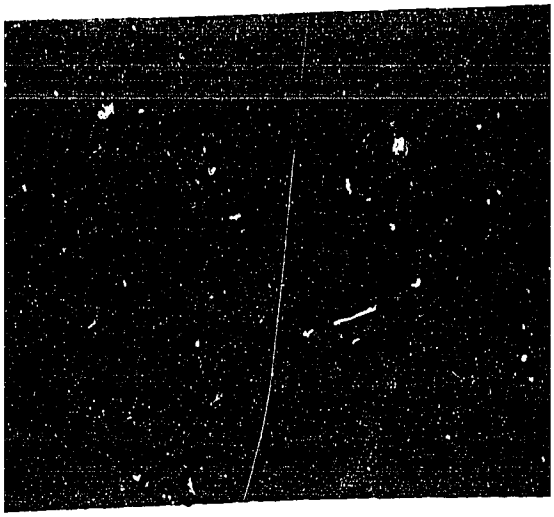

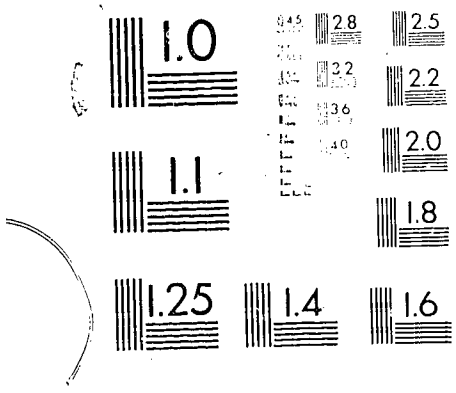

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ABSTRACT

The objectives and accomplishments of the State-Level Information Base project are reviewed, and documents available to state-agency and other staff are summarized. The overall purpose of the project is to assist state-level planners and postsecondary education staff with their information needs, and to effectively match agency responsibilities and staff agenda. The following documents published as a result of the project are briefly described: the "Planning Guide," "Selection of Data to Address Planning Issues," "Pilot-Test State Case Studies," and "Systems-Related Experiences in Eight Pilot-Test States." The content of these documents is summarized in the remainder of this overview. Attention is directed to the following state-level planning issues: "need/demand for postsecondary education services, responsiveness of the postsecondary education enterprise, resources required to support the postsecondary education enterprise, and financial policies related to the acquisition and distribution of resources. Steps of information-system assessment are addressed, including the following: defining issues faced by the state agency, describing the decisions and analytical approaches, and identifying sources for the new data elements. The state-institutional interface is discussed, and information is provided on pilot testing of the project. (SW)

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Postsecondary-Education Information Planning at the State Level

Five documents have been published as a result of the State-Level Information Base project under the general title of *Postsecondary-Education Information Planning at the State Level.* The specific documents are as follows.

Overview. The *Overview* briefly describes the project's purpose, history, and results.

Planning Guide. The *Guide* provides a context for understanding the major environmental and procedural factors influencing the development of state-level information systems. Specifically, it discusses assessment of the developmental environment (agency authority and role, institutional concerns), selection of a procedural approach to information-system planning, assessment of information needs generally, selection and evaluation of specific data elements, and assessment of resource requirements (staffing, computer and systems support, institutional costs).

Selection of Data to Address Planning Issues. As a companion to the *Planning Guide,* this document provides a framework for reviewing common state-level planning issues, the questions that focus analysis on those issues, and the general data requirements associated with the more common questions and analyses. The document includes a section summarizing references to applicable data sources (in either published or machine-readable format), including, when possible, descriptions or examples of these sources. The Glossary section of the document contains standard data definitions and suggested categories for collecting and presenting data.

Pilot-Test State Case Studies. The *Case Studies* describe the background and functions of each of the eight pilot-test state agencies, its approach to information systems, and its planning responsibilities (comprehensive planning, budgeting, program review). Each agency's data set is also described, and each state's information-system costs are summarized. This document also discusses attempts to develop state-level information about adult/continuing education in two pilot-test states and about educational outcomes in two others.

Systems-Related Experiences in Eight Pilot-Test States. As a companion to the *Case Studies,* this document describes pilot-test state experience with systems development, including evaluation of information needs, hardware and software choices, survey administration, staffing considerations, data organization, and data storage and linkage considerations. The ranges of developmental costs among pilot-test state agencies are summarized, and caveats related to difficulties in obtaining reliable and informative data on costs are discussed.

This report has been produced as part of a project supported by the W.K. Kellogg Foundation of Battle Creek, Michigan, with supplemental funding from the National Center for Education Statistics.

Postsecondary-Education Information Planning at the State Level

Overview

Roger Bassett

1979

National Center for Higher Education Management Systems
P.O. Drawer P Boulder, Colorado 80302
An Affirmative Action/Equal Opportunity Employer

The work upon which this publication is based was performed by NCHEMS pursuant to a grant from the W.K. Kellogg Foundation of Battle Creek, Michigan, and Contract No. 300-76-0295 with the National Center for Education Statistics. It does not, however, necessarily reflect the views of those agencies.

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PREFACE

The State-Level Information Base project was initiated in July 1975 with funding from the W.K. Kellogg Foundation to assist state-level planners in postsecondary education with their information needs. The project since then has developed a set of services to guide information-system planners in the development and maintenance of information systems to support post-secondary-education planning at the state level. Differences among state-level postsecondary-education agencies in their responsibilities and analytical requirements are extensive. Therefore the project documents are designed to serve as reference frameworks from which each state can develop a more tailored approach.

The entrance of the National Center for Education Statistics (NCES) into the project in 1976 allowed the scope and the depth of the project to be increased. A federal component of the State-Level Information Base project (the Federal Data Core project) was initiated to help NCES reevaluate federal data needs related

to postsecondary education. NCES also supported special state-level efforts to determine data requirements dealing with educational outcomes and adult- and continuing-education planning. The depth of the project was increased through NCES support by the addition of three general pilot-test states and by further support for the direct staff-assistance portion of the dissemination effort.

The primary review group for the project was a Task Force composed of representatives of each of the eight pilot-test agencies, four representatives of postsecondary institutions, and two representatives of other state-level agencies with an interest in postsecondary education. The Task Force was assisted in its review by a Participant States Group composed of representatives of all state postsecondary-education agencies that expressed interest in the project but had not been selected as pilot-test states. One member of the Participant States Group was selected by the group to serve as a liaison to the Task Force.

ACKNOWLEDGMENTS

The State-Level Information Base project benefited substantially from the participation of many individuals during its three years of development. Any attempt to list all who contributed would inevitably and unintentionally suffer from important omissions. The project staff hopes that those who participated but are not mentioned here will understand our limitations and accept our appreciation.

Project Task Force and Pilot-Test State Representatives

As mentioned in the Preface, the primary review group for the project was a Task Force composed of representatives of the pilot-test states, other interested state-level agencies, and public and private postsecondary-education institutions. Task Force participation was a sensitive and time-consuming responsibility, and each of the members deserves special recognition for service rendered. The members were:

Thomas Braun
Deputy Executive Director
for Administration
Kentucky Council on Higher
Education

Charles A. Brooks, Jr.
Coordinator of MIS Computerization
South Carolina Commission on
Higher Education

Richard Dunn
Executive Budget and Management
Officer
Wisconsin State Department of
Administration

Frederick R. Ford
Executive Vice President and
Treasurer
Purdue University

William Fuller
Executive Director
Nebraska Coordinating Commission
for Postsecondary Education

John Harrison
Associate Director for Administration
California Postsecondary
Education Commission

Adolph Katz
Director
Office of Planning and Research
New Jersey Department of
Higher Education

Stephen W. Keto
Chief Fiscal Officer
Idaho Office of the
State Board of Education

James McGovern
Associate Director
Illinois Board of Higher Education

J. Michael Mullen
Assistant Director
The State Council of Higher
Education for Virginia

Larry H. Litten
Coordinator
Institutional Research
Carleton College

Joseph A. Malik
President
Grays Harbor College

Jane Ryland
Director
SHEEO/NCES Communication
Network
Liaison Representative from the
Participant States Group

Kenji Sumida
Director of Finance
University of Hawaii

Robert Wetnight
Vice President for Finance
Western Michigan University

Richard E. Willey
Budget Analyst
Pennsylvania House
Appropriations Committee

Paul Wing
Coordinator, Office of
Postsecondary Research,
Information Systems and
Institutional Aid
New York State Education
Department

Peter Woodberry
Postsecondary Education
Specialist
Rhode Island Department
of Education

Ex Officio
Curtis O. Baker
Acting Head, Systems Design
and Methodology Section
Systems Design and Analysis Branch
National Center for Education
Statistics

Participant States Group

The second advisory group for the project, composed of representatives of state postsecondary education agencies and other organizations interested in project developments and results, also played an important role during the developmental phase. Since the group represents a large number of potential users of the project results, members of the Participant States Group were especially valuable in assessing the relevance and utility of alternative approaches considered by the project staff and the Task Force. The group met the day before each Task Force meeting and presented its advice to the Task Force through a liaison representative.

Pilot-Test States

The name of the lead representative from each state is included in an earlier section of the acknowledgments and repeated later in this document. Many other pilot-test agency staff participated in the project-related work in their agencies. Notable among them were Raleigh Awaya, Director of the Management Systems Office at The University of Hawaii; Rose Bowman, Program Administrator, and Cliff Trump, Deputy Director for Academic Planning, with the Office of the State Board of Education in Idaho; Steve Sabin, Assistant Director of the University of South Carolina Computer Services Division; John Wittstruck, Coordinator of Information Systems with the Nebraska Coordinating Commission for Postsecondary Education; and Paul Lingenfelter, Associate Director for Fiscal Affairs with the Illinois Board of Higher Education.

Other Contributing Organizations

One of the objectives of the State-Level Information Base project is to promote linkages and communication among all

national and regional organizations interested in state level planning and information systems relating to postsecondary education. Among the organizations that contributed to the project through participation and review were the Education Commission of the States; the SHEEO NCES Communication Network, through its director, Jane Ryland; the National Association for Independent Colleges and Universities, through the efforts of Drs. Virginia Fadil and James Olliver, Codirectors of the State National Information Network project; the Southern Regional Education Board, through the efforts of Dr. E. F. "Tex" Schietinger, Director of Research, and Drs. James R. Mingle and David S. Spence, Research Associates; and the Western Interstate Commission for Higher Education, through the efforts of Drs. Richard Jonsen and Lilla Engdahl.

NCHEMS Staff

During the four years of the State-Level Information Base project, many former and current NCHEMS staff members have been directly involved in project activities.

To Dr. Melvin Orwig and Dennis Jones goes credit for shaping the early stages of the project and for guiding the general course of all project activities during its four years. Dr. Nancy Renkiewicz, the initial project director, organized the activities that first brought the proposal to life. Marilyn McCoy contributed to project results through major authorship of the State-Level Information Base *Field Review* and *Overview* documents, and through her leadership of the Federal Data Core project, a federal-level activity that is complementary to the State-Level Information Base project. Dr. Sidney Micek was the activity leader for the focused development work on state-level educational outcomes analysis, and Dr. Roger Sell led the staff work on adult and continuing education. To Ellen Cherin goes thanks from all project staff for her coordination of project documentation.

Other former and current NCHEMS staff members who have contributed to the development of the project are Richard

Allen, Kathy Allman, Dr. Kent Caruthers, Mark Chisholm, Michael Haight, Dr. Edward Myers, Dr. James Topping, and Dr. Robert Wallhaus.

The production of the project documents has been a lengthy task, spread over two and one-half years. Special thanks go to Cynthia Labuda, for coordinating all work on the lengthy draft production process for final project documents, and to Paula Dressler, for preparing and coordinating production and distribution of the preliminary field-review documents. Major contributions to preparation of drafts of the final project documents have been made by Helen Barron and Rebecca Shanks. Others who have been directly involved in the production of draft documents include Penny Baskin, Martha Hinckley, and Shirley Stucky.

Many other people have been involved in the project, and their help has also been appreciated. It should be emphasized, however, that any errors in the documents are the sole responsibility of the authors.

Project Funders

This statement of acknowledgments cannot possibly be complete without recognizing the role played by the two funding organizations and their representatives. The project was initiated under terms of a grant from the W. K. Kellogg Foundation. The willingness of that organization to make a major investment in the improvement of postsecondary-education planning at the state level deserves special recognition from all who practice postsecondary-education management. Dr. Peter Ellis, the W. K. Kellogg Foundation program director for this project, has exercised the Foundation's interests in the project in a firm and consistent manner and has been most understanding and supportive of the project staff throughout the four years.

The National Center for Education Statistics (NCES) provided supplemental funding for the State-Level Information Base

project beginning in its second year and funded the complementary Federal Data Core Project. The willingness of Mrs. Marie Eldridge, Administrator of NCES, to invest in improved design and use of information systems for postsecondary-education planning at the state and federal levels does much to encourage the continuing impact of the two projects. Curtis O. Baker, NCES project officer, throughout the project provided patient, knowledgeable guidance to the project staff and also served as a source of accurate and timely information to pilot-test and participant states regarding NCES plans and services.

OVERVIEW

Many factors have caused the state role in postsecondary-education planning to increase dramatically over the last two decades. The rapid growth in the 1950s and 1960s in both enrollments and numbers of programs and institutions led to concerns about program duplication, lack of coordination, and institutional accountability. In the 1970s, the postsecondary-education enterprise became even more complex, with leveling or decreasing enrollments, changing student program interests, shifts from traditional students to more part-time and older students, and demands for more vocational and occupational courses.

State-Level Postsecondary-Education Involvement

A need for state-level coordination and arbitration developed in such areas as state-funded financial-aid programs, statewide enrollment planning, and competition for state resources to establish new programs or expand existing ones. In

addition, there was need for active overseeing of the state's responsibilities to provide postsecondary-education opportunities to its citizens. These responsibilities encompassed equal accessibility, financial assistance, establishment of degree programs in developing or high-demand occupational areas, and depoliticization of individual institutional relationships with state government departments.

This increased state-level role has not been limited to public institutions. Independent colleges and universities are becoming more involved with comprehensive state planning, as they are affected by such factors as competition for declining enrollments and the need for student financial aid and other state assistance.

The state role takes no single form. State-level involvement in postsecondary education in a given state can include any of the following: state coordinating or governing board, 1202 planning commission, facilities commission, legislative education/budget committees, state budget office, state education department, state scholarship office, state systems for universities and for community colleges, voluntary independent college associations, and ad hoc citizens' commissions. Even when a single agency has the major responsibility for postsecondary education in the state, its scope of authority may be limited to public institutions and occasionally to public four-year institutions only. State-level functions and activities may include budget review, recommendation, and allocation; master planning; academic program review and authorization; enrollment forecasting; facilities review and planning; administrative support in areas such as personnel, accounting, and student financial aid; and other activities.

Despite variances in the structure and functions of state-level involvement, one factor is common to all the states: the far-reaching impact of resource and other state-level decisions about postsecondary education requires that such decisions be as informed as possible. Information and the ability to analyze information must be available to support the state planning and decisionmaking process.

Project Purposes

The overall purpose of the State-Level Information Base project was to help state-agency leadership, analysts, and information-systems staff make an efficient and effective match between agency responsibilities and staff agenda, and agency information requirements. *Efficient* means here that data-reporting burdens on institutions should be limited to those necessary to support well defined state-level responsibilities. *Effective* means here that the agency information system should recognize the major issues of state-level planning in a particular state at a particular time. The specific purposes of the project were:

- To synthesize a set of planning issues that the states have in common and to develop a reference framework within which specific analytical requirements and associated information needs can be determined
- To encourage definition and analysis of the decision-making requirements associated with common post-secondary-education issues as the basis for each state's individual data-collection decisions
- To encourage evaluation of current data-collection activities, emphasizing selectivity and adaptation of existing data bases in satisfying new data needs
- To emphasize the need for institutional involvement and consideration of institutional capabilities to provide data
- To note the variety of circumstances that affect the costs of developing a state-level information system
- To promote exchange of profile information among interested states, after specific issues have been identified and specialized definitions and procedures have been developed

Final project documents incorporate these emphases. In fact, an underlying theme among all the documents is the recognition that each state's unique responsibilities and analytical requirements, as well as differences in history, tradition, and

philosophy, result in the need for each state to individualize its information system. This individualization requires a review by each state agency of its authority and responsibility regarding the postsecondary-education enterprise as well as a recognition of the need for ongoing communication with the institutions.

Description of Documents

Five documents will be published under the general title of *Postsecondary-Education Information Planning at the State Level* by NCHEMS as a result of the State-Level Information Base project.

Overview. The *Overview* briefly describes the project's purpose, history, and results.

Planning Guide. The *Planning Guide* provides a context for understanding the major environmental and procedural factors influencing the development of state-level information systems. Specifically, it discusses assessment of the developmental environment (agency authority and role, institutional concerns), selection of a procedural approach to information-system planning, assessment of information needs generally, selection and evaluation of specific data elements, and assessment of resource requirements (staffing, computer and systems support, institutional costs).

Selection of Data to Address Planning Issues. As a companion to the *Planning Guide,* this document provides a framework for reviewing common state-level planning issues, the questions that focus analysis on those issues, and the general data requirements associated with the more common questions and analyses. The document includes a section summarizing references to applicable data sources (in either published or machine-readable format), including, when possible, descriptions or examples of these sources. The glossary section of the document contains standard data definitions and suggested categories for collecting and presenting data.

Pilot-Test State Case Studies. The *Case Studies* document describes the background and functions of each of the eight pilot-test state agencies, its approach to information systems, and its planning responsibilities (comprehensive planning, budgeting, program review). Each agency's data set is also described, and each state's information-system costs are summarized. This document also discusses attempts to develop state-level information about adult and continuing education in two pilot-test states and about educational outcomes in two others.

Systems-Related Experiences in Eight Pilot-Test States. As a companion to the *Case Studies*, this document describes pilot-test state experiences with systems development, including evaluation of information needs, hardware and software choices, survey administration, staffing considerations, data organization, and data storage and linkage considerations. The ranges of developmental costs among pilot-test state agencies are summarized, and caveats related to difficulties in obtaining reliable and informative data on costs are discussed.

State-Level Postsecondary-Education Planning Issues

The project identified an illustrative set of state-level planning issues to serve as a frame of reference in helping a state agency review its responsibilities and assess its state-level information needs. These issues are grouped into the following major areas:

- *Need/Demand for Postsecondary-Education Services.* Assessing the nature and extent of individual demands for postsecondary-education programs and institutions, as well as the collective needs of the citizens regarding particular educational and training programs and research and public service contributions.
- *Responsiveness of the Postsecondary-Education Enterprise.* Assessing which postsecondary programs and institutions should exist in the state (types, sizes, location,

quality), which of those do exist, and what changes such as improvement of quality, sharing or program resources, and expansion beyond traditional higher education, can or should be made.

- *Resources Required to Support the Postsecondary-Education Enterprise.* Reviewing the adequacy of finances devoted to postsecondary education in the state, based on an assessment of the amounts, characteristics, and utilization of current resources (particularly finances, personnel, and facilities).
- *Financial Policies Related to the Acquisition and Distribution of Resources.* Determining (1) the resources required to support postsecondary education, (2) how these resources are to be acquired (that is, what portion is to be borne by the state versus other sources), (3) how different financial policies will apply to different categories of institutions, and (4) what proportion of funds will be provided directly to institutions versus indirectly through programs of student aid.

These issues can be further refined by identifying the questions that provide specific focus for analyzing each issue. The exact questions will vary, of course, depending on the relevance of issues for a given state. The choices among potential analytical approaches and needed supporting data can then be described. A framework developed during the project provides examples of how planning issues, analytical activities, and applicable data can be related. Figure 1 is an illustrative page.

The Information-Planning Sequence

The issues framework may be incorporated in a broader sequence of information-system assessment, described in more detail in the *Planning Guide.* Each step of the sequence is significant to the final size and form of the data-collection effort. The steps are:

Figure 1

COMMON PLANNING ISSUES AND RELATED DATA

ISSUE: NEED/DEMAND FOR POSTSECONDARY EDUCATION SERVICES

Specific Questions Related to the Issue	Potential Analyses and Data Related to the Issue: Example Analytical Activities	Examples of Applicable Data
A. What are the *collective needs* of the citizens?		
Are there established state priorities and plans with postsecondary education implications?	• Review appropriate state documents, including legislation, published by the executive and legislative branches, to determine primary state concerns and priorities that impact postsecondary education	• Applicable state documents
What employment patterns have implications for postsecondary education programs in your state?	• Develop and maintain a general employment summary for the state • Compare national and state employment patterns	• Summary of nationwide and statewide employment, showing cross relationships between occupations and industries
	• Conduct special studies of particular occupational clusters	• Additional occupational detail as required for special studies
Are there particular education and training programs on which the state postsecondary education community should focus concentration?	• Develop an assessment of employment-pattern implications for broad postsecondary education program categories as part of the regular statewide planning cycle.	• Summary of established state economic and manpower planning objectives
	• Examine certain program areas for possible expansion or contraction based upon institutional responses through the planning process.	• National and state summaries of job applicants and job offerings by occupational group (where appropriate)
	• Develop indicators to help flag occupational categories with an especially strong potential impact on institutional program-planning options.	• Statewide summary of graduates for selected program fields • Statewide enrollment summary by student level for selected program fields
	• Distinguish employment-related training demands on community colleges and vocational-technical centers from those on senior institutions	• Statewide summary of number of people completing vocational training by field of training
What is the potential need for changes to allow for broader accessibility to postsecondary education (that is, addressing issues of affirmative action/equal opportunity)?	• Compare demographic characteristics of the entire state with those of individuals currently enrolled. Note potential inequities and needs by parts of the state and/or by citizen groups	• Demographic characteristics of the state including - Total state population - County population by age and sex - State population density by race and sex - Level of educational attainment by county - Number of individuals passing high-school equivalency exams
	• Analyze distribution of programs and student financial aid in relation to distribution of income throughout the state.	• Distribution of family income in the state
What research (basic and applied) and public-service contributions can postsecondary education make to the state?	• Analyze various social indicators and related statewide executive and legislative priorities for potential contributions to be made by post-secondary education	• Indicators of public health, literacy, recidivism, transportation requirements, environmental concern, economic changes, and so forth

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- Defining the issues faced by the state agency
- Describing the decisions to be made if the issues are to be addressed
- Describing the intended analytical approaches (or alternative approaches) through which the decisions will be addressed
- Describing the information required to implement the selected analytical approaches
- Distinguishing between recurring and one-time data requirements
- Determining the necessary level of aggregation
- Distinguishing between data available in the existing data base and data to be incorporated into new data-collection activities
- Listing the data elements requiring new collection
- Identifying sources for the new data elements
- Defining the new data elements

Defining the Issues Faced by the State Agency

The issues framework is intended to represent the major issues facing most state agencies. It must be modified to reflect features of the postsecondary-education policy environment in a particular state. It serves a purpose for information-systems planning similar to the purpose that a set of goals serves for comprehensive planning. That is, both provide direction for the overall planning effort and an organizing framework for the more specific objectives or planning decisions through which the plan is implemented. For a description of postsecondary-education planning issues and a framework for relating them to state-level information needs, see *Selection of Data to Address Planning Issues.*

Describing the Decisions to Be Made if the Issues Are to Be Addressed

While the issues (depending in part on how they are stated) will change little from year to year, the statement of particular decisions for a state has a shorter focus. Usually stated as questions to be addressed during a particular year, the decisions represent the expected outcomes of the staff activities of the agency. For information-system planning, it is helpful to anticipate at least the major decision requirements in a three-year timeframe, being very specific about those to be addressed in the year for which the information-system requirements are being considered. For a further discussion of the decisionmaking context for state-level planning agencies, see the *Planning Guide*.

Describing the Intended Analytical Approaches (or Alternative Approaches) through Which the Decisions Will Be Addressed

The selection of particular analytical approaches has as great an impact on the data requirements for a state agency as any other single factor. The preference of the staff of a particular agency for quantifiable approaches to analysis and for use of historical trends determines the overall priority to be placed on information-system development. Also, the importance placed on particular analytical routines (such as budget formulas) determines the importance to be placed on particular data elements. Agency analytical approaches usually evolve over time, so those involved in information-system planning must be prepared for changes.

At the same time, the agency's analytical staff has an obligation to define newly developing or revised analytical routines early enough and in enough detail to serve as the basis for specifying data requirements. Its involvement in information-system planning will place some burdens on the analytical staff—particularly in terms of documenting processes in advance. While these burdens are significant, such documentation is an important factor in the ultimate delivery of useful data in a timely

fashion. This exchange of documentation also promotes discussion between analytical staff and information-systems staff, creating the basis for compromises, which may result in reduced data collection with little or no loss in analytical capability.

For a further discussion of the importance of reconciling agency analytical approaches with agency information-planning, see the *Planning Guide.*

Describing the Information Required to Implement the Selected Analytical Approaches

This step in the sequence can be only as detailed as the preceding step. Ideally, the information requirements will emerge logically from the description of intended analytical approaches (for example, student-faculty ratios as a key factor in the budget formulas). The information-systems staff must then convert the information requirements into a list of the data elements required to produce the information. *Selection of Data to Address Planning Issues* further describes the relationship among issues, analytical approaches, and information requirements.

Distinguishing between Recurring and One-Time Data Requirements

The distinction between recurring and one-time data collection depends on the nature of the analytical requirement and the frequency with which the analysis is to be conducted. Generally, an analytical requirement that is repeated at least once every three years justifies maintaining the required data in the regular data collection, though it can be useful to regularly maintain data for analysis conducted less frequently than that. There are advantages and disadvantages on both sides of this issue. Maintenance of data on a recurring basis, even in the absence of a regular analytical requirement, can be important if the analysis involved relies heavily on historical trends (for example, impact of credit-hour distribution by age on enrollment trends). Also, occasional data collection can cause problems in obtaining timely, editable data. On the other hand, maintenance of infrequently used data

can lead to a larger than necessary data set and unnecessary burdens on data providers.

There will be instances when occasional special surveys are a more appropriate way of collecting needed information than relying on additions to the regular data-reporting schedule. Reliance on special one-time surveys reduces the size of the total recurring data collection and can improve the relationship between a particular analytical requirement and the data required to support it. On the other hand, one-time data requests are time-consuming, particularly in the effort necessary to describe the required survey and solicit institutional support for the data collection. The National Center for Education Statistics, with its Higher Education General Information Survey (HEGIS), and some state agencies use a composite approach involving regular collection of data on multiyear intervals. This takes advantage of both possibilities; that is, systematic data collection with a resulting increase in data validity but with a specific data burden on institutions only as often as needed.

Determining the Necessary Level of Aggregation

Information for state planning should be in the optimal level of aggregation required to satisfy the declared needs of the state. The process of reconciling detailed data among institutions is time-consuming and frustrating enough without the prospect of doing so for unneeded data. The level of detail required in the information system is determined by the analytical approaches used. One state agency may need to go no lower than broad institutional sectors, while another may need information on individual institutions and even on individual programs. As a general rule, a state agency should collect data at no greater level of detail than required by its analytical agenda. This requires that the state agency identify the lowest level of impact of each of its decision areas (for example, program review to program level, budget formulas to broad categorical levels of disciplines, master-plan documentation only to the sector-summary level), and relate its data collection to those levels of impact.

Distinguishing between Data Available in the Existing Data Base and Data to Be Incorporated into New Data-Collection Activities

There is more involved here than a simple comparison of new data requirements against the existing data base. Ideally, the information-system staff will be able to identify possible new combinations of data within the existing base to produce some of the new information required by the analytical staff. To the extent that such combinations can be used, new data collection can be avoided. It is important that the analytical staff recognize that this process may require some adjustment in preferred analytical approaches or activities. Dialogue between analysts and information-systems staff is an important step in maintaining an information system that is adequate for state-level needs and involves the lightest possible burden on institutions.

Listing the Data Elements Requiring New Collection

This step is the result of all those preceding it. Ideally, the new data set will be the minimum necessary to meet state-agency analytical needs and will be described in a form that is as compatible as possible with existing data collection and institutional data-reporting systems.

Identifying Sources for the New Data Elements

Institutions are the primary source for new data elements required at the state level. Since few state information systems preceded their institutional counterparts, however, there is an inevitable need to negotiate adjustments in institutional definitions or state analytical requirements in order to translate institutional data into the state framework.

Selection of Data to Address Planning Issues identifies the probable sources for most of the data it describes. Figure 2 is an example of a data page from that document; as indicated in that example, sources are identified at the bottom of the page. The most common sources of data are the institutions in the state, but

Figure 2

POSTSECONDARY-EDUCATION INFORMATION SYSTEMS AT THE STATE LEVEL

INFORMATION-STRUCTURE OVERVIEW—CATEGORY/AREA:
State Information/Population Characteristics of the State

SPECIFIC DATA:
State Population--Actual Counts, Estimates, and Projections

PLANNING ISSUE(S) TO WHICH RELATED:
Need/Demand for Postsecondary-Education Services

POTENTIAL FUNCTIONAL USES:
Long-Range Planning; Enrollment Projections; Affirmative Action

DESCRIPTION OF DATA:

The number of persons in the state, based on actual, estimated, or projected census information, by year.

Year	Total State Population
1970	
↓	
etc.	
1980	

RELATED GLOSSARY DEFINITIONS:

- Population Actual Counts
- Population Estimates

To determine data and standards used for projections of state population, the state's Federal-State Cooperative Office will have to be contacted.

SOURCE(S):

- 1970 census counts were conducted by the U.S. Department of Commerce, Bureau of the Census. Actual counts for 1970 by state are available in the Series PC(1)-B, "General Population Characteristics," table 16. (See Sources section for a copy of this table.)
- Estimates for years in between the decennial census counts are conducted annually by the Bureau of the Census and each state under the Federal-State Cooperative Program, and the preliminary and final results are published in the Series P-26, "Current Population Reports." (See Sources section for an example report.)
- Projections for the next census period are done separately by each state through the Federal-State Cooperative Office.

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non-institutional sources of data, including, among others, the U.S. Census Bureau and the Department of Labor, are also referenced.

Defining the New Data Elements

Selection of Data to Address Planning Issues defines all the data elements suggested by its framework, but the document emphasizes that states should adapt and modify both the data they select and the definitions of those data to meet their needs. While the definitions in the document are not recommended as standard for all states, they can further extend the interstate-exchange potential now present with HEGIS to the extent that they are adopted by a majority of states.

State-Institutional Interface

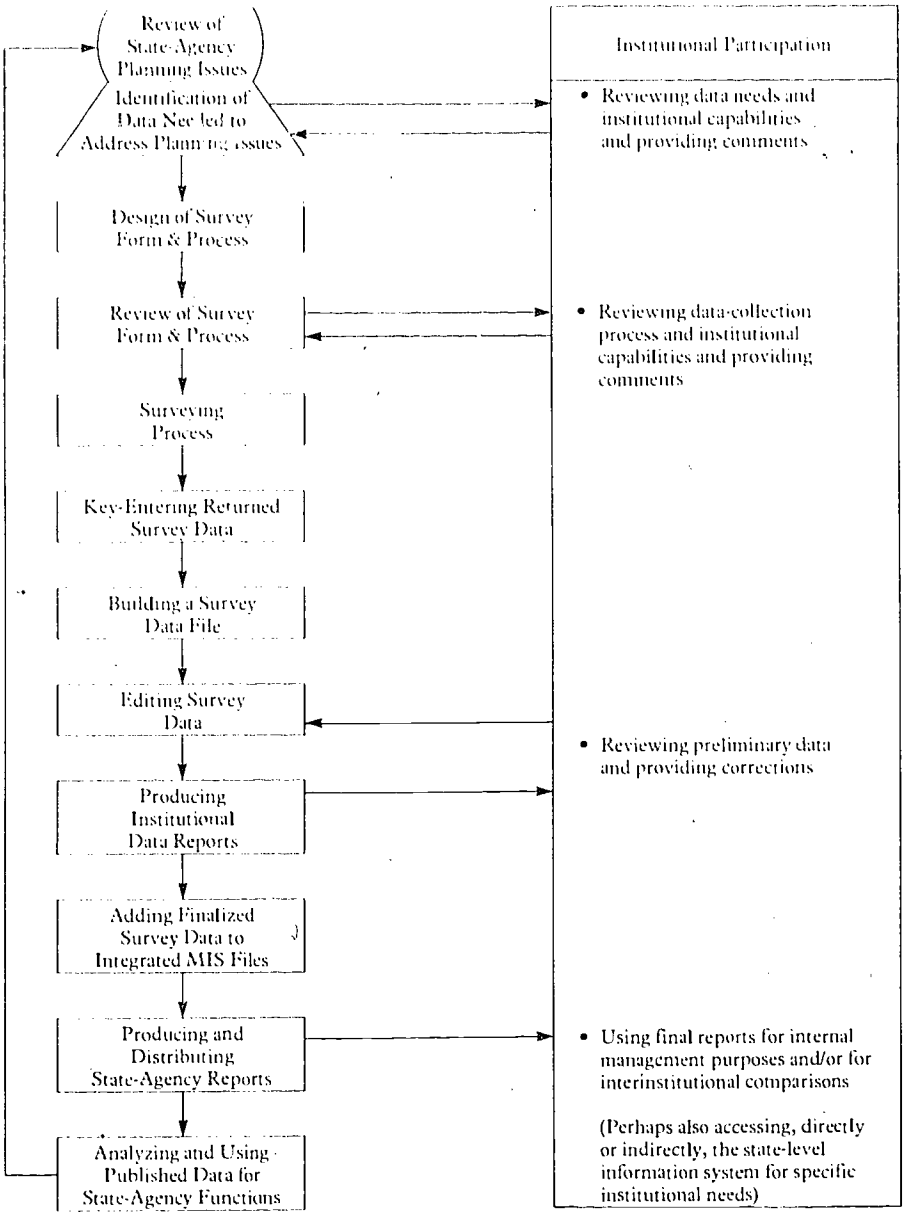
Development of postsecondary-education information systems at the state level must reflect and build on existing relationships between state agency and institutional roles and responsibilities. Of particular importance is the need for ongoing communication between a state agency and the institutions about institutional capabilities and concerns regarding the provision of data. (Figure 3 illustrates the continuous relationship needed between state agencies and institutions in such areas as data selection, collection, maintenance, reporting, and feedback.) Institutional cooperation often depends on mutual understanding of the state-agency role and the data requirements related to effective exercise of that role.

There are three important points in the state-institutional interface regarding the collection of data:

- It is important that a state agency be selective in the process of identifying data items, avoiding a collect-everything approach in the development of an information system

Figure 3

General Procedural Steps Involving Data Determination, Collection, Maintenance, and Reporting



- A state agency should be willing to cite the specific uses for the data collected
- A state agency must consider institutional resource capabilities, both short-term and long-term, for providing data

The relationship between independent institutions and state-level information-system planning was not extensively explored during the project, and issues related to the independent sector's involvement seem best resolved within the conventions and structures of each state. The considerable variability in control and funding base that characterizes independent institutions, as well as the potential data burden, suggests that information-system planners in each state need to consult fully with the range of institutions in their independent sector if the latter are to be included in such an effort.

Three issues emerged as individuals in independent institutions and their state associations considered state-level data collection and use: (1) the need to preserve and enhance the hallmark of the independent sector—its independence, (2) the need to provide the independent sector with information suitable to the planning of its institutions, and (3) the need to provide information to the state so that state planning can be cognizant of the mission, capacity, and condition of the independent institutions. Data that appear to serve one function can easily compromise another. These problems should be further explored as the nature and functions of state-level information are worked out in each state and as the effects of various required and voluntary levels of independent-sector data provision are determined.

The Pilot-Test State Experience

The following statement was prepared and endorsed by the pilot-test state representatives as their description of the experiences and results of participating in the project. It is offered here in lieu of a staff summary of the pilot-test activity.

The documents provided by the State-Level Information Base project represent the individual experiences of the eight states that have attempted to establish a common methodology for collecting, displaying, and using information with the project's issues and data framework as a guide.

In the course of implementing or upgrading our individual state-level information systems over the last three years, we have learned that inter- and intrastate data comparability, while a worthwhile objective, is occasionally an administrative quagmire. Goals that appeared to be theoretically possible and administratively reasonable often proved to be elusive when placed in a practical setting.

During the course of our efforts we have reported our findings to the project Task Force, the Participant States Group, and NCHEMS staff. Modifications have been made in the earlier documents to incorporate our changing thoughts. These documents accurately reflect our experiences, emphasizing the value we have found in implementing the project's concepts while providing cautions regarding the occasional pitfalls we have encountered.

It is important for the reader to understand that each of our states has derived different but important benefits from the concepts represented in the documents. Organizational, political, and economic constraints precluded "successes" in some areas in spite of the dedicated work of our institutional colleagues and our support staff. That we have achieved our results in different ways should be viewed as one of the more important outcomes of the project and as evidence of our collective feeling that no magic solutions exist in the area of information-based state-level planning. The existence of the project documents and other services will not end all data ills but can, however, substantially aid states contemplating implementation of a statewide information system to support state-level planning responsibilities.

We convey the project documents to you with the hope that you will profit from our experiences, and we trust that you will join us in sharing the insights you gain in implementing the project's concepts with those who follow.

General Pilot-Test States

The pilot-test state experiences are specifically documented in the *Pilot-Test State Case Studies* and *Systems-Related Experiences in Eight Pilot-Test States*. More detailed information can be obtained from the pilot-test state representatives listed here.

STATE	PILOT-TEST AGENCY	CONTACT PERSON
California	California Postsecondary Education Commission 1020 12th Street Sacramento, California 95814	John Harrison Associate Director for Administration (916) 322-7983
Hawaii	University of Hawaii 2425 Campus Road, SL-10 Honolulu, Hawaii 96822	Kenji Sumida Director of Finance (808) 948-8328
Illinois	Illinois Board of Higher Education 500 Reisch Building 4 West Old Capitol Square Springfield, Illinois 62701	James McGovern Associate Director, Research and Information Systems (217) 782-2552
Kentucky	Kentucky Council on Higher Education U.S. 127 South West Frankfort Office Complex Frankfort, Kentucky 40601	Thomas Braun Deputy Executive Director for Administration (502) 564-3553
New Jersey	New Jersey Department of Higher Education 225 West State Street Trenton, New Jersey 08625	Adolph Katz Director, Office of Planning and Research (609) 292-4057
New York	Office of Postsecondary Research, Information Systems and Institutional Aid State Education Department The University of the State of New York 99 Washington Avenue, Room 1923 Albany, New York, 12230	Paul Wing Coordinator (518) 474-5091
South Carolina	South Carolina Commission on Higher Education Rutledge Building 1492 Senate Street Columbia, South Carolina 29201	Charles A. Brooks, Jr. Coordinator of MIS Computerization (803) 758-2407
Virginia	State Council of Higher Education for Virginia 700 Fidelity Building 9th and Main Streets Richmond, Virginia 23219	J. Michael Mullen Assistant Director (804) 786-8951

Information System Costs

Establishment and maintenance of a state-level information system is an expensive effort to both the implementing state agency and data-providing institutions. *Systems-Related Experiences in Eight Pilot Test States* and *Pilot-Test State Case Studies* describe the state-level cost experience of the pilot-test states. The importance of recognizing the cost impact on data-reporting institutions is discussed in the *Planning Guide*. The basic point here is that use of the data in the system is the key element in assessing the cost/benefit tradeoff. Collection of unneeded data, no matter how efficiently it is obtained, drains scarce institutional resources and support away from all planning efforts. A consistently high level of use of collected data demonstrates a good-faith effort by the state agency to burden institutions with only those reporting requirements necessary to support well defined agency needs.

Summary

In support of postsecondary education, there must be an effective linkage between the institutional delivery of educational services and legislative and other state-level interests. State-level information systems have no reason for existence independent of the agency's responsibilities and the decisionmaking needs they serve. Project documents call upon information-system designers to transcend the technical aspects of system development to recognize the political, organizational, and personal factors that influence organizational structure, behavior, decision processes, and the resulting information-system needs.

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