost data by segment, campus, academic discipline, student major, level of instruction, and level of student. The cost estimates appearing on the lower half of the figures illustrate costs for alternatives that employ a 25 percent

Figure 12A. Sample Cost of Instruction Data Developed Under Alternative 4A

Full Cost Per Credit Unit Taught
By Academic Discipline And Instructional Level
(all data are hypothetical)

	Level Of Instruction			
	Lower Division	Upper Division	Grad I	Grad II
Agriculture				
Direct Cost	11.40	12.92	23.80	48.30
Full Cost	21.70	24.43	55.80	108.25
Area Studies				
Direct Cost	9.82	10.51	21.92	30.04
Full Cost	13.87	22.75	43.87	62.79
Social Sciences				
Direct Cost	6.10	8.07	9.98	-
Full Cost	9.92	10.72	16.72	-

Data available by campus and by segment

Figure 12B. Sample Cost Of Instruction Data Developed Under Alternative 4A

Full Cost Per Credit Unit Taken
By Student Program (Major) And Student Level
(all data are hypothetical)

	Level Of Student			
	Lower Division	Upper Division	Masters	Ph.D.
Agriculture				
Direct Cost	11.60	12.76	22.80	46.90
Full Cost	23.70	25.90	54.80	106.40
Area Studies				
Direct Cost	9.19	10.04	20.40	28.63
Full Cost	14.08	23.20	46.89	59.92
Social Sciences				
Direct Cost	6.15	7.08	9.42	-
Full Cost	9.85	10.88	16.06	-

Data available by campus and segment

Figure 13. Sample Cost of Instruction Data Developed Under Alternative 4B

Total Cost Per Credit Unit Taught By
Academic Discipline And Instructional Level
(all data are hypothetical)

	Level Of Instruction			
	Lower Division	Upper Division	Grad I	Grad II
University of California				
Direct Cost	23.08	29.42	46.40	52.19
Full Cost	38.14	41.63	88.92	108.63
State University				
Direct Cost	25.16	27.03	39.92	-
Full Cost	54.20	58.60	63.95	-
Community Colleges				
Direct Cost	22.86	-	-	-
Full Cost	55.15	-	-	-

Figure 14. Estimated Implementation Costs for Various Cost of Instruction Alternatives

Alternative	U.C.	C.S.U.C.	C.C.C.	Total
1	$ 19,400	$ 47,250	$1,700,000	$ 1,766,650
2A	$2,644,400	$184,500	$3,353,000	$ 6,181,900
3A	$4,459,400	$453,500	$5,225,000	$10,137,900

Alternative	U.C.	C.S.U.C.	C.C.C.	Total
1	$ 19,400	$ 47,250	$1,700,000	$1,766,650
2B	$ 169,400	$184,500	$3,352,000	$3,705,900
4B	$1,554,400	$500,750	$3,657,000	$5,712,150

Figure 15. Estimated Annual Operating Costs for Various Cost of Instruction Alternatives

Alternative	U.C.	C.S.U.C.	C.C.C.	Total
1	$ 8,800	$ 23,000	$ 216,000	$ 247,800
2A	$1,343,800	$228,000	$3,247,000	$ 4,818,800
3A	$3,013,800	$371,000	$5,928,000	$ 9,312,800
4A	$3,098,800	$405,000	$6,658,000	$10,161,800

Alternative	U.C.	C.S.U.C.	C.C.C.	Total
1	$ 8,800	$ 23,000	$ 216,000	$ 247,800
2B	$108,800	$108,000	$1,013,000	$1,229,800
4B	$193,800	$308,000	$1,272,000	$1,773,800

random sample of faculty in a statewide faculty-reporting system. These alternatives are capable of producing cost-of-instruction data at the segmental level, by level of instruction only. Under these alternatives, cost data would not be developed by campus, by academic discipline, by student major, or by level of student.

The following considerations should be applied when evaluating the cost estimates appearing in Figures 14 and 15.

1. Cost estimates were prepared in terms of 1979-80 fiscal year dollars.

2. Implementation cost estimates do not reflect single-year costs. It is assumed that the total cost of implementation would be spread over a number of years.

3. Cost data were prepared independently by each segment using "reasonable" estimates of each alternative's cost. Rigorous feasibility studies were not employed to develop these data.

4. The cost estimates presume the full use of existing data processing systems and faculty-reporting mechanisms.

5. The cost of faculty time required to complete faculty activity surveys is not included in the data presented in Figures 15 and 16.

6. The cost of converting data developed by academic discipline or student major from the existing four-digit HEGIS coding structure to the six-digit classification of Instruction Programs structure (a conversion mandated by the National Center for Education Statistics in the fall of 1982) is not included in segmental cost estimates.

7. The estimates prepared by the segments were not audited by Commission staff to verify their accuracy or completeness.

CHAPTER VI

THE CALIFORNIA FISCAL INFORMATION SYSTEM AND ITS RELATIONSHIP TO THE NCHEMS COST-OF-INSTRUCTION PROGRAM

INTRODUCTION

This chapter discusses the origin and characteristics of the California Fiscal Information System (CFIS). Selected comparisons between the CFIS program and the cost-of-instruction alternatives are provided. Two areas of potential conflict between the cost-of-instruction program alternatives described in Chapter VI and the CFIS program are identified and discussed.

Assembly Bill 3322 (Boatwright), enacted in the 1978 session, established the California Fiscal Information System (CFIS) as the State's primary vehicle for developing annual budgets and accounting for prior-year expenditures. AB 3322, subsequently chaptered as Sections 11409 and 13300 of the Government Code, directs CFIS to provide the legislative and executive branches with fiscal data that would "enhance fiscal decision-making in the establishment of budgets for all state activities." The statute calls for:

1. Development of a "modern and complete accounting system,"

2. Maintenance of "accurate, and comparable records, reports, and statements of all financial affairs of the State,"

3. Development of a system permitting "comparisons of budgeted expenditures, actual expenditures, and encumbrances,"

4. Use of an accounting structure that facilitates the linkage of actual expenditures to specific goals and objectives, and

5. Use of a coding structure (presumably within the accounting structure) that will permit, "identical activities being performed by different entities to be identified and compared."

The statute implies that all State agencies, commissions, bureaus, boards, and institutions are subject to inclusion in the CFIS program. The only exemption of significance relates to the University of California. Section 13341 indicates that "the existing budgeting, accounting, and reporting systems of the University of California shall not be substantially modified to comply with [the statute]."

Eight "pilot" agencies have been identified for initial conversion to the CFIS program. They are:

1. Employment Development Division,
2. Department of Education,
3. Department of Water Resources,
4. Department of Transportation,
5. Department of Health Services,
6. Department of Social Services,
7. Department of Motor Vehicles, and
8. The California State University and Colleges [emphasis added]

Task forces have been established within the Department of Finance and the Chancellor's Office of the State University and Colleges to facilitate implementation of the CFIS program. At this writing the State University system anticipates that the CFIS program will be operational, at least in part, prior to the fall of 1980. To date, neither the University of California nor the Community College campuses have participated in either the development or implementation of the CFIS program. Conversion dates for these two public segments, the California Maritime Academy and the Hastings College of Law, have not been established.

The emergence of the CFIS program as the State's primary budgeting, accounting, and performance-measuring system raises a number of important issues with regard to the determination of costs-of-instruction. Two of the more important considerations are discussed below.

1. Comparability

Chapters I and V of this report have noted that cost comparability among postsecondary institutions is an exceedingly difficult concept to implement and that meaningful comparisons of some educational activities among differing institutions cannot be achieved at any price. The CFIS program envisions that cost comparability can be achieved not only among postsecondary institutions, but among all other governmental agencies as well. Extending cost comparability throughout all facets of State government could escalate the costs of data collection and reporting above those appearing in Chapter V, and could result in a product of questionable utility with respect to the postsecondary education community.

One of the key questions that should be considered by legislative and executive branch staff with regard to the CFIS program is the degree of comparability desired in the budget preparation and review process. Does the State desire, or need, cost comparability between postsecondary institutions and all other governmental agencies, or does it desire cost comparability only among the segments and their campuses? Stated differently, is it more important to establish cost comparability between the California State University and Colleges and the Department of Motor Vehicles, or between the California State University and Colleges and the University of California? If cost comparability among all State agencies (including the public segments) is indeed the Legislature's objective, the usefulness of cost-of-instruction data as described in this report appears limited. If, however, cost comparability among the segments is the Legislature's primary goal, the cost-of-instruction methodologies described in this report would appear to be a better approach to cost comparability than the CFIS program in its present form.

2. Program Classification Structure

CFIS' charter--to establish cost comparability measures among all State agencies--requires the use of a classification structure that must, of necessity, embrace numerous activities and cost centers that are not common to postsecondary educational activities. While the exact format of the CFIS accounting structure has not been determined, it is clear that any accounting system or activity structure designed to represent organizational units with such dissimilar roles or missions as the Department of Transportation, the Department of Water Resources, and the California State University and Colleges, must be exceedingly diverse in nature. This diversity poses the potential for campus activities and expenditures to be translated from an internal nomenclature that accurately reflects educational activities and costs, to an external structure that may be inconsistent with the original activities and expenditures. This report has clearly demonstrated that translations of campus-based activity and expenditure data between accounting systems can result in losses of precisions and accuracy. (See the discussion of the impact of methodological differences upon data accuracy in Chapter I.) Such losses are minimized where translations are performed between similar classification structures--e.g., between campus systems and the NCHEMS PCS--but would undoubtedly increase as the gap between the basic foundations of the two classification structures widens--e.g., between campus systems and the State-level CFIS structure. If cost comparability among all State agencies is the primary intent of the Legislature, and if the CFIS accounting structure is to be the primary vehicle for such comparisons, the loss of accuracy and precision resulting from translations of campus data to the CFIS structure may preclude many valuable inter- and intrasegmental comparisons. If however, the Legislature's primary

interests lie in cost comparisons among postsecondary educational institutions and segments, the cost-of-instruction methodologies outlined in this report, and the use of NCHEMS PCS, should be considered as an alternative to, or as a modification of, the CFIS program.

CHAPTER VII

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

INTRODUCTION

This report was commissioned as a feasibility study--one designed to evaluate alternative means of developing cost-of-instruction data. It has described the uses of cost data in other states, and has reviewed California's earlier experiences in using cost-of-instruction data. The report also has described various cost-of-instruction methodologies, identified alternative methods of producing cost data, and documented the implementation and ongoing operational costs of each alternative. Finally, it has examined some of the forces that have a peripheral effect on the use of cost-of-instruction data in California; the CFIS program and the discussion of limitations on the use of cost data are two such examples.

The Commission considers its charge to examine the potential usefulness of cost-of-instruction data for public postsecondary education has been fulfilled, and that attention should now turn to determining both the desirability and utility of employing such data as an agent for fiscal accountability and policy review.

The remainder of this chapter documents the Commission's findings, conclusions, and recommendations. The following three sections synthesize the discussion that appears in prior Chapters, provides concluding statements about the relative merits of the cost-of-instruction alternatives presented in Chapter V, and sets forth three recommendations for future action.

Findings

1. The experiences of states which have implemented cost-of-instruction programs have been mixed.

   a. Few states appear to have realized all of their original objectives for cost-of-instruction data.

   b. Some states have employed cost-of-instruction data for inter- and intrasegmental cost comparisons while others have specifically precluded the use of the data for this purpose.

   c. Some states have used cost-of-instruction data for budget preparation and review only, others for campus based planning and management only; some have used the data for both purposes.

d. The organizational entity responsible for developing, publishing, and using cost-of-instruction data varies dramatically among states; the most popular choices have been legislative/executive branch staff, 1202 Commissions, and Boards of Regents/Trustees.

e. Nearly all of the states that have implemented state-level, cost-of-instruction programs appear to have experienced difficulty in establishing cost comparability standards.

f. Most states which have embraced state-level, cost-of-instruction programs have required longer implementation time periods than orginally anticipated.

g. Only two of the thirty-one states responding to the Commission's survey prepared full cost-of-instruction data annually; a third state developed these data on a biennial basis.

2. Many of the methodological problems attendant on the development of cost-of-instruction data have been resolved in recent years, but methodological problems are still a factor worthy of consideration. Considerable progress has been made during the last decade in the development of survey instruments, in data-gathering procedures, and in supporting data processing systems. Even with these improvements, however, many data collection and information processing obstacles must be overcome before useful State-level, cost-of-instruction data can be developed.

3. Functional differences--those attributable to the "personality" of an individual campus--continue to present a major obstacle to cost comparability among campuses. In California, many of these differences were created by the 1960 Master Plan, which established specific differentiation of functions among the public segments. No set of formulas, procedures, or guidelines have been, or likely will be, developed in the near future to deal with functional differences between and among institutions.

4. Cost-of-instruction data have not proven to be a panacea for fiscal and program review ills. When properly developed and applied, cost data have provided valuable insights into similarities and differences among institutions. The data cannot, however, stand alone. To be useful as a cost-analysis tool, cost-of-instruction data must be used in conjunction with additional forms of descriptive quantitative and non-quantitative information.

5. Cost-of-instruction data can be an exceedingly valuable, but potentially debilitating, commodity. The possibility for misuse of cost data, and particularly cost-of-instruction data in the forms described in this report, is significant. Care must be exercised in the development and use of these data to ensure that they are employed by persons who understand the data's unique character and nature, and who are able to view the data in their proper perspective.

6. Under optimal circumstances, cost-of-instruction data describe only one-half of the cost/benefit equation. Since the benefits of many postsecondary educational activities are rarely, if ever, quantified, there is an inherent tendency to assume that all benefits are either equal, or roughly equivalent. Cost-of-instruction data can play a meaningful role as an analytic tool only when both the costs and the benefits of the educational activities to be studied are given equal treatment.

7. Cost-of-instruction data, as described in this report, measure average costs. Many legislative and executive branch fiscal decisions are concerned more with marginal costs. While average-cost data are a valuable and necessary precursor to the development of marginal-cost information, average-cost data cannot play a meaningful role in marginal-cost/benefit decisions.

8. Much of the legislative interest in cost-of-instruction data identified by the Commission appears to be addressed in part by the California Fiscal Information System (CFIS) presently under development by the State Department of Finance. While some portions of the cost-of-information program described in this report are congruent with the CFIS program, two areas of the CFIS program warrant further legislative consideration;

   a. The degree to which cost comparability among general governmental agencies and public postsecondary educational institutions should be emphasized at the expense of cost comparability between/among the public segments; and

   b. The degree to which campus cost and activity data will be distorted by translation of campus data to a State-level accounting system designed to facilitate cost comparability among general governmental agencies.

Conclusions

Determining the Optimal Cost-of-Instruction Alternative

The cost-of-instruction alternatives that exhibit optimal cost/benefit relationships are Alternatives 2B and 4B. Under these alternatives, costs per credit unit taught by level of instruction (e.g., lower division, upper division) would be developed at the segmental level on an annual basis. (No institutional breakdowns would be provided.) The one-time implementation costs of these two alternatives would be $3,705,900 and $5,712,150, respectively. The annual operational cost for the same two alternatives would be $1,229,800 and $1,773,800, respectively.* Even though these two alternatives represent the optimal cost/benefit solution, the Commission has concluded that the potential benefits to be derived from the data are not justified by the costs of its preparation. The Commission believes that most of the cost data developed under these alternatives are either presently available from fiscal information supplied to the Department of Finance on a routine basis, or can be developed or extracted from existing information at costs far lower than those cited in Chapter V.

The Commission has further concluded that the cost-of-instruction data developed under Alternatives 2B and 4B would not adequately address a substantial portion of the legislative objectives described in Chapter I, even if the data could be obtained at a greatly reduced cost. While these data might be valuable first steps in the development of a State-level cost-of-instruction program, they lack a number of important characteristics (e.g., costs by academic discipline, by campus), and are developed at too high a level of data aggregation (e.g., segmental level only) to meet the Commission's interpretation of the Legislature's interest in the data.

Considering Other Alternatives

Of the four remaining alternatives, the Commission has concluded that Alternatives 1, 3A, and 4A do not represent viable responses to the Commission's interpretation of the Legislature's objectives. Alternative 1, while inexpensive in comparison to the others presented, results in cost-of-instruction data of extremely limited utility. Further, cost data similar to those that would be collected under Alternative 1 are published annually in the Governor's Budget for the four-year public segments.

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* These estimates were prepared by the segments at the Commission's request. The Commission has not audited these estimates for accuracy or completeness.

Alternative 3A was eliminated from further consideration because it had the unique distinction of possessing high implementation and ongoing operational costs (approximately $10 million each), while producing cost data of questionable usefulness to legislative, executive, and segmental decision makers. The primary drawback of the cost data developed under Alternative 3A is that they are developed on the basis of the direct cost per credit unit taken by student major and by level of student. The Commission believes that such data are subject to considerable inaccuracies due to the vagaries of the ways in which students select and report their majors. If developed, these data would undoubtedly be useful indicators of student enrollment patterns but the Commission believes similar data can be obtained from other, less expensive, sources if the Legislature indicates a need for such information.

Alternative 4A was eliminated from consideration for similar reasons. Under this alternative the full cost per credit unit taken by student major and by student level would be reported. These data are subject to the same inherent failings as those described for Alternative 3A, with the added burden of increased methodological errors due to the procedures used to allocate overhead costs to instructional programs.

Of the six alternatives discussed in this report, Alternative 2A represents the data set that most readily agrees with the Commission's interpretation of the Legislature's objectives for these data. The cost data developed under this alternative would describe the direct cost per credit unit taken by campus, by level of instruction (e.g., lower division, upper division), and by academic discipline. Alternative 2A was not identified as the "optimal" alternative because of high implementation ($6,181,000) and operating ($4,818,800) costs, as estimated by the segments. However, this alternative provides the best blend of data quality and quantity, given the Commission's assumptions about the Legislature's interests.

Resolving the Dilemma

In preparing this report, the Commission developed a statement of its understanding of the Legislature's interest in cost-of-instruction data. This statement, referred to as "legislative interest areas," was prepared by reviewing prior legislative directives and the experiences of other states that have developed state-level, cost-of-instruction programs. The review procedures employed by the Commission resulted in a broad statement of legislative need because it was based upon an imprecise understanding of the intended uses of the data. Further study of legislative (and executive) branch needs and a clearer statement of the intended uses of these data would

undoubtedly result in reduced implementation and ongoing operational costs.

Recommendations

1. The Commission recommends that the Office of the Legislative Analyst, the Department of Finance, and representatives of legislative fiscal committees review the cost-of-instruction alternatives described in this report to determine which of these alternatives, if any, would be consistent with their needs for these data.

2. The Commission recommends that, in conducting this review, the implementation and ongoing operational cost estimates provided by the segments for each cost-of-instruction alternative be examined to determine if further specificity of the need and intended use of the data would result in reductions in these costs or reductions in other costs that emerge due to the elimination of reporting responsibilities for selected existing fiscal data.

3. The Commission recommends that prior to implementation of any cost-of-instruction program a separate review be undertaken by the Office of the Legislative Analyst, the Department of Finance, and representatives of legislative fiscal committees, to determine the quantities and qualities of fiscal data currently requested from the public segments, with the intent of identifying information requests that are either redundant or of marginal usefulness in fiscal review and control.

FOOTNOTES

1/ The Commission, acting in cooperation with the SHEEO/NCES Network, sponsored a national survey of the use of cost-of-instruction data in other states. While 31 states responded to the survey, few provided significant insights into why their state decided to embrace the collection of cost-of-instruction data. Many states were reluctant to discuss either their motivations in embarking on the pursuit of cost data, the constituencies to be served, or the results they had expected to realize.

2/ Procedures for Developing Historical Full Costs, National Center for Higher Education Management Systems, September 1977, p. 1.13-1.14.

3/ Cost Information and Formula Funding: New Approaches; "The Uses and Abuses of Cost Information," April 1979, p. 7.

4/ Planning, Managing, and Financing in the 1980s, Proceedings of the 1977 NCHEMS National Assembly, November 1977, p. 91.

5/ Cost Information and Formula Funding: New Approaches; April 1979, p. 32.

6/ PS-Postsecondary Education in New York; Vol. 7, No. 4; Fall 1979; p. 3.

7/ Annual Report of the Director, 1963-64, p. 10.

8/ Ibid., p. 11.

9/ Ibid., p. 11.

10/ Volume 21, No. 5, of Ways and Means Committee's reports to the Assembly.

11/ Nos. 66-14, 66-16, 66-17 and 66-31.

12/ November Report on the Level of Support for Public Higher Education, CCHE report No. 67-16, December 6, 1967.

13/ The incompatibilities between UC's and CSUC's State-level accounting systems were documented in a Commission report--published in March 1980--entitled, "State Budget Formulas for Declining Enrollments in California's Public Segments of Postsecondary Education." Specific intersegmental accounting differences appear in Appendix E of the report.

14/ Program Classification Structure, Second Edition, Collier, D.J., National Center for Higher Education Management Systems, 1978.

15/ A review of the program elements used for UC and CSUC in the Governor's Budget appearing in Figure 2 and the structure of the PCS (illustrated in Figure 3) clearly indicates the prima facie compatibilities of the two accounting systems. While differences exist between the two, four-year segments in the manner in which accounting data is recorded, the basic structures employed by both are nearly identical to the PCS.

16/ For the purposes of this report, "faculty" includes senior level administrators (e.g., chairpersons, deans, assistant deans).

17/ For the purposes of this report, faculty "salaries" include direct salaries, fringe benefits, retirement contributions, and all other forms of formal renumeration.

18/ Faculty Activity Analysis: Interpretation and Uses of Data, Romney, L.C. and Manning, C.W., National Center for Higher Education Management Systems, 1974.

19/ An example of data arrayed in accordance with the PCS appears in Figures 2 and 9.

20/ The differences between direct, and full costs are quite important. Direct costs represent only those costs dealing with providing academic instruction. In general, direct costs document faculty salaries, benefits, etc., departmental support (e.g., secretarial support, misc. supplies), and a limited amount of "overhead" costs represented by the department chairperson. Full costs include all costs covered under direct costs plus all other forms of campus support. Generally the costs of the library, academic/administrative/executive administration, plant operation, et al. are included in the computation of full costs. Comparisons of direct costs tend to be comparisons of the "cost of the faculty" providing instruction while comparisons of full costs represent comparisons that include both faculty costs and campus overhead costs. There exists substantial disagreements between educators regarding which measure most accurately reflects "true" costs-of-instruction.

LIST OF APPENDICES

APPENDIX A

FINDINGS AND RECOMMENDATIONS OF THE 1972 CCHE COST STUDY

APPENDIX A

FINDINGS AND RECOMMENDATIONS OF THE 1972 CCHE COST STUDY

This is the first in a series of annual reports that will determine the full costs of instruction in public higher education in California, as required by SCR 105 of the 1971 Legislative Session. The report attempts first to define the phrase "the full costs of instruction", which in the broadest sense can be interpreted to include a variety of social and private economic costs such as opportunity costs, foregone earnings of the individual student, foregone tax receipts, and others. In the narrower and more practical sense, the phrase can be interpreted to include only those costs that represent expenditures incurred by an institution in the form of capital outlays and current operations. This report is limited to the analyses of those costs pertaining to current operations for the 1970-71 fiscal year.

The report also attempts to set out the differences in the reporting systems currently used by the three public segments. Variations exist in the reporting of expenditures among the segments due to functional differences, the manner in which the segments have defined various activities, the way the segments charge recipient activities for services rendered, segmental interpretations of the inclusiveness of the various funding sources, and other factors. The report represents a first attempt to allocate support expenditures to the primary programs, and for the two four-year segments, to allocate expenditures to the level of instruction or of students. Variations in the procedures for allocation are noted:

No projection of costs has been made because of variations in the reported expenditures. Further, the data reported are for one fiscal year (1970-71) and, therefore, inadequate for determining trends. Also, current budgetary projections for the 1973-74 fiscal year require a 1971-72 budgetary base. Council staff plans to submit a supplement to this report in November with 1971-72 expenditure data.

Finally, through setting out the current reporting differences among the segments and citing present limitations, the report identifies those factors or problems that will have to be overcome in future reports before the intent of SCR 105 can be realized.

The more important findings are listed below, with staff conclusions.

Findings

A. With respect to segmental reporting procedures:

1. UC and CSUC report current operating expenditures within the format of the Program Classification Structure developed by NCHEMS at WICHE. The California Community Colleges report expenditures within an object classification structure presented in the California School Accounting Manual, which is also used by the public elementary and secondary schools.

2. The four-year segments do not report like activities within like cost centers. The variations in expenditure assignments within the Program Classification Structure are noted below:

   a. The University recharges directly the cost of certain support program activities to recipient cost centers, while the CSUC does not.

   b. Certain discrete and like named activities are assigned to different programs or sub-programs within each segment. That is, instead of reporting the expenditure of an activity under one sub-program, it is distributed over several programs and sub-programs for that segment.

   c. Definitions of activities are not the same between the segments.

   d. Expenditures related to certain activities, although reported in the Governor's Budget, are not included within any of the three primary or four support programs for a segment.

3. The segments are not comparable in their reporting of expenditures by sources of funds. The greatest variation among segments relates to those funds representing Reimbursements.

B. With respect to the allocation of support costs to the primary programs:

1. UC uses the recursive allocation technique, while CSUC and CCC use the direct allocation procedure.

2. CCC and CSUC allocated all support expenditures to the Instruction Program, while UC allocated a proportionate share to the Instruction, Organized Research, and Public Service Programs.

3. The University of California was the only segment that prorated expenditures assigned to Instruction to those sub-programs of Instruction other than General Academic (i.e., Special Session, Extension (For Credit)).

C. With respect to the proration of General Academic Instruction expenditures among the different student (instructional) levels, UC allocated the sub-program General Academic by Level of Student, while the CSUC made allocations by Level of Instruction.

D. With respect to reported segmental output and activity measures, the two four-year segments reported output and activity measures in terms of Weekly Student Contact Hours (WSCH), Student Credit Hours (SCH), and Full-Time Equivalent Students (FTE), while the CCC used WSCH and Average Daily Attendance (ADA) as measures.

Conclusions

A. The date for the annual Council report to the Legislature should be changed from June 30 to November 30 in order to match the purposes of SCR 105 with the activities and information needs required for segmental budgetary preparation.

B. In future reports, a uniform basis for unit-cost analyses among the segments will necessitate the following changes in the reporting of segmental expenditures:

1. Expenditures and measures of instructional output and activities need to be reported in terms of both the Level of Student and Level of Instruction.

2. Agreement needs to be reached respecting the assignment of activity expenditures to programs in the NCHEMS Program Classification Structure.

3. Agreement needs to be reached on a common method (through the use of an equivalent allocation parameter) for prorating support costs to primary programs.

4. Agreement needs to be reached with respect to the activities to be assigned specifically and uniquely to the three primary programs and the four support programs.

5. Agreement needs to be reached with respect to the definition of a FTE student.

6. Agreement needs to be reached with respect to the method for prorating the costs of General Academic Instruction, Occupational/Vocational Instruction, Special Session Instruction, and Extension (For Credit) to Level of Student and Level of Instruction.

7. Agreement needs to be reached with respect to a common interim procedure for the assignment of faculty and support personnel expenditures within the Program Classification Structure until the NCHEMS project on Faculty Activity Analysis is completed.

8. The California Community Colleges need to make an effort in their changeover to the NCHEMS Program Classification Structure to devise a method by which the Instruction sub-program of General Academic and Occupational/Vocational may be reported separately.

9. Agreement needs to be reached on a more comparable method for the reporting of funding sources.

APPENDIX B

FINDINGS AND RECOMMENDATIONS OF THE 1973 CCHE COST STUDY

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FINDINGS AND RECOMMENDATIONS OF THE 1973 CCHE COST STUDY

The more important findings are listed below along with certain procedural and definitional changes needed to be resolved in the reporting of segmental expenditures for future reports. These changes will be resolved with advice from the Council staff's Ad Hoc Committee on Costs of Instruction.

Findings

A. With respect to segmental reporting procedures:

1. The University of California and the California State University and Colleges report current operating expenditures within the format of the Program Classification Structure developed by NCHEMS. The California Community Colleges report expenditures within a object classification structure presented in the California School Accounting Manual, which is also used by the public elementary and secondary schools.

2. The four-year segments do not report like activities within like cost centers. The variations in expenditure assignments within the Program Classification Structure are noted below:

   a. The University recharges directly the cost of certain support program activities to recipient cost centers, while the California State University and Colleges does not.

   b. Certain discrete and like-named activities are assigned to different programs or sub-programs within each segment. That is, instead of reporting the expenditure of an activity under one sub-program, it is distributed over several programs and sub-programs for that segment.

   c. Definitions of activities are not the same between the segments.

   d. Expenditures related to certain activities, although reported in the Governor's Budget, are not included within any of the three primary or four support programs for a segment.

3. The segments are not comparable in their reporting of expenditures by sources of funds. The greatest variation among segments relates to those funds representing Reimbursements.

B. With respect to the allocation of support costs to the primary programs:

1. The University of California uses the recursive allocation technique, while the California State University and Colleges and the California Community Colleges use the direct allocation procedure.

2. Once allocations have been made, the Instruction program at the University of California accounts for approximately 40 percent of General Campus expenditures from all fund sources, while the other two segments report over 95 percent of their expenditures charged in this manner.

C. With respect to the proration of General Academic Instruction expenditures among the different Student (Instructional) levels, the University allocated the sub-program General Academic by both Level of Student and Level of Instruction, while the California State University and Colleges made allocations by Level of Instruction only. The University used the allocation parameter of faculty and teaching assistants contact to allocate costs to the different levels, whereas the California State University and Colleges' allocation technique is based upon the production of Student Credit Hours by Level of Instruction. Both segments use a direct allocation technique.

D. With respect to reported segmental output and activity measures, the two four-year segments reported output and activity measures in terms of Weekly Student Contact Hours (WSCH), Student Credit Hours (SCH), and Full-Time-Equivalent Students (FTE), while the California Community Colleges used WSCH and Average Daily Attendance (ADA) as measures. Further:

1. The methods used by the segments in accumulating Weekly Student Contact Hours are inconsistent.

2. The methods used by the segments in accumulating Student Contact Hours at the Graduate level are inconsistent.

Implications for Future Report

A. The date for the annual Council report to the Legislature should be changed from June 30 to November 1 in order to match the purposes of SCR 105 with the activities and information needs required for segmental budgetary preparation.

B. In future reports, a uniform basis for unit-cost analyses among the segments will necessitate the following changes in the reporting of segmental expenditures.

1. Expenditures and measures of instructional output and activities need to be reported in terms of both the Level of Student and Level of Instruction.

2. Agreement needs to be reached in respect to the assignment activity expenditures to programs in the NCHEMS Program Classification Structure.

3. Agreement needs to be reached on a common method (through the use of an equivalent allocation parameter) for prorating support costs to primary programs.

4. Agreement needs to be reached with respect to the activities to be assigned specifically and uniquely to the three primary programs and the four support programs.

5. Agreement needs to be reached with respect to the definition of a Full-Time-Equivalent student and also the methods used in accumulating Student Credit Hours and Weekly Student Contact Hours.

6. Agreement needs to be reached with respect to the method for prorating the costs of General Academic Instruction, Occupational/Vocational Instruction, Special Session Instruction, and Extension (For Credit) to the Levels of Student and Levels of Instruction.

7. Agreement needs to be reached with respect to a common interim procedure for the assignment of faculty and support personnel expenditures within the Program Classification Structure until the NCHEMS project on Faculty Activity Analysis is completed. Until this project is completed, however, the University of California in future reports, as the

California State University and Colleges has done for this report, should take into consideration variations in average slaries of faculty when allocating expenditures to the different Levels of Instruction and Student.

8. In future reports, the segments should include within proposed expenditures any adjustments in salaries that are proposed or contemplated so that the unit-cost computations are not understated by these amounts.

9. The California Community Colleges need to make an effort in their changeover to the NCHEMS Program Classification Structure to devise a method by which the Instruction sub-programs of General Academic and Occupational/Vocational may be reported separately.

10. Agreement needs to be reached on a more comparable method for the reporting of funding sources.

The third annual report under SCR 105 (February 1974) indicated considerable progress had been made by the UC and CSUC systems in implementing the format of the Program Classification Structure developed by NCHEMS. However, the Community Colleges continued its old accounting structure which was not comparable. The Recommendations for Future Reports noted that the studies had gone as far as possible in determining costs of instruction due to limitations imposed by data currently available. It set forth several recommendations to the Commission should it decide to continue the series. (See attached Section V, Recommendations for Future Reports).

APPENDIX C

FINDINGS AND RECOMMENDATIONS OF THE 1974 CCHE COST STUDY

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FINDINGS AND RECOMMENDATIONS OF THE 1974 CCHE COST STUDY

The future of these series of annual reports will, of course, be determined by the Postsecondary Education Commission, which will assume the Council's functions and operations on April 1, 1974. Within the limitation imposed by data currently available, the current report has probably gone as far as possible in determing comparable costs of instruction among the three public segments of California higher education.

If more complete comparability is to be achieved, refinement of the current reporting system will be necessary and will require total commitment by the segments--a commitment that can only be achieved if they are assured that the resulting study will be of benefit in their budgetary deliberations. This commitment will be particularly difficult, since the timing of this report and segmental development of budgetary proposals to the Department of Finance coincide. To date, this report has been given lower priority by the segments. Another obstacle to segmental commitment arises from some duplication of effort by the Department of Finance in its Higher Education Budget Project, which is directed toward a budgetary procedure for the acquisition of support funds, and by the Council, through this series of reports. The new Commission should reconcile these projects.

As indicated earlier in the report, if the Commission decides to stress segmental commitment toward this project, it will benefit not only the budgetary process, but also the Commission in its responsibilities for program review--particularly when costs can be determined for subject fields and/or student majors.

Some of the major areas of conern that inhibit expenditure comparability among the segments were noted in Section II and are repeated here for emphasis.

1. The accounting and budgetary systems currently used by the three segments do not provide data that lend themselves to comparability. It is hoped that in future reports comarability will be improved as the segments begin to assign similar activities to the same programs.

2. Segmental procedures in the distribution of Support Program activities to the Primary Programs are presently not comparable, as was noted in Section II. It will be difficult to achieve comparable allocation techniques

until the segments assign activities to the Program Classification Structure in a similar manner.

3. The techniques used for the allocation of Instruction expenditures to the Levels of Instruction and Levels of Student are not comparable. The University uses the allocation parameter of Weekly Student Contact Hours, while the State University and Colleges uses Student Credit Units. Council staff favors the use of Weekly Student Contact Hours, because this measure more closely represents the amount of service rendered by an institution and does not depend upon successful completion of the activity.

4. One of the greatest obstacles to achieving comparability is the present lack of an adequate method for assigning salary costs of faculty and support personnel to the activities in which they are engaged.

In general, the segments have assigned faculty salary costs to activities on the basis of faculty contracts or of how faculty are budgeted. Faculty contract statements, budget line items, and similar official records do not always indicate adequately the specific activities in which a given faculty member engages for a particular semester, quarter, or summer session. More specifically, these records do not always give value or degree estimates of the division of effort among the activities. Commission should consider the sponsorhip of a faculty activity analysis by the segments.

APPENDIX D

COPY OF THE COST OF INSTRUCTION QUESTIONNAIRE ADMINISTERED BY THE SHEEO/NCES NETWORK OFFICE

SHEEO/NCES COMMUNICATION PROJECT

SHEEO

737 29TH ST. BOULDER, COLORADO 80303

JANE N. RYLAND
PROJECT DIRECTOR

(303) 449-4955
(303) 492-5156

MEMORANDUM

March 11, 1980

TO: SHEEO/NCES Communication Network Representatives

FROM: Jane N. Ryland

SUBJECT: Request for Information on Cost of Instruction

The State of California is interested in the extent to which each state develops and utilizes information on the cost of instruction. If you have existing information which would provide enlightment on the following, it would be helpful if you could provide it to the Network Office. Existing information is material already developed and available, in order to avoid imposing a burden on you in response to this request.

1) Existing information which indicates if your state presently develops cost of instruction (cost per student) data for public and/or independent institutions.

2) If so, existing information which indicates how often the data is prepared.

3) Existing information which indicates if the data are differentiated by level of student and/or level of instruction.

4) Existing information which indicates if the data are differentiated by discipline and/or program.

5) Existing information which indicates if the data are employed in:

   a. budget analysis and review
   b. program review
   c. faculty staffing formulae
   d. tuition and fees determination

6) Existing information which indicates if the data are employed by campuses, the legislature and/or the executive branch of government.

Please send any material or information which you might have to the Network Office by March 30, 1980. All responses will be compiled and a summary report will be provided to respondents. Thank you very much for your cooperation in providing any such information.

A PROJECT OF THE STATE HIGHER EDUCATION EXECUTIVE OFFICERS
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APPENDIX E

TABULATION OF RESPONSES TO THE COST OF INSTRUCTION QUESTIONNAIRE

RESPONSES FROM THIRTY-ONE STATES TO SHEEO/NCES QUESTIONNAIRE ON COSTS OF INSTRUCTION

State	Respondent	0. Do you develop cost-of-instruction data?	How often?	1. Is data differentiated by level of student/instruction?	2. Is data differentiated by discipline/program?	3. How are data employed? (a) Budget analysis and review	(b) Program review	(c) Faculty staffing	(d) Tuition and fee determination	4. Users of data	5. Comments
Alaska	Alaska Commission on Postsecondary Education	No	--------	No	No	No	No	No	No	None	No data collected
Arizona	Board of Regents	Yes	Annually	Yes	Yes	Yes	No	Yes	Yes	Yes	(Telephone response--no additional information.)
Colorado	Colorado Commission on Higher Education	---	--------	---	---	---	---	---	---	----------	Enclosures: 1. Library Acquisition Formula 2. Library Acquisition Maintenance Formula 3. Formula Financing for Libraries 4. Formula Financing Committee--Physical Plant Subcommittee 5. Small College Budgeting 6. Guidelines for Reporting FTE Enrollments
Connecticut	Board of Higher Education	No	--------	No	No	No	No	No	No	None	No data collected
Florida	Department of Education										Enclosures:
	Community Colleges	Yes	Annually	Yes	Yes	Information system provides vast amounts of data--cost study serves as a basis for financial modeling system.					Community Colleges 1. Community College Management Information System Procedures Manual, June 1977 2. The Community College Program Fund, FY 1979-80, 1980-81
	State University	Yes	Annually	Yes	Yes	---	---	---	---	Legislature, Governor, Boards, Campuses	State University 1. 1976-77 Expenditure Analysis, State Universities Comments: 1. Both divisions develop direct and full cost data in compliance with 1976-77 legislative directive 2. Cost studies based on NCHEMS (Caveat--data not viewed as appropriate level of funding for quality education)

		1	2	3	4	5 (a)	5 (b)	5 (c)	5 (d)	6	
Idaho	State Board of Education	Yes	Annually	Yes	Yes	Data too new to be useful to anyone, however, there is some internal institutional use.					Enclosure: 1. First Report 1977-78 Comments: 1. Work begun in 1975 2. A modified NCHEMS procedure 3. Develops direct and full costs 4. Not adaptable to cost comparisons among institutions 5. Report cites six (6) limitations of data
Illinois	Board of Higher Education	Yes	Annually	Yes	Yes	Yes	Yes	No	Yes	Campuses, Boards, Legislature, Governor	Enclosures: 1. 1978-79 Academic Discipline Cost Study for Public Universities 2. FY 1979 Unit Cost Analysis for Public Community Colleges 3. Unit Cost Study Procedures Manual (Community Colleges) Comments: Reports summarize direct and full costs by level and broad disciplines for each campus
Iowa	Department of Public Instruction (Merged Area Schools)	Yes	Annually Instructional costs per student by level Biennially Unit costs	Yes Cost per student by level Yes Student/instruction	Biennially	Yes	Yes	No	No	Campuses, State Board, General Assembly, and Others	Enclosure: 1. Costs of Instruction, FY 1978; Merged Area Schools
	Iowa College Aid Commission (Attachment: Board of Regents)	Yes	Annually Instructional costs per student by level Biennially Unit costs	Yes Cost per student by level Yes Student/instruction	Biennially	Yes	--	Yes, variable costs	---	Campuses, State Board, General Assembly	Enclosure: 1. Unit Cost of Instruction by Level, 1978-79 Comments: 1. Compute cost per student annually 2. Unit cost determination is so involved that the effort is expended only every other year 3. Uses five (5) levels of instruction 4. Private sector has no reporting procedure

		1	2	3	4	5				6	
						(a)	(b)	(c)	(d)		
Kansas	Board of Regents	Yes, public 4-year institutions only	Biennially	Yes	Yes	Yes	Yes	No	No	Campuses, Legislature, and Executive Branch	Enclosures: 1. The Development of Funding Formula 2. FY 1978 Expenditure Report Comments: 1. Uses four (4) levels of instruction 2. Uses 24 disciplines aggregated to a 2-digit HEGIS code 3. Computes average direct expenditure per SCH, other expenditures by formula
Louisiana	Board of Regents	Yes	Annually	No	No	Yes	Yes	No	No	--------	Enclosure: 1. Ratios of Selected Revenues and Expenditures per Headcount and per FTE Comments: 1. Costs based on E and G expenditures only 2. No cost determinations by level of student, level of instruction, discipline, or program
Maryland	State Board for Higher Education	Yes	Annually	No	Yes	Yes	Yes	---	---	--------	Comments: 1. Data collected as part of annual budget submission, 4-year institutions only 2. Costs by program only 3. State Board for Community Colleges annually collects cost data by program
Michigan	Department of Education	Yes	Annually	Yes	Yes	Yes	No	No	No	State Bureau of the Budget	Enclosure: 1. 1980-81 Michigan Higher Education Executive Budget Funding Model Comments: 1. A formula approach distributing funding on the basis of a model 2. The model employs average cost per SCH by discipline and level using 32 broadly defined subject areas, and 4 levels of instruction
Minnesota	Minnesota Higher Education Coordinating Board	Yes	Annually	Yes	Yes			See Comments			Comments: Three separate agencies develop independent cost studies: 1. University study used in budget analysis and review and tuition and fee determination by the University 2. Vocational-Technical Institutes study conducted by Executive Branch and Legislature. Data used in budget analysis and review by the State Department of Education 3. Coordinating Board develops cost information for State University and Community College Systems. Used in budget analysis and review

		1	2	3	4	5				6	
						(a)	(b)	(c)	(d)		
Missouri	Missouri Department of Higher Education	Yes	Annually	Yes	No	Yes	No	No	No	Coordinating Board	Enclosures: 1. Two letters describing procedures 2. Report, Budget Recommendations, FY 1981 Comments: 1. Computes direct cost of instruction per SCH in HEGIS 2-digit discipline categories 2. Primarily a budget formulation process
Montana	The Montana University System	Under development	Annually or Biennially	Yes	Yes	Yes	Yes			Campuses, segments, Legislature, Executive Branch	System under development
Nebraska	Nebraska Coordinating Commission for Post-secondary Education	No	-------	No	No	No	No	No	No	----------	Comments: Data routinely prepared by each public campus and used internally
New Jersey	Department of Higher Education	No	-------	No	No	No	No	No	No	----------	Enclosures: 1. Formula Budgeting for New Jersey Institutions of Higher Education 2. The Faculty Ratio System 3. Student Teacher Ratios for FY 81 4. Budget Recommendations Comments: Budget formulas highly refined used to generate resources for instruction at the senior public institutions
New York	The State Education Department	No	-------	No	No	No	No	No	No	----------	Enclosure: 1. Quarterly Newsletter, Fall 1979 Comments: 1. Newsletter provides 4 years of data on Student-related Expenditures per FTE by Sector and Type of Institution. Found to be useful but cautions reader against any comparisons
North Carolina	The University of North Carolina	No	-------	No	No	No	No	No	No	----------	Comment: Data not collected

		1	2	3	4	5				6	
						(a)	(b)	(c)	(d)		
Ohio	Ohio Board of Regents	Yes	Annually	Yes	Yes	Yes	No	No	Yes		Enclosure: 1. Program Expenditure Models for Higher Education Budgeting, 1977-79 Comments: 1. A Subsidy Formula System 2. Divides instructional programs into six major groupings each of which is subdivided into two or three levels 3. All programs are fitted into the six groups for a Subsidy Formula System divided into five functions; I & R, Support, Services, Administration and Plant 4. More program categories would be too complex for appropriation purposes
Oklahoma	Oklahoma State Regents for Higher Education	No	-------	---	---	---	---	---	---	----------	Enclosures: 1. Operating Budget Needs of the Oklahoma State System of Higher Education, 1980-81 2. Student Fees, 1978 Comments: 1. Budget formulation process 2. Calculates budget needs by program, by level, by institution, per FTE for eight functions--administration, general expense, instruction; other instruction, libraries, extension/public service, physical plant 3. Uses ratios and percentages
Pennsylvania	Department of Education	Yes	Annually	No	Yes	Yes	No	No	No	----------	Enclosures: 1. University Budget Instructions 2. Community College Budget Instructions 3. State Related and State Aided Colleges and Universities, Budget Instructions Comments: 1. Budget formulation documents 2. 18 subject classifications used to project need for faculty, plus eight support categories of expense, i.e., administration, public service, student services, plant operations, research, support, student financial support and independent operations 3. Independent colleges and universities contract with John Minter Associates to determine costs. These data are not transmitted to Board of Education

	1	1	2	3	4	5 (a)	5 (b)	5 (c)	5 (d)	6	
Rhode Island	Department of Education	Yes	-------	---	---	No	No	No	Yes	Campuses	Comments: 1. Data developed in broad categories, undergraduate/graduate not separated by disciplines 2. Many definitional problems; hence, not published 3. May not be repeated
South Dakota	Board of Regents	Yes	Each term	Yes	Yes	Yes	Yes	Yes	Yes	Employed by campuses but not by Legislature or Executive Branch	Comments: 1. Information available only in the form of computer printouts
Tennessee	Tennessee Higher Education Commission	Yes	Biennially	Yes	Yes	Yes	Yes	Yes	No	Campuses, Boards, Commission	Enclosures: 1. An Analysis of Instructional Costs, 1975. 2. FY 1979 Appropriations Formula Comments: 1. Studies conducted each odd numbered year since 1969 2. Institutions adopted new accounting guidelines in 1975 3. Cost data are not comparable therefore comparative cost tables have not been reported 4. Costs are presented as average cost per SCH by academic area and by level 5. Primary use is to develop appropriation formulas for 30-32 program areas, by level, by institution 6. Data used to determine instructional component in statewide funding formula
Texas	Coordinating Board, Texas College and University System	Yes	Annually	Yes	Yes	No	Yes	No	No	Campuses, Coordinating Board	Enclosure: 1. Proration of FTE and Faculty Salary into Curriculum Area Comments: 1. Approach is not an actual cost of instruction study per se 2. Distributes faculty salaries across teaching loads related to levels of instruction with subject classifications 3. Relates to faculty salaries only, excludes all other campus costs
Vermont	Higher Education Planning Commission	---	-------	---	---	---	---	---	---	----------	Comments: 1. Attempted, without success, to develop instructional costs 2. Basic problem--definition of costs among widely diverse institutions 3. State Colleges develop their own costs per student for internal use

		1	2	3	4	5				6	
						(a)	(b)	(c)	(d)		
Virginia	Council of Higher Education	Yes	Annually	Yes	Yes	Yes	Yes	Yes	Yes	Campuses, Council, Legislature, other agencies	Enclosures: 1. The Cost of Higher Education in Virginia, 1975-76 2. Guidelines and Special Requirements for Institutions of Higher Education, 1979 3. Policies and Procedures for Six-Year Curricular Plans, 1979 4. Virginia Information Exchange Procedures Comments: 1. Uses modified system thoroughly based on NCHEMS procedures 2. Develops direct and full costs 3. Virginia has the most comprehensive and sophisticated costing system
West Virginia	West Virginia Board of Regents	Yes	Annually	---	Yes	Yes	Yes	No	No	Campuses, Board	Enclosure: 1. Sample computer print-out Comments: 1. Direct cost for faculty salaries only 2. Uses 30 HEGIS subject area classifications only
Washington	Council for Postsecondary Education	Yes	Biennially	Yes	Yes	Yes	Yes	Yes	Yes	Campuses, Council, Legislature, Governor	Enclosures: 1. Paper presented at costing conference, Statewide Costing--Is It the Answer, 1979 2. 1976-77 Unit Expenditures Study 3. 1978-79 Cost Data Reporting Manual for the Unit Expenditures Study Comments: 1. Two major uses; tuition/fee recommendations and establishment of budget formulae 2. Study excludes research, public service, summer programs, and certain fee related activities 3. Summary reports present direct costs and full costs in 23 subject area classifications, by level 4. No Faculty Activity Analysis (FAA) is conducted, judgmental distributions of workload are used

		1	2	3	4	5 (a)	5 (b)	5 (c)	5 (d)	6	
Wisconsin	Board of Vocational, Technical and Adult Education	Yes	Annually	See Notes	Yes	---	---	---	---	Campuses, Legislature, Governor, public	Enclosures: 1. Cost Allocation Summary, 1979-80 (Projected) 2. Cost Allocation Summary, 1978-79 (Actual) Comments: 1. Summary reports present data for only 9 subject classifications 2. Derives direct costs and indirect costs 3. Used to calculate distribution of state aid to districts 4. Used to prepare 5-year plan for vocational education 5. Presents costs by student enrollment in college parallel, associate degree, vocational, and continuing education

APPENDIX F

A SUMMARY OF ACCOUNTING DIFFERENCES BETWEEN THE UNIVERSITY OF CALIFORNIA AND THE CALIFORNIA STATE UNIVERSITY AND COLLEGES

Appendix F

A Summary of Accounting Differences Between the University of California and the California State University and Colleges

(PROGRAM CLASSIFICATION SYSTEM FOR THE PURPOSES OF STATE BUDGETING)

Program Classification	Segment (UC/CSUC)	Funded Activities
Instruction	Both	All personnel and supplies involved in formal instruction: faculty, teaching assistants, instructional and support staff, classroom and laboratory supplies, instructional equipment.
Regular		
Health Sciences	UC Only	
Summer (Special) Session	Both	
Extension	Both	
Research	Both	Specific projects or organized units concerned primarily with basic research.
Public Service	Both	Applied programs outside the regular curriculum which are designed for the general public.
Academic Support	Both	Libraries, audio-visual services, computing support, and ancillary support (clinics, bureaus, centers, and institutes).
Teaching Hospitals	UC Only	Health services within the five hospitals owned by UC.
Student Services	Both	Offices of admissions and records, cultural and social activities, counseling and career guidance, financial aid administration (CSUC), student health services, supplemental educational and learning services.
Institutional Support	Both	Executive management, fiscal operations, general administrative services, logistical services, community relations operation and maintenance of plant (CSUC).

University of California and the
California State University and Colleges

(PROGRAM CLASSIFICATION SYSTEM FOR THE PURPOSES OF STATE BUDGETING)

Continued

Program Classification	Segment (UC/CSUC)	Funded Activities
Operation and Maintenance of Plant	UC Only[1]	Utilities and refuse disposal, custodial and grounds maintenance, structural and equipment maintenance, plant administration and fire departments.
Student Financial Aid	UC Only[2]	Financial aid supported by the student Educational Fee.
Auxiliary Enterprises	UC Only	Noninstructional services provided primarily to students in return for specific charges (housing, parking, inter-collegiate athletics, food services, etc.)
Independent Operations	CSUC Only	All activities that benefit students, faculty and independent agencies, but not directly related to educational objectives. (college union, credit unions, bookstores, food services, foundations, etc.)
Provisions for Allocation	UC Only	Temporary accounts for lump sum appropriations which ultimately go: (1) from systemwide accounts to the campuses, (2) from campus accounts to operating programs (salary merit increases and promotions, reclassifications, price increases, employee benefits, endowment income, budgetary savings, etc.)
Extramural Programs Sponsored and Other Restricted Activities	UC Only	Primarily research projects under contract.
Energy Research and Development	UC Only	Activities within the U.S. Energy Laboratories.

[1]The CSUC includes this under "Institutional Support."
[2]The CSUC includes this under "Student Services."
[3]These totals include reductions mandated in Sections 27.1 and 27.2 of the 1978-79 Budget Act. These reductions are $15,430,000 for the University of California, and $14,050,000 for the California State University and Colleges.

SOURCE: Governor's Budget for 1979-80 (Sacramento, 1978).

APPENDIX G

AN OVERVIEW OF THE NCHEMS PROGRAM CLASSIFICATION STRUCTURE

Introduction

In January 1972, the National Center for Higher Education Management Systems (NCHEMS) published the first edition of the *Program Classification Structure*.* It represented the culmination of more than two years of effort in which representatives of all sectors of higher education worked to develop a programmatic framework for looking at higher-education activities. The first edition of the *Program Classification Structure (PCS)* was something of a landmark in higher-education planning and management, in that it served as both a common language and as a starting point for "program-oriented" planning and management. Program-oriented planning and management focuses attention on the *objectives* being served in carrying out an activity or expending resources. (By contrast, organization-unit-based planning focuses on the unit itself rather than the purposes for which the unit operates.) Such an objective-based planning and management focus is particularly important in postsecondary education, where institutions exist to attain objectives related to instruction, research, and public service. Therefore, postsecondary education has made increased use of such techniques as program planning, program budgeting, and program evaluation. Since its introduction, the *PCS* has been either adopted directly or adapted for specific purposes by hundreds of higher-education institutions, by many state-level planning agencies, by most federal-level educational-planning agencies, and by institutions in several foreign countries.

*Warren W. Gulko, *Program Classification Structure*, NCHEMS Technical Report 27 (Boulder, Colo.: Western Interstate Commission for Higher Education, 1972).

WHAT IS THE *PCS*?

The *Program Classification Structure* is a set of categories and related definitions which allows its users to examine the operations of a postsecondary education institution as they relate to the accomplishment of that institution's objectives. Specifically, the *PCS* is a logical framework for arraying information in a hierarchical disaggregation of *programs*, in which a "program" is defined as an aggregation of activities serving a common set of objectives. The *PCS* suggests that nine major programs are carried out by postsecondary-education institutions in pursuit of their objectives (see figure 1):

1.0 Instruction
2.0 Research
3.0 Public Service
4.0 Academic Support
5.0 Student Services
6.0 Institutional Administration
7.0 Physical Plant Operations
8.0 Student Financial Support
9.0 Independent Operations

The information that may be communicated through the use of the *PCS* format includes information about the organization's personnel, facilities, activities, and so forth. The assignment of activities to the various categories within the *PCS* should be based on either the *primary intent* or the *actual intent* of the program element. The first edition of the *PCS* stipulated that the assignment of activities and resources to categories should be made on the basis of "primary intent" (i.e., the basic purpose or primary reason for carrying out the activity). This criterion suggests that if an activity supports multiple objectives, the primary objective should be identified and the activity classified accordingly. However, a more exact program-classification procedure would use the criterion of "actual intent." This criterion requires that when multiple objectives are supported by the same activity, the classification procedure should allocate the activity appropriately among all of the actual objectives served by the activity. The second edition of the *Program Classification Structure* recognizes either criterion as appropriate for the classification of activities and resources. In one sense, the use of "actual intent" represents a more refined and concise picture of the programmatic utilization of resources, but either criterion will result in *program information*.

The lowest level at which activities and resources are classified in this edition of the *PCS* is by *type of activity*. This is a departure from the first edition, in which the classification scheme was disaggregated in the following manner:

Programs

↓

Subprograms

↓

Program Categories

↓

Program Subcategories

↓

Program Sectors

↓

Program Elements

In the second edition, however, only three levels of disaggregation are provided:

Programs

↓

Subprograms

↓

Types of Activity

In this revised scheme, the subprogram is the lowest level of disaggregation that shows how the activities are related to objectives. The "type-of-activity" category, while serving as a further disaggregation of information, represents a somewhat different dimension of information within the *PCS* and is not necessarily unique to a particular subprogram. One type of activity, in fact, may be carried out within more than one subprogram. "Retail services and concessions," for example, may be conducted both for the faculty and staff (thereby contributing to the objectives of the Institutional Administration program) and for the students (thereby contributing to the Student Services program).

WHAT IS THE ROLE OF THE *PCS* IN PLANNING AND MANAGEMENT?

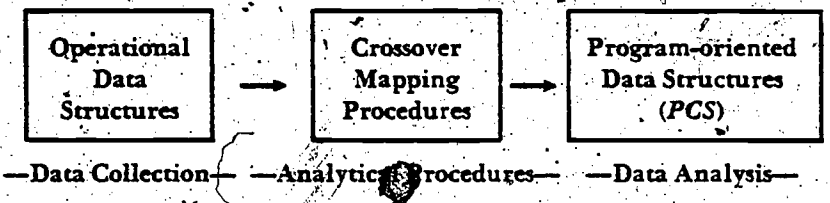
The *Program Classification Structure* has been designed to allow its users to relate information about resources and activities to the achievement of institutional objectives. This is accomplished by classifying information within a set of *PCS* categories that have been designed to reflect the kinds of programs that postsecondary institutions carry out to accomplish their objectives.

The role of the *PCS* in planning and management thus is similar to the role of programmatic information in postsecondary education. The *PCS* is intended to serve as:

- a framework for the analysis of different types of data
- a starting point for programmatic planning and management
- a common language and framework for describing activities in postsecondary education.

Framework for Data Analysis: Most data formats are data specific in that they are designed to serve the unique characteristics of one particular type of information (for example, personnel data, financial data); therefore they have limited utility for analyses that require the integration of several different kinds of data. The *PCS* helps to overcome this limitation. In a cost analysis, for example, information about people, finances, facilities, time, and so forth, must be integrated, but these data cannot be linked unless there is a single data framework that accommodates all of them. By focusing on programs, the *PCS* provides the analyst with a format for conducting such an analysis.

The role the *PCS* plays in analysis is as follows:



This diagram points out that by definition analytical data and operational data are different. Operational data are collected on an ongoing basis for the institution's operations (such as the accounting system or a student-data system) and are usually classified in categories that relate directly to organizational units within the institution. Analytical data (of which program-oriented data represent one kind) usually are obtained after certain analytical procedures (such as crossover or mapping procedures) are performed on the operational data. For example, a faculty-activity analysis can be used to further explain the objectives served by the resources used in various academic departments, thereby resulting in analytically derived program data. While the *PCS* often is used to display operational data, it should be viewed primarily as a format for the display of program data that are obtained through the use of analytical procedures.

Starting Point for Program Planning: The programmatic focus built into the *PCS* also has made it an important starting point (or prototypical model) for program planning, program budgeting, and other types of objective-oriented planning and management in postsecondary education. Use of the *PCS* encourages one to look at institutional objectives and to consider how one goes about combining resources to attain those objectives—something that is especially important in a postsecondary education

enterprise characterized by limited resources. Information formatted around the kinds of programs the institution is carrying out might encourage the user to look at several aspects of those programs—its organization, its performance, its growth or decline; and its future prospects. Furthermore, since programs often cut across organizational lines, for example, the process of classifying an institution's operational records in the *PCS* format usually requires some sort of program analysis. This process, generally referred to as the "crossover process," often results in as much valuable information as does the subsequent analysis of the data.

Common Language and Framework: Closely related to the programmatic nature of the *PCS* is the fact that it provides a common language and a comprehensive and compatible framework for postsecondary education. Since the *PCS* focuses on programs (which are, in turn, related to objectives), it can be used as a framework for data from multiple institutions regardless of differences in their organizational structures. The detailed definitions associated with each category also make it a useful tool for ensuring the more compatible collection of information. Therefore the *PCS* is often used in the collection of data from multiple institutions as well as in comparisons of data across institutional boundaries.

WHY WAS THE *PCS* REVISED?

It is safe to say that the first edition of the *PCS* and the structure it described reflected the realities of planning and management in 1972. While the original *PCS* was a good approximation of a programmatic framework, it was not a conceptually consistent program structure since its developers were forced to make certain compromises in the interests of feasibility, acceptability, and the state-of-the-art in higher-education planning and management at that time. However, that state-of-the-art has improved and both the level of acceptability and the understanding of program-oriented planning and management have changed significantly since 1972. Therefore, it is important that the *PCS* reflect those changes. A prime example of how the *PCS* has been changed to reflect a more consistent program structure can be seen in the revised Instruction subprograms. The original subprograms used a variety of different classification criteria, ranging from differences in the "subject matter" to differences in "when the courses are offered" and differences in the "organizational unit" responsible for the courses. In the second edition, only two criteria (degree/nondegree and broad subject areas) are used in defining subprograms within Instruction.

A second, equally important rationale for revising the *PCS* is that the higher-education enterprise also has changed markedly in the past five years. Planners and managers today deal with educational programs in the broad context of postsecondary education, one that goes well beyond the more limited idea of "collegiate" higher education. Therefore, the second edition of the *PCS* has been designed to accommodate these broader needs

by including more detailed categories for nondegree instructional offerings, by outlining a set of categories for different kinds of instructional delivery mechanisms, and by recognizing such activities as the sales operations of proprietary schools.

A third change in the *PCS* was made because the multileveled structure in the first edition was found to be too detailed for the actual collection and use of data. Therefore, the structure recommended in the second edition includes only two levels of disaggregation (program and subprogram) with "types-of-activity" categories provided if additional detail is needed.

Finally, while the concept of "primary intent" has always served as a useful guide in the classification of activities and resources in the *PCS*, many users felt that the precision afforded them by using "actual intent" should also be available as a classification rule. Therefore, the second edition allows either primary intent or actual intent to serve as the classification guideline.

As was the case in the development of the first edition of the *PCS*, an extensive effort involving persons throughout postsecondary education was carried out to determine what revisions were needed and how they could best be implemented. In many ways, the effort to revise the *PCS* has formally involved even more organizations than took part in the development of the original *PCS*. The Association of American Medical Colleges, for example, worked with the NCHEMS staff for more than a year to develop definitions and categories for medical-care activities. The Coalition of Adult Education Organizations (a coalition representing 15 different adult/continuing education associations) appointed a task force that spent almost a year expanding the classification scheme within the Instruction program to serve adult/continuing education needs. Input from such organizations as the American Association of College Registrars and Admissions Officers, the Association for Educational Communications and Technology, and the National Collegiate Athletic Association was solicited and used extensively in developing the revised *PCS* categories and definitions. A discussion of the changes that have been incorporated into the second edition of the *PCS* is included as appendix E.

While the revised *PCS* is essentially the same framework as the one set forth in the original, it is hoped that the revised structure, the additional categories, and the more detailed definitions will better serve today's educational planners and managers. It is recognized that postsecondary education will continue to evolve as will the state-of-the-art in educational planning and management. This edition of the *Program Classification Structure* reflects an attempt to incorporate the changed nature of the postsecondary-education entity, the existing state-of-the-art in educational planning and management, and the attitudes and needs of the practitioners, in 1978 and for the foreseeable future.