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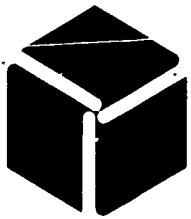
ABSTRACT

Because of the limitations in the state of the art of using outcomes information in postsecondary education, and the important planning and management needs that exist in this area, a project was undertaken to (1) develop a set of coherent and widely accepted outcomes constructs that describe what an educational outcome is; and (2) develop a related system that can be used to organize outcomes information effectively for classification, analysis, and decisionmaking. A set of six attributes of an educational outcome was established, and five related factors were identified. In addition, three dimensions (continuum along which outcomes can be placed and related to each other) were on a small scale, and may have a number of uses throughout postsecondary education. (Author/MSE)

A Structure for The Outcomes of Postsecondary Education



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A STRUCTURE FOR THE OUTCOMES OF POSTSECONDARY EDUCATION

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1977

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ABSTRACT

Having a wide variety of outcome information without any structure is analogous to possessing a file cabinet in which the contents are arranged randomly. Similarly, without agreement on a common language and context for outcomes, it is difficult for institutional officials to communicate succinctly how their institution and program differs from its counterparts. An effective outcomes structure can be of assistance to postsecondary education planners and managers for those purposes as well as for identifying needs, developing goals, translating goals into concrete objectives, setting priorities and plans, and evaluating institutions and their programs.

The potential volume of outcomes information in postsecondary education is quite formidable and poses a significant barrier to using outcome information in institutional planning and management. Although a number of attempts have been made to develop structural systems for organizing outcomes information, all of them have so far proved inadequate to meet the practical need. Because of the limitations in the state of the art and the important planning and management needs that exist in this area for postsecondary education, an NCHEMS project was conceived and executed that aimed to: (1) develop a set of coherent and widely accepted outcome constructs that describe what an "educational outcome" is, and (2) based on the conceptual framework provided by those constructs, develop a system that can be used to organize outcomes information in an effective way for purposes of classification, analysis, and decision making.

The end product for the project was to be an "outcomes structure," a framework for organizing and classifying information about the full range of postsecondary education outcomes. Basic to the development of the Outcomes Structure, however, was the development of an appropriate conceptual framework. Until the present time, the term "educational outcome" has meant different things to different people. Therefore, based on an extensive synthesis and analysis of relevant literature, a set of six attributes or characteristics of an "educational outcome" was formulated: (1) Form, (2) Change Status, (3) Focus, (4) Neutrality, (5) Measurability, and (6) Output/Impact. Five outside factors are also important in understanding the concept of "educational outcome": (1) Producer/Facilitator, (2) Audience, (3) Intended/Unintended, (4) Functional Area, and (5) Time. The Outcomes Structure has three formal dimensions, where an outcomes dimension is a continuum that can be divided into segments along which outcomes can be placed and viewed in relation to one another. The three dimensions are: (1) Audience—the persons, groups or entities that receive and/or are affected by (or which are intended to receive or be affected by) the outcome of concern; (2) Type of Outcome—whether or not the outcome involves a change in status (maintenance versus change) and the basic, specific entity that is maintained or changed; (3) Time—the time frame in which the outcome occurs or is intended to occur.

The Outcomes Structure has been tested out primarily through the use of logic. In addition, independent judges classified a sample of outcome statements to check for reliability in classification, the Structure was used in a preliminary way at one public university and eight small private colleges, and various practitioners in different types of postsecondary education settings have reacted to the Structure. Also, a review version of this document was tried out as a basic text in a graduate student course on outcomes at another university. Based on these experiences, it is felt that the Structure has a number of potential uses throughout postsecondary education, but an indication of its real usefulness awaits practical tryout within postsecondary education institutions and at other levels.

FOREWORD

This document describes the development of a system designed to organize information about intended and/or actual postsecondary education outcomes in an effective way for purposes of classification, analysis, and decision making. It is intended for use by researchers working in the area of educational outcomes, by administrators, and by other educational practitioners who desire a detailed and in-depth discussion of the NCHEMS Outcomes Structure and of the concept of "educational outcomes." Another document titled *The Outcomes Structure: An Overview and Procedures for Applying it in Postsecondary Education Institutions* has been prepared for day-to-day use by administrators and other educational practitioners. This Outcomes Structure has been developed as a part of the NCHEMS Outcome Structures and Measures project, supported by funds from the National Institute of Education. The earliest forerunner of the Outcomes Structure is the NCHEMS Inventory of Higher Education Outcome Variables and Measures (Micek and Wallhaus, 1973). More recently, a preliminary paper (Service, 1974) summarized some initial conceptual work with respect to the Outcomes Structure. This paper provided a basis for review and discussion by NCHEMS staff, the Outcomes of Postsecondary Education Project Task Force, and other interested parties. Results of these discussions were incorporated into the development plan that led to the publication of this document.

As part of that development process, two extensive literature review efforts were inaugurated late in 1974. Yong S. Lee explored the meaning of the concept "outcome," and attempted to derive a definition for this concept that would be appropriate for planning, management, and policy-development purposes. Various people have viewed postsecondary education outcomes in different ways, and a special concern was whether one definition of "outcome" would suffice for the Structure or whether the definition would have to be adjusted according to the context in which the term was being used.

In the second literature review Oscar T. Lenning explored: (1) literature in the field of taxonomy for principles or criteria that should be considered in developing a classification structure for the outcomes of postsecondary education, (2) the literature describing previous attempts at classifying educational outcomes and outcome-related concepts such as goals and objectives (more than eighty such classifications were eventually found), and (3) the literature on specific postsecondary education outcomes that could be used to generate a broad list of outcomes for use in testing the Outcomes Structure resulting from the project. Both the Lee and Lenning reviews were continuations and extensions of the comprehensive review of the research and theoretical literature conducted by Lenning and associates at the American College Testing Program (1974, 1975).

With these literature reviews as background, a draft version of the Outcomes Structure was developed. This draft was examined in detail by NCHEMS staff and selected external consultants. Subsequent revisions of the Structure also were tested by logical analysis, and the Structure was tried out in a practical way at one public university and eight small private colleges (see pages 38-43). In addition, the Outcomes Structure was subjected to an extensive review by a Design Review Committee formed especially for that purpose. The committee included representatives of various sectors of postsecondary education as well as different types of potential users and appropriate methodologists. A variety of other postsecondary education practitioners also reacted to the review edition of this document that was completed in the fall of 1976.

In conclusion, the NCHEMS Outcomes Structure is an evolutionary product. It rests upon significant bodies of previous work and is intended to continue to grow and develop as time passes.

ACKNOWLEDGMENTS

Any errors or omissions in this publication or in the Outcomes Structure are solely the responsibility of the authors. However, recognition is due a large number of people who made positive contributions to its development.

First, acknowledgment and sincere thanks go to the design review committee for the project. Its members reviewed and critiqued the concepts being developed and different drafts of this document, brainstormed with us, and made many excellent suggestions for improvement. Their diverse backgrounds, knowledge, and creativity were invaluable to the fruition of the project. The following were members of the committee:

Joanne Arnold, Associate Vice-Chancellor for Academic Affairs, University of Colorado at Boulder

Bruce Dearing, Vice-Chancellor for Academic Programs, State University of New York System

Kenneth Feldman, Associate Professor, State University of New York at Stony Brook

Elinor Greenberg, Director of the University Without Walls Program, Loretto Heights College

Ervin Harlacher, Chancellor, The Metropolitan Community Colleges, Kansas City, Missouri

James Hurst, Dean of Students, University of Texas at Austin

Lora Robinson, Director of Institutional Research, Grand Valley State Colleges

Kenneth Tollett, Director of Institute for Study of Educational Policy, Howard University

Equally helpful were the four outside consultants for the project, whose significant contributions are also acknowledged with thanks: George Barton, Director of Instruction, Nova University; Del Schalock, Director, Teacher Education Research Program, Teaching Research Division of the Oregon State System of Higher Education; Robert Staaf, Professor of Economics, Virginia Polytechnic Institute and State University; and David Witmer, Assistant Chancellor, University of Wisconsin at LaCrosse. The same is true of those who tried out the Structure in a preliminary way. Jean Endo, at the University of Colorado, used the Structure to classify lists of outcomes that they had developed over a period of several years and to identify whether or not important areas of coverage were missing from their lists. Edward Cooper and Edward Myers, University of Colorado graduate students on the NCHEMS staff, were involved in the tests of inter-judge classification consistency. Another NCHEMS research assistant, Robert Passmore, also provided useful assistance. In addition, try-out workshops and follow-up interviews were conducted in cooperation with the Learning Outcomes Task Force of the Council for the Advancement of Small Colleges at four institutions: Macalester College (Jack Rossman, Project Campus Coordinator); Siena Heights College (James Ebben, Project Campus Coordinator); Spelman College (Edward Riley, Project Campus Coordinator); and Spring Arbor College (Ralph Sickmiller, Project Campus Coordinator). In addition CASC Task Force members made visits to four other colleges and interviewed institutional and program faculty and staff about the student experiences or activities they promote and how each relates to categories in the Outcomes Structure: Kalamazoo College, Madonna College, Ottawa University, and Paul Quinn College. CASC Task Force members involved in the various interviews were William Crothers, Clinton Jones, Edward Lundin, Thomas Maher, John Newby, and Jack Rossman. Thank you to all of the above-named people and to the administrators, faculty members, and students at each college who were interviewed and/or participated in one of the workshops.

Additional thanks are due to the other 50 people outside of NCHEMS who requested to become involved in the examination and critique of the preliminary review edition of this document, and especially to the following individuals for their helpful input: Fred Balderston, University of California; Kevin Bunnell, WICHE; Lilla Engdahl, WICHE; Aubrey Forrest, American College Testing Program; Carl Harshman, St. Louis University; Mark Meredith, University of Colorado; Eldon Park, Educational Testing Service; Thomas Shay, WICHE; and Donald Williams, University of Washington. Dr. Williams and his colleague, Robert Cope, used the review version of this document as a text for a graduate course on outcomes at the University of Washington: thanks go to them and to their students for input provided from that experience.

Several members of the NCHEMS professional staff should also receive special acknowledgment for their helpful input: Cathy Bower, Richard Johnson, Dennis Jones, Nancy Renkiewicz, JoAn Segal, James Topping, and Robert Wallhaus. Special acknowledgment also goes to the secretary for the project, Cheryl Pedersen, for the long hours that she spent typing the many drafts (thirteen in all), and for other important project activities. And finally, a special thank you to Jean Strueber for her thorough editing of the manuscript for this document.

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Throughout this document there are examples of potential outcomes claimed by various people to be products of postsecondary education. NCHEMS does *not* warrant that these outcomes are products of postsecondary education. (There is strong research evidence, however, that some of them are.) For example, various *student* outcomes aimed for by institutional and program practitioners may be primarily the result of experiences away from the campus—such as in the community surrounding the college or at home with parents, siblings, and friends. Similarly, intended outcomes for *young people* may result from the natural maturational processes of growing older, and might occur even if the person entered the world of work out of high school rather than entering postsecondary education. This is not saying, however, that postsecondary education experiences have no potential for hastening the occurrence of such outcomes. Whether or not outcomes result from postsecondary education is *not* the concern of this document—research on that question is continuing at NCHEMS and elsewhere. Rather the concern of this document is with improving the ability of people to communicate more effectively about such outcomes, and to organize, analyze, and use outcomes information in decision making—whether the outcomes be actual, planned, or simply desired.

Chapter 1
OVERVIEW AND CONTEXT

Introduction

All the major activities conducted by administrators, faculty, and student personnel workers in postsecondary education institutions are, presumably, aimed toward bringing about certain kinds of "educational outcomes." The activities of planning, budgeting, management, evaluation, research, scholarship, instruction and other developmental activities for students, and even staff development, all have educational outcomes as a primary focus. Other groups within an educational institution, such as the secretarial staff and the computer operators, also presumably contribute to various educational outcomes.

By "educational outcomes" we mean more than the effects of postsecondary education on students and the further impacts of those on others, including society in general. As used here, "educational outcomes" refer to any results or consequences of an educational institution and its programs. The outcomes may be direct results of institutional activities, such as academic degrees, technological discoveries, student knowledge and skills, or institutional staff salaries. Conversely, there may be later consequences of those outcomes, such as individual prestige, higher family income, more educated work force, or effects of staff salaries on the local economy.

Educational activities focus on intended outcomes, but unintended or unplanned outcomes should also be of concern to educators. Unexpected or unintended outcomes can occasionally become more important than the intended outcomes. Some unintended outcomes are considered to be of positive value by most people (for example, increased student ingenuity or creativity), but other kinds of outcomes are considered to be detrimental (for example, increased drug use or political radicalism).

Actually, the generic concept of "educational outcome" is a neutral one, separated from any inherent value status. But people attach value connotations to the outcomes, and even the most universally accepted educational outcomes are probably seen as negative by some people.

As discussed in a later chapter of this document, it is important, in exploring outcomes, to separate the direct outcomes of institutional activities from the later consequences of those outcomes. Similarly, it is important to distinguish intended from unintended outcomes, and to be aware of to whom the outcome appeals and does not appeal. There are also other distinctions that can help institutional officials and others to understand a particular educational outcome: whether it involves maintenance (preserving, replenishing, reproducing, or stabilizing) or change (modifying, revising, enriching, restructuring, or replacing); whether the outcome takes the form of a product, an event, or a condition; the measurability of the outcome; who or what receives or is affected by the outcome, and in what functional area; the specific institutional activities contributing to the outcome; and when the outcome occurs and how long it lasts.

Because educational outcomes are the *raison d'etre* of the educational endeavor, it is important to have a common language for communicating to one another about outcomes, and to have information available about which outcomes are occurring and to what extent they are occurring. Equally important is the ability to interpret and use outcomes information.

This document is a description and discussion of a mechanism designed to aid in communicating, interpreting, and using information about postsecondary education outcomes. The mechanism consists of a proposed outcomes structure (a system for separating outcomes into meaningful categories) for postsecondary education and some general guidelines for its use. The NCHEMS Outcomes Structure is intended as an alternative organizational framework that will accommodate information about the full range of postsecondary education outcomes.

The emphasis within this classification scheme is upon organizing, differentiating, and showing relationships among the variety of educational

outcomes. Individual outcomes can be located within the classification structure and certain relationships with other outcomes assessed. The NCHEMS Structure was built on an extensive foundation of previous work and is believed to be useful, but whether its use will yield general practical benefits awaits its application at postsecondary institutions across the country. It is expected that improvements and modifications of the Structure will be made in the future, based on continued developmental activities and on actual experience with using the Structure.

The Context and Need for an Outcomes Structure

There is considerable evidence of continuing and increasing interest in understanding and documenting the outcomes of postsecondary education institutions. Individual institutions are faced with a variety of challenges and pressures that require them to go well beyond their traditional data-collection and dissemination activities. The generation and use of meaningful outcomes information is one key element of this task. The need at the institutional level is reinforced and augmented by an increasing competition for societal resources that provides an impetus for postsecondary education as a whole to become more capable of expressing its contribution to individuals and society.

The outcomes of postsecondary education can be viewed in a number of different contexts. In the largest sense, one can talk about the aggregate outcomes of the entire system of postsecondary education, that is, the products postsecondary education provides the society and nation (and the world) and the impacts of those products. Next one could talk about the outcomes of institutions of particular types, such as state university systems, liberal arts colleges, community colleges, vocational schools, and proprietary institutions. There are also different contexts at the individual institution level. The college president focuses on institution-wide outcomes, the department head focuses on departmental outcomes, and the instructor focuses on the outcomes of the particular courses he or she is teaching. Outcomes are important at all of these levels and there is a commonality in the concept of "outcome." However, there are also differences for different levels, for example, in the types of outcome information desired for decision making and in the ways that outcome information is gathered and interpreted.

It is possible to view the collection and use of meaningful information about specific outcomes as involving at least five interrelated tasks: (1) identifying intended and potential outcomes and associated measures, (2) gathering outcomes data, (3) structuring the data, (4) analyzing the data, and (5) applying the results of the analysis toward modifying and improving the institution and its outcomes.

For the first task, the range of postsecondary education outcomes to be considered should be identified as a prerequisite to their measurement. This involves transforming mission statements and needs assessment data into goals, which in turn are translated into more specific, concrete objectives stated in outcome terms.[2] It also involves logical consideration of what significant (for planning purposes) unintended outcomes have the potential to occur, and their likelihood of occurring. Then, to the greatest extent feasible, one or more measures that can serve as quantitative indicators should be associated with each potential outcome.

For the second task, the measures identified are applied through the definitions and procedures necessary for acquiring outcomes information, and the appropriate data are collected. The NCHEMS *Outcome Measures and Procedures Manual* (Micek, Service, and Lee, 1975) is intended as a support for exactly this kind of measurement activity.

A third aspect of the outcomes information question can be viewed as a structural task. Organizing the array of educational outcomes in some conceptually sound and operationally useful manner is an important element in the productive use and understanding of outcomes data. At the very least, a structure can provide a basis for analysis of the interrelationships among various outcomes and also serve as a vehicle for more coherent communication of outcomes information among different users and decision makers. One version of such a structure is the NCHEMS Inventory of Higher Education Outcome Variables and Measures (in Micek and Wallhaus,

[1] It should be noted that although the Outcomes Structure was designed specifically for use at the postsecondary level, it may have utility also at the elementary and secondary levels of education.

[2] General outcome goals can be generated in an open-ended manner or with the aid of an instrument like the ETS *Institutional Goals Inventory*.

1973). Many other attempts to structure educational outcomes also have been made (Lenning, 1977b).

Once the outcome data have been identified, generated, and structured, analysis appears as a logical fourth task. Such analysis might be directed toward *identifying redundancies* among outcome measures, *assessing the validity* of the data, *identifying tentative relationships* between outcome measures and other variables, and identifying and understanding the outcomes that have occurred.

Once the data have been analyzed and the outcomes ascertained, the findings need to be applied to the institutional decision-making process. Decisions about institutional and program modification depend on such information, as do general policy and management decisions. Students' and funders' decisions about institutions and programs can also be facilitated by such information. Procedures and guidelines are needed, however, to integrate the outcomes information with information about inputs and processes and to apply such information to planning and management problems in an effective manner.

This document is directed to the first and third of these five tasks, outcome identification and structuring. As mentioned previously, the structure discussed here was designed to help identify, organize, and classify information about the full range of possible postsecondary education outcomes.

The need for an outcomes structure arises from practical as well as conceptual considerations. Such a device can stimulate people to think about outcomes in a more systematic and concrete manner than was previously the case. Also, the potential volume of outcomes information is quite formidable. The sheer mass of this body of data could well be a significant barrier to the overall objective of use of outcomes information in planning and management. In the absence of some framework or structuring device, data items of interest must be identified individually; there is no mechanism for aggregating or for referencing a series or class of items. Having a wide variety of outcome information without any structure is analogous to possessing a file cabinet in which the contents are arranged randomly. The ability to retrieve and communicate the contents of the file improves as the organization of the material within it becomes more explicit. Therefore, an explicit organizing scheme is needed to aid in organizing, filing, and retrieving outcome information. Such a framework could conceivably serve as the basis for the outcomes portions of computerized information storage and retrieval systems.

A closely related need can be described in terms of opportunities for effective communication of outcomes information. Without some agreement on a common language or context, there is a very serious risk that particular outcome measures will assume different meanings from one situation to another. Given the imperfections of measurement technology, some ambiguities will undoubtedly always remain. Nevertheless, an outcomes structure should help to minimize or at least reduce this phenomenon by delineating a set of concepts and relationships that remain constant from one use of outcomes information to another. In a very real sense, the outcomes structure can provide a grammar that links together individual words (outcomes information items) and thereby creates a workable language for communication about postsecondary education outcomes. This language would assist individuals in postsecondary education in somewhat the same way that Linnaeus's taxonomy provided a common language and helped biologists to identify and categorize the various hierarchies of living organisms. Once the taxonomy was completed, biologists were in a better position to identify, measure, and analyze the characteristics and changes among the various species. As a result, their understanding and comprehension of living organisms increased, and their communication with other scientists improved.

Another need is for some device to assist in the identification of those outcomes (or categories of outcomes) for which adequate quantitative measures are not available. The process of associating measures with elements of an adequate outcomes structure could, presumably, lead to identifying areas in which quantitative information is deficient or altogether lacking.

There are additional needs that an outcomes structure could help to meet. One is the need for postsecondary education institutions and their sub-units to improve their goal definitions and to translate more effectively their *goals* into concrete *objectives.* Another is the need for planners and managers to communicate more succinctly how

their institution or program differs from its counterparts. Still another need is for a framework that can guide the assessment of the types of outcome information needed by different decision makers (trustees, presidents, academic planning administrators, student affairs administrators, budget and finance administrators, legislators, directors of state agencies, and so forth). Finally, there is a need for analyzing and evaluating the outcomes of institutions and their programs. As a case in point, a comprehensive outcomes classification structure could be of assistance to an evaluator using a "goal-free evaluation" approach (an evaluation in which the actual outcomes of an institution or program are identified without any prior knowledge of the outcomes that were intended) by providing an exhaustive listing of all the outcomes that might be achieved (positive or negative).

Researchers in education also have important needs that an outcomes structure could help to meet. Use of such a structure might help to determine the relationships among outcomes and classes of outcomes, to identify gaps in the comprehensive set of outcomes, and to enhance measurement capability with respect to particular outcomes or classes of outcomes. Research and development work in the outcomes area is far from complete, and a well-designed outcomes structure could lend viable support for future efforts.

Chapter 2
A CONCEPTUAL FOUNDATION FOR THE NCHEMS OUTCOMES STRUCTURE

Introduction

A primary objective of the NCHEMS Outcome Structures and Measures project was development of a practical and useful classification system that encompasses the full range of outcomes. Since any such structure should come out of a conceptual and theoretical base, development required some resolution of the difficult question of exactly what should be included under the rubric "outcomes of postsecondary education" and what should be excluded. At the present time, the term "outcome" means different things to different people. For some the term denotes "output" (Goodman, 1971) or "planned output" (Hoenack et al, 1974). For others the same term signifies "end results" or "ultimate consequences" (Robinson and Majak, 1967; most PPBS literature). For still others the term stands for intended benefits (Hitch, 1970; Becker, 1964) or conversely for unintended effects or "side effects" (Bauer, 1966; Cook and Scioli, 1972). "Productivity"—maximizing outputs obtained from a given amount of resource inputs *or* minimizing inputs needed to produce a given amount of output—was the concept of "outcome" emphasized by Hitch (1970) and Christenson (1969), while Astin (1970) has focused not on maximizing outputs with respect to inputs but on comparing output conditions, characteristics, and levels to those at input (value added). Other frequently used synonyms for "outcomes" are "performance," "efficiency," "effectiveness," and "goals and objectives" (that have been achieved). A survey of the literature on program evaluation and policy analysis clearly indicated that up until the present time there has been no generally accepted concept that serves to define the facts known as "outcomes" and to discriminate among the potentially different types or classes of outcome measures.[3] Widespread agreement on the need for some unifying concept has not been sufficient to overcome the theoretical complexity that characterizes the issue (Barton, 1961; Easton, 1965; Goodman, 1971; Schalock et al, 1972; Micek and Wallhaus, 1973).

Previous attempts to develop a systematic and useful conceptualization of outcomes have been frustrated for a variety of reasons. Probably the most fundamental is the fact that postsecondary education (and education in general) performs multiple functions and generates a wide range of intended as well as unintended consequences. Some results (such as the number and type of degrees granted) are tangible enough to permit their identification and measurement without great methodological difficulty. Others are much more intangible and not readily susceptible to comprehensive, empirical investigation. In addition, educational programs are often designed not so much for the production of immediate benefits as for the generation of the future, long-term effects. Educational outcomes are expected to occur over a wide range of time. These and other complexities have presented formidable barriers to attempts by educational researchers and practitioners to develop an "operational definition" of outcomes.

The conceptual framework developed for the project has two key purposes: (1) identification of specific outcomes, and (2) understanding of their composition and characteristics. Identification is served through determination of whether or not a given entity actually constitutes an outcome. The conceptual framework specifies a set of characteristics or attributes common across outcomes. Understanding of the real nature or makeup of an outcome in the educational context, on the other hand, is accomplished through specification of the details of these attributes as they relate specifically to educational outcomes.

Six attributes of an "educational outcome" that are meant to provide answers to the question

[3] Measures, as used here, refer to concrete or quantifiable indications of the presence and the extent, quality, or size of an outcome, for example, posttest versus pretest differences (where controls have been made for input level) on a skill or knowledge achievement test, number of students being accepted by graduate schools, or score on a self-rating scale of perceived impact on achievement. Because measures of educational outcomes are often inexact and only superficially indicative of the outcome under consideration (as contrasted to the more direct, exact, and standardized implication of the generic definition of "measure"), some people prefer the term "indicator."

"*What* are the characteristics and makeup of an educational outcome?" are discussed in the first section of this Chapter. These attributes have been labeled as follows: (1) form, (2) change status, (3) focus, (4) neutrality, (5) measurability, and (6) output/impact. Following this is a section where other factors important to an understanding of educational outcomes are discussed. Included are discussions of the following: *Which* institutional resources and activities are combined, and in *which* ways, to bring about the outcome(s) of concern? For *whom* (persons, groups, communities, or other entities) is the outcome intended, or *who* actually received or was affected by it? *Why* will, or did, the outcome occur? *Where* will, or did, the outcome occur? *When* will, or did, the outcome occur?

Several of the attributes and factors served as a basis for the dimensions included in the Outcomes Structure that are described in Chapter 3. Others have implications for using the Outcomes Structure (for example, in developing lists of outcomes for different cells of the Structure) and in analyzing outcome information. The relationship of the Outcomes Structure to the attributes and factors outlined will be discussed in the sections that follow.

The Attributes of an "Educational Outcome"

A total of six attributes of an "educational outcome"—form, change status, focus, neutrality, measurability, and output/impact—help to answer the question "*What* are the characteristics and makeup of an educational outcome?"

1. *Form*. This attribute of an outcome refers to the makeup or substance of the outcome—the forms in which particular direct outcomes of postsecondary education, or consequences associated with those direct outcomes, are (or are intended to be) observed and/or measured. In developing a classification of the direct outputs of educational research and development, Schalock and his associates (1972) empirically identified a dimension they called "structure" that outlined the basic makeup of the output. This dimension had three classes called "product," "event," and "condition." An earlier exploration by Schalock (1972), this time of student outcomes, determined a dimension called "content," that had three classes similar to those for "structure": "objectives," "events," and "processes." It seems clear that the three classes Schalock and his associates identified are applicable to the consequences of direct educational outputs as well as the outputs themselves. Furthermore, "form" is probably a more descriptive term than either "structure" or "content" of what the three classes portray. Therefore, "form" was included as an attribute of "educational outcome," and the three classes are "product," "event," and "condition." These classes can be especially useful when applied to the categories of the Outcomes Structure described in Chapter 3. Their main utility is perceived to be in building up lists of specific outcome variables and indicators for any category of the Structure that is of concern, and in an analysis of outcomes. The three classes of "form" are defined as follows:

   a. *Product*—tangible, concrete entities that endure with time, for example, a program completer, a degree, a job, a book.

   b. *Event*—observable, tangible transactions or sets of behaviors that do not endure with time, such as a seminar, a concert, a graduation exercise, being listed in *Who's Who in America*.

   c. *Condition*—intangible but real circumstances—morale, satisfaction, an attitude or belief, an appreciation, social equality, achievement, and so forth.

2. *Change Status*. A second attribute of "outcome" is "change status." This attribute was suggested by the extensive work of Derr (1973), who developed a taxonomy of the "social functions" of education that had such a concept as its foundation. Derr was able to classify the ideas of each of the major educational theorists who has dealt during this century with educational purposes, into the categories and subcategories of his taxonomy. Upon inspection, it seemed clear to the NCHEMS staff that Derr's categories could be used to classify the functions of education for individuals as well as for society: the *maintenance functions* of stabilization or reproduction (for example, preserving the culture has always been considered a primary function of education by many) and the *improvement functions* of modification or replacement. Parsons (1951) referred to these same two broad functions as "maintenance"

and "adaptation." All educational goals are designed to preserve, replenish, reproduce, or stabilize the status quo, or to modify, enrich, restructure, revise, or replace what is current. Therefore, all educational outcomes can conceivably be thought about in these terms, and this realization led to the selection for the current project of "change status" as a primary attribute of "educational outcome."

A problem with the term "improvement" used by Derr and the term "adaptation" used by Parsons is that they have value connotations suggesting that the outcomes in these classes are viewed as being positive. Outcomes often will be viewed as desirable by some people and undesirable by others. Therefore, a neutral term should be used for this category, if possible. After much deliberation, the following, somewhat neutral, terms were selected for the two major classes of "change status," and included as "fourth level of detail" categories of the "type" dimension in the Outcomes Structure:

a. *Maintenance*—outcomes that result in keeping the status quo: in stabilization or in reproduction and preservation—for example, continuing traditions into the next generation, helping a student to keep from becoming "rusty" on basic academic skills, or recording current knowledge in books and other documents so that it will be preserved for future use.

b. *Change*—outcomes that result in alteration of the status quo: in modification, revision (improvement or otherwise), or replacement.

The traditional purposes of a postsecondary education have often been couched in terms of maintenance or change. Furthermore, these two outcome directions require decidedly different orientations and strategies. As a result, the "change status" attribute was considered to warrant inclusion as a part of the type-of-outcome dimension of the NCHEMS Outcomes Structure.

3. *Focus*. "Focus" is similar in concept to the "form" attribute discussed previously but has a different emphasis. Dictionaries define "focus" as a point of concentration and this attribute describes the point of concentration—the basic, specific "what"—that is maintained or changed to constitute the outcome of concern. (Another appropriate name for this attribute would have been "aspect," as used by the Swedish LIGRU taxonomy of educational objectives [Klingberg, 1970].) To illustrate, instruction and socialization can involve maintenance or change on such entities as knowledge and understanding, skills and competencies, attitudes and values, appreciations, habits, roles, reputation, certification and licensure, status, jobs, income, economic security, family relations, social interactions, social conditions, community standard of living, and gross national product. Research and scholarship involve maintenance or change on such entities as basic knowledge and understanding, applied knowledge and understanding, techniques and technology, art forms, and the basic entities within people and communities which these impact. Public service involves maintenance and change on the services that constitute its outputs, and on the basic entities these services impact.

Most of the taxonomies and classifications of educational outcomes and objectives so far developed have included "focus" types of categories. The forerunner of the NCHEMS Outcomes Structure, the NCHEMS Inventory of Higher Education Outcome Variables and Measures, is essentially this kind of a taxonomy. The "focus" attribute was used along with "change status" in developing categories for the type-of-outcome dimension of the Outcomes Structure presented in Chapter 3.

4. *Neutrality*. A fourth attribute of "educational outcome" is one that can be called "neutrality." In the past, some people have more or less equated "educational outcomes" to "educational benefits." Such an approach, however, tends to direct studies of outcomes only to the positive aspects of education, neglecting the potentially undesirable results of education that could have just as much, if not more, impact or effect on individuals, families, and society as do many of the potentially desirable results of education. Clearly, outcomes viewed as having negative value or costs should be considered just as carefully in postsecondary education planning and management as those outcomes viewed as having positive value.

There are many consequences of education generally thought to be desirable by *most*

people. Examples include student adaptability, a more knowledgeable and skilled population, increased economic status of college graduates, improved health care due to research advances, and an increased community standard of living. However, there are also presumed consequences generally thought to be viewed in negative terms by the majority of the country's population. For example, Bowen (1974) lists drug use, political radicalism, and religious dissent as impacts generally viewed in negative terms. Although most people in society may view a particular educational impact as being a positive or negative consequence, however, there will almost always be a minority that sees it in the opposite way. And the population may be quite divided in its view of certain presumed impacts of college, such as the impacts of university laboratory discoveries on population growth or on ecology. The majority of the population may feel neutral or noncommittal about other outcomes.

The point being emphasized here, which is sometimes overlooked by educators as well as others, is that the generic concept of "educational outcome" is a neutral one separated from any inherent value status. Planners and managers need to hold to this concept of "outcome" as a neutral term so that values do not cause them to ignore potentially negative or unexpected impacts in their assessment of needs, goal-setting, program evaluation, and so forth. (This is a primary rationale given in support of Scriven's "goal-free" evaluation.) It is important to keep in mind, however, that people *do* attach value connotations to the particular outcome and make it into a value-oriented concept. The same outcome may be viewed as a benefit by some and as a detriment by others, while still others take a neutral position in the matter.

5. *Measurability.* "Measurability" is an additional attribute that helps to give insight into the "what" question. Some people claim that any outcome can be measured, while others suppose that certain outcomes cannot be measured—but this attribute does not concern itself with such a distinction. Measurability, as used here, refers to the extent and ease with which a particular outcome can be quantified. It is related to the tangibility, or concreteness, that was one of the two characteristics (the other one was endurance) that helped differentiate the product, event, and condition categories given for the "form" attribute discussed previously. However, it is more than this. Some rather abstract and intangible outcomes can be measured quite readily in quantifiable terms, for example, mechanical aptitude, reading comprehension, and vocational readiness.

Some outcomes are easy to measure; others are more difficult to measure. One who has especially focused on this distinction is Gross (1973), although he talked in terms of goals instead of outcomes. His breakdown of easy-to-measure versus hard-to-measure goals for different target populations is shown in Figure 2.1.

Although knowledge about the measurability of particular categories of outcomes is extremely important to outcomes identification, analysis, and interpretation—it is important to know which categories of outcomes are difficult to quantify and which are easy to quantify—this attribute was rejected as a dimension of the Outcomes Structure. First, the boundary between the two categories (or the three categories if an in-between one is added) could not be made distinct enough that different people could classify outcomes near the boundary. Finally, what one measurement expert may consider as easy to measure, based on the availability of a particular measure, may be viewed as difficult to measure by another measurement expert who considers that measure to be invalid. (For example, some measurement experts would consider scores on a reliable self-report instrument to be a valid measure of a criterion; others would consider the scores invalid.) These problems do not, however, negate the importance of trying to determine, from one's own perspective, the measurability of outcomes described in the various sections of the Outcomes Structure of Chapter 3.

6. *Output/Impact.* Another attribute that can add to the the understanding of "what is an outcome" is the "output/impact" distinction. Many outcomes researchers have focused on *outputs* as educational outcomes, that is, the conditions, goods, and services that the programs and institutions of postsecondary education produce as a direct transformation of the input elements. A few researchers in the outcomes area have focused on *impacts* as

Figure 2.1

GROSS'S PRESENTATION OF "EASY-TO-MEASURE" AND "HARD-TO-MEASURE" GOALS

Benefits To	Goals Easily Operationalized	Goals Hard to Measure
1. Society	1. Improved equity (income, employment) 2. Increased GNP 3. Reduced unemployment 4. Increased social satisfaction a. social institutions b. job satisfaction c. overall satisfaction	1. Reduced asocial behavior 2. Reduced dependency on government 3. Improved family life 4. Improved race relations 5. Improved health 6. Improved housing
2. Individuals	1. Increased incomes 2. Reduced unemployment Increased satisfaction with a. work b. general conditions c. social status	1. Reduced dependency 2. Improved health 3. Improved family life 4. Improved housing
3. Employers	1. Jobs of specific employers filled 2. Jobs in particular areas filled	1. Increased productivity of work force in particular parts of labor force
4. Government	1. Increased tax revenues through increased tax base 2. Increased numbers of qualified persons for public service	1. Reduced cost of government questions (health, welfare, law enforcement, etc.)
5. Institutions	1. Meet the need for quality undergraduate and graduate level output 2. Improve equity (income and educational opportunity) 3. Improve the level of human capital for industry, agriculture, business, government, etc. 4. Meet community adult education and continuing education needs	1. Improve levels and sensitivities in community 2. Improve chance of individuals reaching higher levels of self-fulfillment and competence 3. To advance knowledge through a. organization of learning b. research and publication

From "A Critical Review of Some Basic Considerations in Postsecondary Education Evaluation" by P.F. Gross, *Policy Sciences* Vol. 4, No. 2 (1973), page 186. Used with permission of the Elsevier Scientific Publishing Company, Amsterdam.

outcomes, that is, on the consequences of the outputs. Other investigators have concurrently examined outcomes in terms of both outputs and impacts. In doing so, however, the concept of "output" has often been used as though synonymous or combined with the term "impact." Educational outputs have not, in these cases, been clearly distinguished from educational impacts.

The failure to make a conceptual distinction between outputs and impacts reduces the ability to identify and organize systematically the wide range of educational outcomes, and also reduces the ability to analyze educational outcomes. Both concepts are crucial but it is important that they remain distinguished from one another. Dye (1975), for example, has observed:

> Policy impact is *not* the same as policy output. It is not enough to measure benefits [for instance] in terms of government activity. For example, the number of dollars spent per member of a target group (per pupil educational expenditures, per capita welfare expenditures, per capita health expenditures) is not really a measure of the *impact* of a policy on the group. It is merely a measure of government activity—that is to say, a measure of *policy output*. We cannot be content with measuring how many times a bird flaps its wings, we must assess how far the bird has flown. In *describing* public policy, or even in *explaining* its determinants, measures of policy output are important. But in assessing the impact of policy, we must first identify changes in the environment . . . that are associated with measures of government. [p. 328]

These observations by Dye about a political system are equally applicable to the educational system. For the study of educational outcomes, it is important to distinguish conceptually measures of educational outputs from measures of educational impacts without losing sight of either set of measures. Dye and other policy analysts (Easton, 1965; Robinson and Majak, 1967; Cook and Scioli, 1972) have in effect implied that the outcomes analyst in postsecondary education needs to seek separate answers to two questions:

1. What direct products, events, and conditions (*outputs*) do institutions of postsecondary education produce?

2. What differences (*impacts*) in the real world result from these products, events, and conditions—what other products, events, and conditions result?

Educational *outputs* have been defined by some as the "first-order consequences" of institutional and programmatic activities because they can typically be directly linked, at least in concept, to those activities. Conversely, educational *impacts* are defined as "second-order consequences" because the linkages to the institutional and programmatic activities are indirect.

Institutional or program planners will probably consider particular second-order consequences (impacts) in their planning, although they may never suspect other such consequences that will result (because they were never considered or were thought to be impossible, as well as not being intended or aimed for). Because educational impacts are related to the activities in an indirect manner, however, the institutions and programs may have little or no control over such impacts. For instance, several researchers have found that college education is highly correlated to the level of one's earnings, implying that the college education has an impact on one's ability to earn. However, it is difficult to demonstrate that one's earning ability should be attributed primarily to college education. For both the college educated and for others, the ability to earn is to a large degree dependent upon prevailing market conditions and other factors. Educational institutions obviously have no direct or immediate control over such conditions.

Another point that should be mentioned is the relationship of the "output/impact" attribute to the time when the outcome occurs, a factor discusssed in the next section. Because of its direct linkage to the institutional or program activity or activities that caused it, an output must appear or take shape during or directly at the end of the process activities that caused it. An impact, on the other hand, is less immediate than the output (or as is more likely, the many outputs) that initiated it, and it also is less immediate than any chains of intermediate impacts leading to it. An impact

can occur during the process (such as citizen enjoyment [impact] of a concert [output] sponsored by the institution), or at any time thereafter (even many years later [such as more enjoyable retirement years because of attending college-sponsored concerts when a student]).

Since the primary factor distinguishing outputs from impacts is whether or not there is a direct link between the outcome and the institutional activities responsible for that outcome occuring ("immediacy" and "amount of control" are secondary factors), we have defined "outputs" and "impacts" as follows:

a. *Outputs*—the *direct* end products, events, or conditions that result from the application of the institutional or program processes to transform the various inputs. Examples for institutions are achievement levels, specialization of knowledge, degrees, program completers, publications, cultural or entertainment events.

b. *Impacts*—the consequences of outputs and earlier impacts (the *indirect* products, events, or conditions produced) for particular individuals, communities, or things. "Impacts" answer the question of what differences result because of outputs and earlier impacts. Examples of possible impacts for institutions include a program completer's ability to obtain and hold a job, the security and income or the prestige the job gives a person, the increased gross national product that results from increased income of individuals, the increased standard of living and quality of life that may be associated with increased gross national product, and so on.

Because of their direct relationship to the process activities causing them, outputs are easier to research than are impacts (although there are serious research problems even for them). Therefore, most of the research done on educational outcomes has focused on outputs. However, in spite of their indirect nature, which makes it especially difficult to show cause and effect relationships, impacts have been the focus of a number of empirical investigations.[4] Most of those studies have focused on the impacts on individual students and graduates and include only minimal treatment of postsecondary impacts on the community and society at large. On the other hand, it must be kept in mind that impacts at the societal level are aggregates of the impacts on individuals. It is an extremely complex aggregation, however, because it involves concepts such as the "multiplier effect."

This attribute makes an extremely important distinction that can be useful in identifying and generating lists of outcomes and in analyzing outcomes. It was not used as a dimension of the NCHEMS Outcomes Structure, however, because some outcomes would be considered an output by particular people and an impact by others. A skill such as welding can be used as an example. Some of those using the institution, the program, or the course as a unit of analysis (the causative unit on which attention is focused) would classify this as an output because they would contend that it is a skill provided directly by the unit of concern. Others using the same unit of analysis would content that the component skills of welding must be mastered prior to the student having the "skill of welding," which would mean that the "skill of welding" has an indirect relationship to the activities causing it, through the component skills of welding. From their viewpoint, the component skills of welding become educational outputs that result in a skill impact, the overall "skill of welding." The same rationale could be used for any developmental outcome that has prerequisite components. In addition, for many outcomes there may be contributions to their existence from particular outputs and their impacts that add to the major contribution that comes directly from the producer or producers of these outcomes, in which case the outcome might be considered as part output and part impact.

Other Factors Important to Understanding "Educational Outcomes"

In addition to the attributes of "educational outcome," a total of five other factors are important to an understanding of this concept. These factors have been labeled producer/facilitator, audience, intended/unintended, functional area, and time. Each factor relates directly to one of the following questions (which were

[4] Most notably these studies have been in the areas of human capital (Schultz, 1963, Becker, 1964), behavioral influences (Feldman and Newcomb, 1969, Pace, 1972), attainment of selected social objectives (Krathwohl and Payne, 1971), and intellectual accomplishment (Schalock, 1972).

noted at the beginning of this chapter), and in the order listed: . *Which* institutional resources and activities are combined, and in *which* ways, to bring about the outcome(s) of concern? For *whom* is the outcome intended, or *who* actually received or was affected by it? *Why* will, or did, the outcome occur? *Where* will, or did, the outcome occur? *When* will, or did, the outcome occur?

- *Producer/Facilitator.* Educational outcomes generally do not just happen; they are caused or influenced to happen and conditions are such that they are allowed to happen. Even unintended outcomes are typically stimulated or caused to happen by a producer/facilitator or combination of producers/facilitators. Similarly, accidental outcomes usually do not just happen. Some actions or activities bring them about.

  It is important to recognize that the phenomenon called an "outcome" is a relative thing. An outcome from one point of view may well be seen as an input from another perspective. To illustrate, for a *college* "graduates produced" constitutes an outcome, while for business firms these graduates are considered inputs. Thus it is necessary to link outcomes to the unit or entity that produces them in order to maintain a consistent perspective. Since postsecondary institutions and their components have the basic responsibility for generating postsecondary education outcomes, the institution and its programs are the focus used in this conceptualization of outcomes.[5]

  Traditionally, the programmatic or functional activities of an educational institution and its components that produce and facilitate (or are intended to produce and facilitate) particular outcomes have been divided into three functional areas: instructional and socialization activities, research and scholarship activities, and public service activities. Instruction and socialization are the formal (curricular) and informal activities provided to help bring about student growth and development, that is, knowledge, understanding, competencies, attitudes, appreciations, habits, and so forth. Over the years, a wide variety of programs and methodologies have been tried in different settings to stimulate student growth and development.

  Research and scholarship activities are conducted by units or individual staff members within the institution with the aim to develop new knowledge or art forms. The new knowledge, techniques, or forms of expression can be designed either to have practical application (for example, "applied research") or merely to be new (for example, "pure research").

  Public service activities are those activities that aim to benefit directly or have an impact on the communities or groups of individuals residing within the service area of the institution. Many public service activities are instructional in nature, such as extension courses and other community education services. Others are advisory or entertainment, such as extension advisory and consulting services for individuals and businesses, community problem analysis services, and cultural and entertainment events or facilities for the community.

  It should be noted that these three traditional focuses of postsecondary education institutions correspond to the primary programs of the NCHEMS Program Classification Structure (PCS), outlined in Figure 2.2. Similarly, the six support programs of the PCS (academic support, student service, institutional administration, physical plant operations, student financial support, and independent operations), could be expected to also generate educational outcomes.

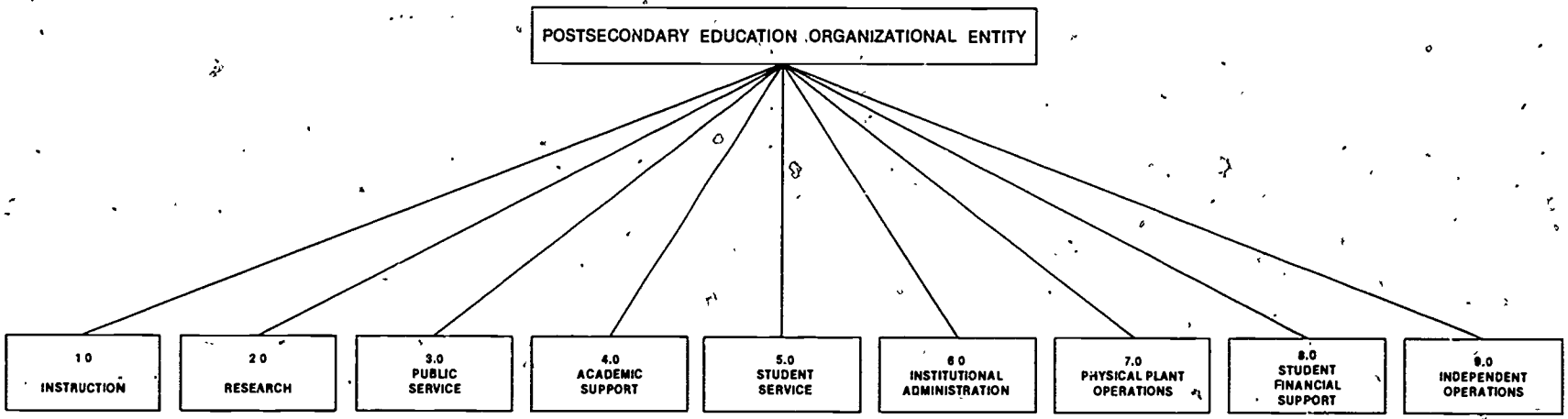
  The producer/facilitator dimension is critical in any attempt to identify, classify, or analyze outcomes because different types or levels of programs and organizational units are designed to produce particular kinds of outputs and impacts. For example, many of the outcomes intended for an introductory biology course may be different from those intended for an advanced biology course, for a degree-oriented program in the biological sciences, for a biology department, or for the institution as a whole.

  One major problem with the producer/facilitator dimension is referred to as the "jointness problem," where two or more types of programs or other organizational units may have contributed to the production of a particular outcome, and it is difficult to

[5] The focus on institutions and their component programs (as the "unit of analysis") also applies at the more composite levels of educational planning, for example, the use of outcomes information for educational decision making and policy development at the state and federal level.

Figure 2.2

REVISED 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

Reprinted from *Program Classification Structure—Second Edition,* by Douglas J. Collier, 1978.

ascertain their relative contributions (it may even be impossible to ascertain this). Therefore, a particular outcome can and often should be associated with more than one category of producer/facilitator—which suggests that "producer/facilitator" would not make a good formal dimension for the NCHEMS Outcomes Structure.

Another problem with using producer/facilitator as a dimension of the Outcomes Structure is that it is difficult to determine which producer/facilitator units actually contributed to the production of an outcome. The jointness problem is one reason. Another reason is that the environment of the institution, program, or other unit (such as student peers, atmosphere, and reputation) affects the outcomes produced by interaction with the producer/facilitator components. Similarly, a wide variety of methods, techniques, and tools can interact to constitute the process within the producer/facilitator unit of concern; and each combination might be expected to result in different educational outcomes. In addition, the input characteristics of the entities being acted on—such as the abilities of the incoming students—will make a difference in the outcomes to be expected and in the outcomes actually attained.

It is especially difficult to relate actual outcomes attained to specific program units because of the number of affecting variables and the complexity of the interactions, but it is still important to realize that there are such producers/facilitators. Environmental and climate variables, direct process variables, and input variables all affect the outcomes.

It should be kept in mind that there are other ways that producers/facilitators of outcomes can be categorized that could be just as useful in analyzing and evaluating outcomes. For example, instead of focusing on activities grouped according to the program categories of an organizational framework like the NCHEMS Program Classification Structure, one could focus on strictly purposive groups of activities, such as activities aimed at development of general or specific knowledge, development of competencies and skills, development of new knowledge and art forms, providing analytic and advisory assistance. Similarly, one could focus strictly on process—on types of activities, such as lecturing, discussion, investigation, preparing reports and newsletters, consulting.

- *Audience.* "Audience" refers to the persons, groups, organizations, communities, or other entities that receive or are affected by, or that are meant to receive or be affected by, the educational outcome(s) of concern. While on the surface this idea may seem straightforward, it actually presents one of the major difficulties in identifying and understanding educational outcomes. These difficulties result from the great complexity that characterizes the individuals, groups, communities, and other populations who directly or indirectly are served or affected (or are meant to be served or affected) by the outcomes of postsecondary education. According to Gross (1966), the performance of any social system consists of activities designed "to satisfy the interests of various 'interesteds'" (p. 184). An example of these various "interesteds" is provided in Figure 2.3, which is a reproduction of a table prepared by Gross (1966, p. 173), to illustrate the variety and complexity of social systems potentially affected by the actions of organizations such as colleges, universities, and other postsecondary education institutions. In addition to such "interesteds," particular institutional and program outcomes may be primarily aimed at and/or received by subpopulations of people having particular observable characteristics, such as retired persons, homemakers, women, blacks, and the verbally handicapped.

Because in planning, management, and evaluation it is crucial to keep straight who the outcome is aimed at, and because audience categories can be created that have little overlap, the "audience" factor was incorporated into the Outcomes Structure as one of the three formal dimensions. As outlined in Chapter 3, a number of different categories and subcategories were formulated for the "audience" dimension of the Structure (for a definition of any of the following categories, see page 24): (1) *Individual/Group Clients*—students, former students, family and relatives of the students and former students, peers and associates of students and former students, faculty, staff other than faculty, and other individual/group clients; (2) *Interest-Based Communities*—

Figure 2.3

GROSS'S ILLUSTRATION OF THE VARIETY AND COMPLEXITY OF INSTITUTIONS THAT CAN BE AFFECTED BY COLLEGES

VARIETIES OF SOCIAL SYSTEMS

	*People**	*Groups**		*Formal Organizations**				*Territorial Entities†*
Levels		*Informal Groups*	*Families*	*Associations*	*Enterprises*	*Government Agencies*	*Governments*	
Micro-systems	Individuals	Small groups	Nuclear families	Single associations	Single enterprise units	Single agencies	Local governments	Villages Local communities Neighborhoods
System clusters		Mobs Crowds	Extended families	Local, state, and regional federations	Multiunit enterprises or groups	Agency groups	Intergovernmental bodies State and regional	Towns and cities Metropoli Megalopoli Intranational states and regions
System constellations			Tribes	National federations	National multiunit enterprises or groups	Nationwide agencies	National states (unitary) or federal	Nations
Macro-systems				International federations	International multiunit enterprises or groups	International agencies	International regions or systems "Worldwide" governmental federations	International regions World

* These columns include only *simple* systems. *Complex* systems are networks composed of formal organizations (usually different types), groups, and individuals.

† As here defined, "territorial entity" includes a variety of other social systems within its spatial boundaries. Almost every territorial entity is a complex system.

Reprinted with permission of the publisher from "The State of the Nation: Social Systems Accounting" by B.M. Gross in *Social Indicators*, edited by R.A. Bauer. M.I.T. Press, Cambridge, Massachusetts, 1966, page 173.

private enterprise communities, association communities, government communities, non-governmental/public service communities other than the institution producing the outcome, the institution or institutional unit that caused the outcome to occur, and other interest-based communities; (3) *Geographic-Based Communities*—local community, the state, a region, the nation, an international community, and other geographic-based communities; (4) *Aggregates of People*—subpopulations based on ability level, age, educational level, occupation, physical disability condition, race, sex, and other factors.

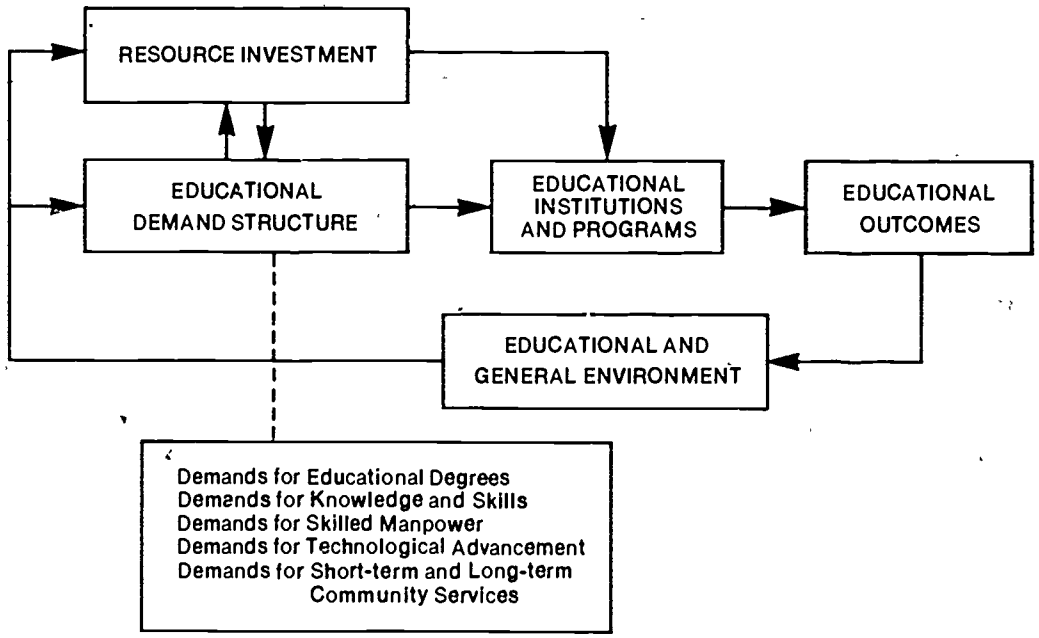
- *Intended/Unintended.* The "intended/unintended" factor helps to answer the "why" question. Outcomes are generally either "intended to occur" (in which case the producer/facilitator attaches a purpose or purposes to an outcome) or "not intended to occur" (in which case *no* purposes are attached to the outcome). Many of the negatively viewed educational outcomes that occur are not expected by those planning the educational activity that causes or facilitates them. They are "unintended outcomes," which may occur instead of the intended outcomes or along with the intended outcomes. Unintended outcomes are often referred to as "side effects," and particular side effects are often unexpected, but they may also be expected. Sometimes previous experience or research may suggest that negative side effects will occur but the planner considers the benefits of the intended outcomes to outweigh the negative side effects enough to warrant proceeding with the activity or program.

It should not be implied from the preceding discussion, and from the fact that intended outcomes are almost always viewed as being desirable by the educational planner, that the unintended outcomes are always or usually negative outcomes. A majority of side effects may be of positive value for some programs or activities.

Concerning intended outcomes, a major reason institutions and programs provide outcomes is because they will receive something of value in return. The focus on institutions and their component programs as the basic unit of analysis assumes that institutions supply educational goods and services because these are desired and demanded by various members of the society (or at least the institutions perceive a demand for these goods and services). In exchange, society provides financial and other necessary resources, plus perhaps nonpecuniary returns such as status and praise. Figure 2.4 depicts this educational exchange system.

Figure 2.4

THE EDUCATIONAL EXCHANGE SYSTEM



To produce educational goods and services efficiently and also to attract sufficient resources, institutions need to know the quality and types of educational goods and services that are produced. They also need to understand the costs, and what impacts these goods and services have on members of society.

Some organization theorists would stress that the major outcomes toward which all organizational entities are striving are survival, adaptation, and growth, with all other goals being subsumed under these three basic ones. Institutions and the people in those institutions, on the other hand, would stress altruistic purposes such as aiding the local community and its residents in particular ways, and exhibiting a concern for others and the welfare of society. In either case, the exchange system is operating. In exchange for helping the community, the members of the institution may receive altruistic satisfaction plus resources that will allow them to continue their assistance.

This discussion of the intended/unintended factor emphasizes two things. The first is that important unintended outcomes of postsecondary institutions and their programs do occur, and that the possibility of such outcomes needs to be considered in the planning and management process taking place within institutions. The second is that expressed purposes (plus perhaps some unexpressed purposes) will always be attached to intended outcomes by producers/facilitators, and that it is important to consider such purposes in planning for and analyzing educational outcomes.

- *Functional Area.* The "audience" factor, related to the "for whom" question, also says something about "where" the outcome is occurring (in individuals, in their homes, in their neighborhoods, and in a variety of communities). However, "where" also refers to functional areas within those various entities. Parsons (1951) formulated four functional or behavioral areas that apply to both individuals/groups and communities: (1) politics, (2) economy, (3) integration, and (4) maintenance. The life of any individual, group, institution, or community involves similar functional areas. A potentially useful formulation for presenting a picture of educational outcomes is to expand on the politics and economy categories so that each major functional aspect affected by postsecondary education is covered. One possible breakdown that may have potential for this purpose is: (1) economic outcomes, (2) educational/technological outcomes, (3) political outcomes, and (4) social/cultural/personal outcomes. Examples of outcomes for each of these functional areas are shown in Figure 2.5.

  Serious consideration was given to including the four functional areas as categories for one dimension of the Outcomes Structure. Although the term "function" is value laden, the antecedent terms are not; for example, the social/cultural/personal, economic, and political areas of focus in a person, group, or community can clearly be of either positive or negative value. Furthermore, the four areas have much meaning to educators (the traditional goals of education directly relate to them) and it is useful to think in such terms when analyzing outcomes. The problem, from the perspective of classifying outcomes, is that there is too much overlap among the classes. For example, most outcomes in the political area are essentially also outcomes in the social area, and developmental outcomes in almost every area could be considered outcomes in the educational area as well. (An "educational" category still would be needed, even though it could be considered to overlap all the other categories, to be able to classify such outcomes as degrees and program completers.) Because of this problem, a "functional area of occurrence" dimension was rejected for the Outcomes Structure. The concept did, however, influence the "type" dimension finally formulated; for example, note that it has classes such as "economic outcomes" and "art forms and works outcomes."

- *Time.* Time is the "educational outcome" factor that pertains to the "when" question. This factor has two important aspects: (a) the point-in-time when the outcome occurs, and (b) how long the outcome lasts.

  As described earlier, time is one of the *secondary* factors that distinguishes outputs from impacts. By definition, outputs occur only during or at the end of an institutional or institutional-unit process, while an impact can only occur after the output(s) that led to it,

Figure 2.5

EXAMPLES OF POSSIBLE OUTCOMES IN EACH OF FOUR DESIGNATED FUNCTIONAL AREAS OF PERSONS AND SOCIETY

	Individuals	Society[a]
ECONOMIC AREA	- Earnings - Promotions - Job Opportunities - Job Security - Job Satisfaction - Leisure - Participation in Group Decision Making - Technical Competency	- Growth of National Income - Growth of State and Local Income - Labor Productivity - Income Distribution - Structure of Manpower Pool (Distribution of Skilled Manpower vs. Unskilled Manpower) - Labor Mobility - Industry Structure (e.g., the relationship between academic disciplines and industries)
EDUCATIONAL/ TECHNOLOGICAL AREA	- Degrees - Reading Habits - Pursuit of New Knowledge - Public Speaking - Problem-Solving Ability - Understanding Social Issues - Writing Habits	- Educational Level of Society - Advancement of Social Science Knowledge - Advancement of Scientific and Technological Knowledge - Dissemination of New Knowledge - Intelligence of American People
POLITICAL AREA	- Political Attitude (e.g., liberalism vs. conservatism) - Skill in Evaluating Political Candidates - Frequency of Voting - Party Identification - Public Policy Orientation - Participation in Civic Activities - Political Letter Writing	- Public Policy Development - Supply of Political Candidates - Directions of Public Policy - Resolution of Social Conflicts - Election Outcomes - International Relations (e.g., exchange of scholars)
SOCIAL/CULTURAL/ PERSONAL AREA	- Religious Attitude - Appreciation of Art - Value Orientations (e.g., ethnocentrism vs. philanthropy, egalitarianism, etc.) - Traditional Values - Human Relations Skills - Personality Growth - Hobbies	- Character of Civic Culture - Crime Rates - Use of Drugs - Fertility Rate - Changes in Traditional Values - Aesthetic Cultural Development

[a] The societal outcomes listed here have been hypothesized by different people as being impacts of postsecondary education on our society—note that some would be considered to be of positive value by most people while others would be considered detrimental by many people. As indicated earlier, the extremely complex interactions continually taking place in society make it very difficult, and maybe impossible, to isolate the societal impacts of postsecondary education from the impacts of other social institutions and student experiences outside of postsecondary education. There is definite empirical evidence indicating that postsecondary education has a significant impact on many of these "outcomes," while others seem to be strictly conjecture.

although at any point after the output comes into being. The time when the outcome occurs is especially important for impacts because any educational impact can be expected to lead to other impacts. For analysis it is helpful to know when (in relation to the process) and where in the chain of intermediary impacts a particular impact fits. Lenning (1974) has combined "time when the outcome occurs" with "audience" and presented this causal chain as a pyramid where student outcomes constitute the base, postgraduate outcomes constitute the mid-section, and societal outcomes constitute the apex. The pyramid illustrates the fact that many societal outcomes of postsecondary education depend largely on students' postgraduate outcomes to bring them about, which in turn depend on the outcomes when they were students.

The time, expected time, or time preference of occurrence of an outcome in students' lives can have serious implications for data collection and analysis, for curriculum planning, and for other institutional decision making concerning students. Therefore Astin (1970) included "time of outcome" as one of the three dimensions in his taxonomy of student output measures, and Schwartz and Tiedeman (1957) included "time" as a dimension of their classification of educational objectives. But it seems impossible to specify particular categories of time that will satisfy most people's needs in classification of educational outcomes. Furthermore, time categories important for planning student outcomes often will have little or no meaning for other audience categories. For these reasons "time" was at first eliminated from consideration as a dimension of the NCHEMS Outcomes Structure presented in Chapter 3. In the end, however, to emphasize its strategic importance in the use of outcomes information, a "time" dimension was added that has no specifically defined categories (the categories to be applied are left up to the complete discretion of the user of the Structure).

Concerning how long the outcome lasts, an outcome can be of short duration or it can be of long duration, where the dividing line between "short" and "long" is relative and depends on the situation and the perceptions of the viewer. For one person or situation, an outcome persisting from graduation until a year later might be considered "short duration." For another person or situation, such persistence might be considered "long duration." Figure 2.6 gives examples of short-duration and long-duration outcomes for both outputs and impacts.

Summary

We have discussed six attributes or characteristics of an "educational outcome" plus five other factors important to an understanding of this concept. These attributes and factors are responses to a number of questions about outcomes. The questions, the attributes and factors associated with each, and what they mean are summarized below:

A. *What* are the characteristics and makeup of an "educational outcome"?

- *Form*—the basic configuration of the outcome as it is observed and/or measured. Outcomes can be separated into products, events, and conditions.
- *Change Status*—whether the outcome results in maintaining (preserving, replenishing, reproducing, or stabilizing) or changing (modifying, enriching, restructuring, or replacing) the existing condition or state of affairs.
- *Focus*—the basic, specific "what" that is maintained or changed to constitute the outcome of concern (knowledge, understanding, skills, attitudes, roles, certification status, jobs, income, social conditions, technology, art forms, and so forth).
- *Neutrality*—although people attach positive or negative value connotations to specific outcomes, the generic concept of "outcome" is a neutral one separated from any inherent value status.
- *Measurability*—the ease with which the outcome can be quantified or measured. Some outcomes are easily measured; others are difficult to measure.
- *Output/Impact*—whether there is a *direct link* between the outcome and its producer/facilitator (output), or an *indirect link* between the outcome and its producer/facilitator through outputs and intermediary impacts (impact).

Figure 2.6

EXAMPLES OF SHORT-DURATION AND LONG-DURATION OUTPUTS AND IMPACTS

	Outputs	Impacts
Short-Duration—Lasting but a little time; of brief duration. (Where the dividing line is between short-term and long-term should be decided on and defined by the institution and will depend on its particular needs.)	A college football game.	The enjoyment by spectators as they watched a college football game.
	Placement in an entry-level position in the "occupational world."	On-the-job learning experiences during the first year after college to prepare for a second-level advancement.
Long-Duration—Lasting an extended or permanent period of time; of great duration or longevity. (Where the dividing line is between short-term and long-term should be decided on and defined by the institution and will depend on its particular needs.)	Development of a vaccine for cancer.	Eradication of cancer from our society and the resulting increase in life expectancy.
	Holding of a degree.	Job security and greater lifetime earnings resulting from holding an earned degree.

B. *Which* institutional resources and activities are combined, and in *which* ways, to bring about the outcome(s) of concern?
   - *Producer/Facilitator*—the programmatic or functional activities of an educational institution or its components that produce and facilitate, or are intended to produce and facilitate, particular educational outcomes.

C. For *whom* is the outcome intended, or *who* actually received or was affected by it?
   - *Audience*—the persons, groups, organizations, communities, aggregations of people with common observable characteristics, activities or other entities that receive and/or are affected by (or are intended to receive or be affected by) the outcome of concern.

D *Why* will, or did, the outcome occur?
   - *Intended/Unintended*—whether the outcome was designed or planned to occur or whether it just happened. Included are the positive, negative, or neutral value connotations attached to an outcome by different people and groups, and the "exchange value" perceived for the outcome by its producer/facilitator.

E. *Where* will, or did, the outcome occur?
   - *Functional Area*—the functional areas within the various audience entities that are being affected by (or that are meant to be affected by) the outcome, such as economic, educational/technological, political, and social/cultural/personal.

F. *When* will, or did, the outcome occur?
   - *Time*—the time, or expected time, of occurrence of an outcome (such as prior to graduation, more than one year after graduation) and the duration or persistence of the outcome (how long it lasts).

Several of these attributes and factors served as a basis for dimensions of the Outcomes Structure described in Chapter 3: audience, change status, focus, and time. Others have implications for using the Outcomes Structure (for example, in developing lists of outcomes for different cells of the Structure) and in analysis of outcomes information.

Chapter 3
A PROPOSED OUTCOMES STRUCTURE FOR POSTSECONDARY EDUCATION

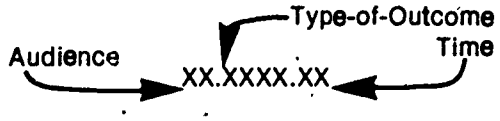
Introduction

By definition, a classification system (or structure) for outcomes consists of one or more dimensions divided into associated categories and subcategories for organizing, differentiating, and showing relationships among outcomes.[6] A large number of varied attempts have been made using many different dimensions to formulate classification systems for educational outcomes and such outcome-related concepts as goals and objectives. A list of over eighty such classifications found by Lenning (1977) is in Appendix A. All these classifications say something about outcomes and about organizing outcomes, and provided useful input to the current NCHEMS effort in this area, but several problems are present. Many of the classifications found appeared to be quite arbitrary in their content and organization, and had their basis in other than empirical studies. Those that are empirically based tend to be narrow in their area of focus, for example, classifying only particular kinds of student outcomes. Furthermore, most of the broader classifications consist only of simple lists of categories, and those remaining tend to go into little if any definitional detail. None of the broadly focused outcome classification systems cover the full range of potential postsecondary education outcomes. Therefore, this new attempt was made to structure outcomes in a useful way, and the proposed system is described in this chapter.

In certain past attempts to structure educational outcomes, educators with particular philosophical and theoretical orientations have felt that the structure favored other philosophies or theories of education and was biased against their own because of the nature of its organization and/or content. Therefore, special care was taken to eliminate value and philosophical connotations as much as possible from the NCHEMS Structure. It is probably impossible to eliminate such bias completely, however.

An in-depth discussion of the concept of "educational outcome" that underlies the structure presented here was given in Chapter 2. A number of the attributes and other factors discussed there, each contributing to an understanding of a particular educational outcome, were considered for use as a dimension of the NCHEMS Outcomes Structure: form, change, status, focus, output/impact, audience, functional area, and time. Two of the factors were selected as appropriate dimensions for the Structure: "audience" and "time." Two of the other factors discussed in Chapter 2, "focus" and "change status," were combined into a third formal dimension for the structure, labeled "type-of-outcome." Figure 3.1 shows these three dimensions in relation to one another, and diagrams the NCHEMS Outcomes Structure in its simplest and broadest form. Figure 3.2, in turn, is a diagrammatic overview of the Structure that shows these dimensions with their major categories added.[7] Each of the dimensions is discussed separately in the following sections of this chapter, and then the entire Outcomes Structure is described in more detail.

Outcome category code numbers identifying particular outcomes are used throughout this chapter. As will be discussed later, the code numbers assigned to a particular outcome consist of three sets of numerical digits separated by periods, where the first set identifies the audience category, the second set the type-of-outcome category, and the third set the time category into which the outcome falls, as shown below:



[6] For example, time could be used as a dimension for an outcomes structure and could have categories of "short term" and "long term" or of Time 1, Time 2, Time 3, and so forth. Other possible dimensions have been outlined by Goodman (1971) and include observability, economic/noneconomic, measurability, quantitative/qualitative, individual/social returns, and internal/external returns.

[7] Note in the three-dimensional matrix of Figure 3.2 that cells are formed which correspond to a specific "audience" category, a specific "type-of-outcome" category, and a "time" category. Three examples have been shown (indicated by X's).

A coding scheme has several important uses in a structure such as this. First it provides a shorthand for referring to specific cells in the matrix formed by the three dimensions. For example, it is much more efficient and easy to write "20.2000.10 outcomes" or to say "Code twenty-point-two thousand-point-ten outcomes" than to write or say "knowledge, technology, and art form outcomes occurring during Time 1 for interest-based communities." This is true especially if one is classifying a large number of specific outcomes, outcome information items, or outcome measures at a fine level of detail. Second, such numbers provide a readily available, consistent, and meaningful computer storage location code for every category of outcome in the Structure, for computerized, or manual, outcome information retrieval systems.

The "Audience" Dimension

This dimension is intended to aid in the classification of outcomes by identifying who or what receives or is affected by the outcome of concern. That is, it is designed to determine the person, community, or other entity that actually receives or is affected by (or is intended to receive or be affected by) a particular output or impact. For the purpose of the current version of the Outcomes Structure, the categories and sub-categories (second-level categories) listed in Figure 3.3, along with their associated code numbers, will be used to classify outcomes according to audience.

For many planning purposes, a third level of detail is often needed for some second-level audience

Figure 3.1

ILLUSTRATION OF THE THREE DIMENSIONS OF THE NCHEMS OUTCOMES STRUCTURE

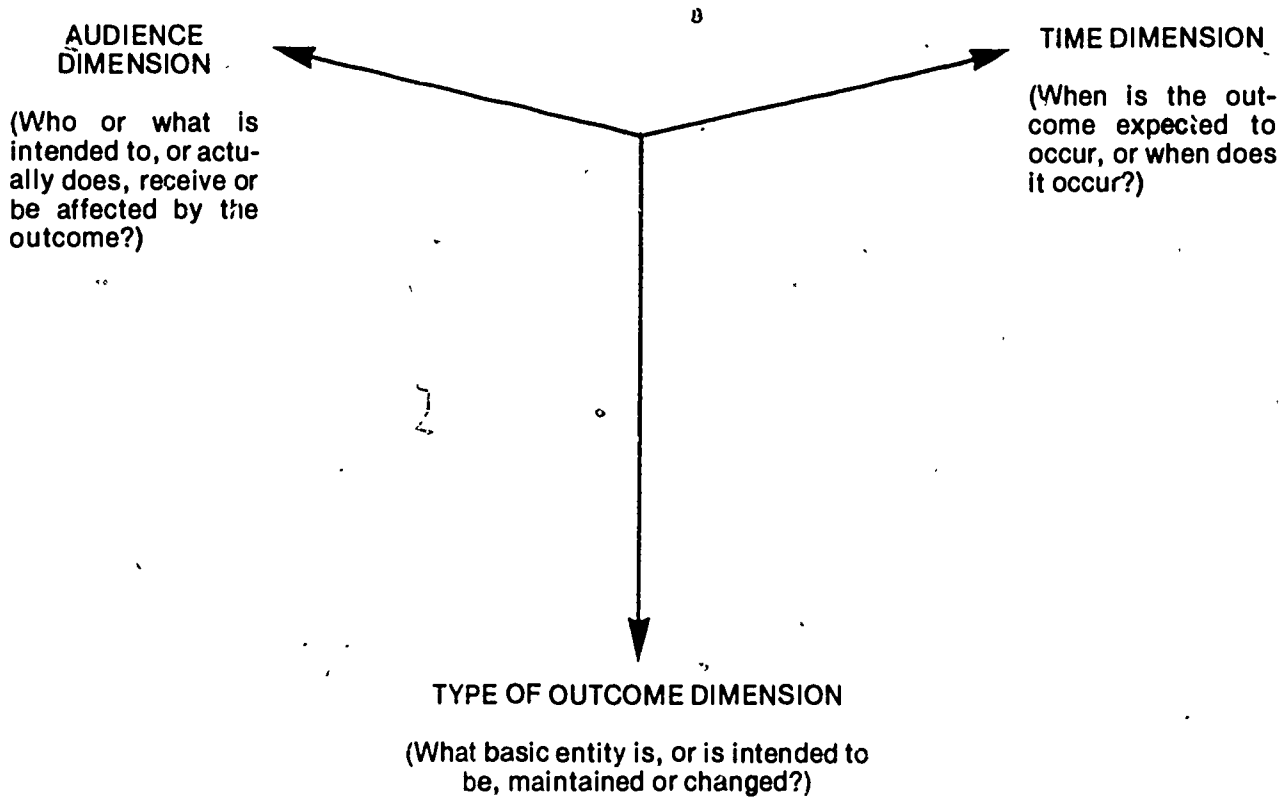


Figure 3.2

DIAGRAMMATIC OVERVIEW OF THE NCHEMS OUTCOMES STRUCTURE

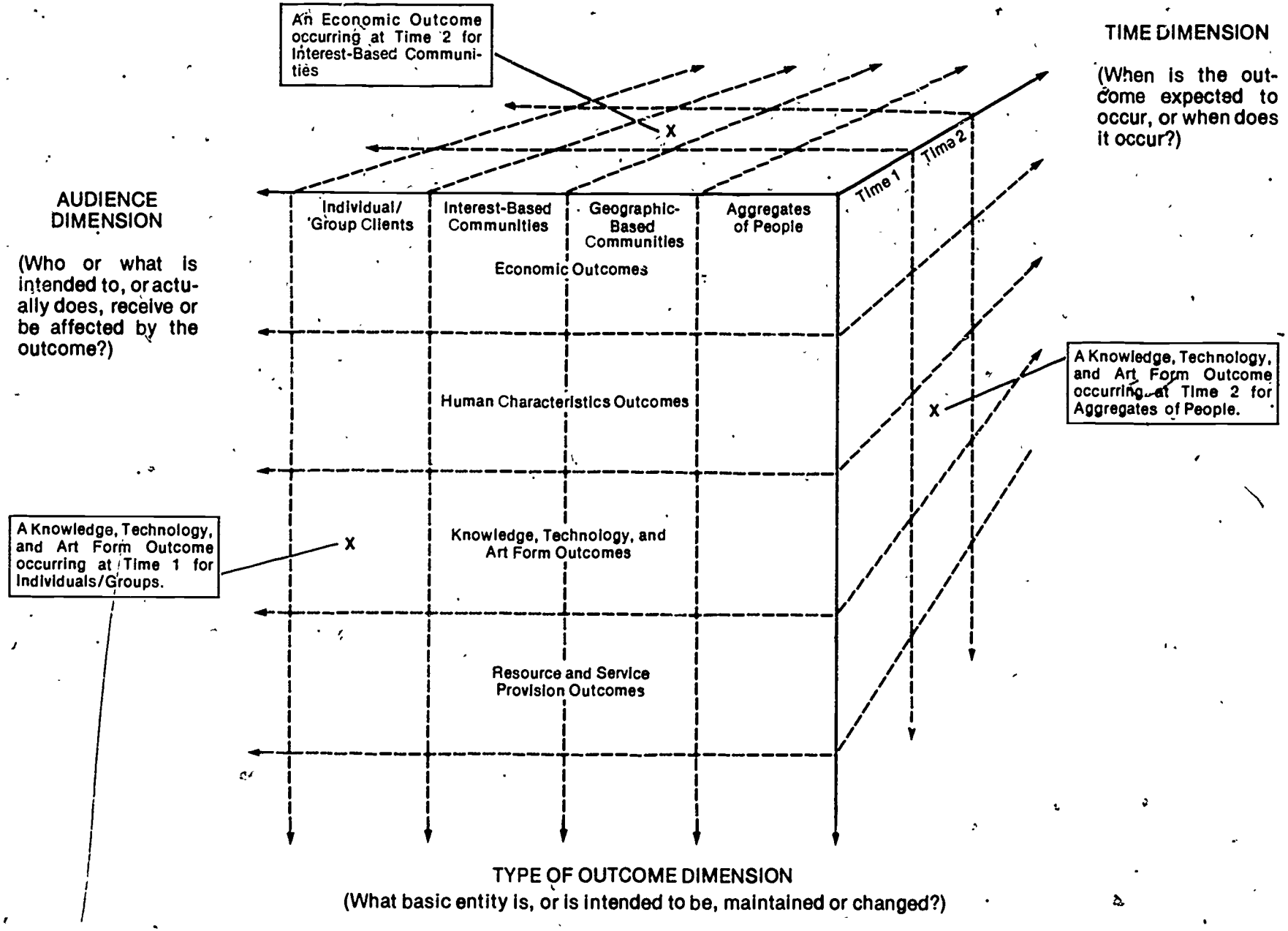


Figure 3.3

THE CATEGORIES AND SUBCATEGORIES OF THE AUDIENCE DIMENSION

10. *Individual/Group Clients*—This category refers to persons or groups of persons who are direct clients of the postsecondary education unit of concern and/or their immediate associates, such as family and relatives or peers.

    11. *Students*—Individuals or groups of individuals who currently are enrolled in the program, institution, or system of postsecondary education.

    12. *Former Students*—Individuals or groups of individuals who formerly were enrolled in the program, institution, or system of postsecondary education.

    13. *Family and Relatives of Students or Former Students*

    14. *Peers and Associates of Students or Former Students*

    15 *Faculty*

    16. *Staff Other than Faculty*

    17 *Other Individual/Group Clients*—An example would be an individual who is none of the above but is served by an advisory service offered by the college.

20. *Interest-Based Communities*—This category refers to large groups that are identified as entities working toward *a well-defined interest or mission.*

    21. *Private Enterprise Communities*—Communities where a major purpose is financial remuneration and profit—for example, corporations, small businesses, and farmers

    22 *Association Communities*—Communities where members belong on the basis of affiliation rather than employment, such as unions and professional societies.

    23. *Government Communities*—Communities designed to administer government regulations and services, such as city hall, state department of education, and legislative communities.

    24. *Nongovernmental/Public Service Communities Other than the Institution Producing the Outcome*—Nonprofit service organizations, such as schools, hospitals, welfare agencies, philanthropic foundations, colleges (other than the college producing the outcome), and research organizations

    25. *Institution or Institutional Unit Producing the Outcome*—The postsecondary education institution and/or units within that institution that are perceived as the producer/facilitator of the outcome(s) of concern.

    26 *Other Interest-Based Communities*—An example would be an ad hoc coalition task force of representatives from two or more of the above areas.

30 *Geographic-Based Communities*—This category refers to large groups defined on the basis of *functional territorial boundaries.*

    31 *Local Community*—A township, city, county, metropolitan area or other type of locality having particular boundaries. It is not necessarily restricted to the legal or jurisdictional boundary, but the functional one in which the impact of the institution is (or should be) directly and physically felt. The boundaries will vary with the institution/program and outcome of concern.

    32 *The State*

    33. *A Region*—An aggregation of states or parts of states.

    34. *The Nation*

    35. *An International Community*

    36 *Other Geographic-Based Communities*—An example would be a research discovery that affects primarily people living in the coldest latitudes, or where it snows heavily.

40 *Aggregates of People*—This category refers to subpopulations of people *distinguished by particular characteristics that may indicate common concerns, needs or wants*, but who do not necessarily have a common interest or mission, and therefore do not constitute communities.

    41. *Ability Level Subpopulations*—Subpopulations defined according to level of ability/proficiency, on general intellectual functioning or specific skills—for example, gifted, typical, disadvantaged, or skilled, semi-skilled, unskilled.

    42. *Age Subpopulations*

    43. *Educational Level Subpopulations*

    44 *Income Level Subpopulations*

    45. *Occupation Subpopulations*

    46. *Physical Disability Condition Subpopulations*

    47. *Race Subpopulations*

    48. *Sex Subpopulations*

    49. *Other Such Aggregates*

50 *Other Audiences*—Examples would be the natural environment that is affected by university-sponsored research (which in turn would be expected to have impacts on audiences such as individuals and communities) and populations of animals (such as the animals affected by efforts to keep depleted species from becoming extinct or by the development of veterinary medicines).

categories. The third-level categories needed vary with the producer/facilitator level of analysis—for example, institutionwide administrators may need to examine student outcomes separately for different degree-aspiration groups, while program administrators may need to examine student outcomes separately for those majoring in the program and those only taking courses in the program. Similarly, they can vary according to functional concern—for example, at the program level one administrator may need to compare full-time to part-time students, another may need to compare according to whether or not they are majoring in the program, and a third may need to compare according to whether or not the students are disadvantaged socioeconomically or otherwise. See Appendix C for procedures to use in adding a third level of categories to this dimension that will meet the planner's needs.

The "Type-Of-Outcome" Dimension

The type-of-outcome dimension identifies whether or not the outcome involves a change in status (maintenance versus change), and the "focus" of the maintenance or change (the basic entity that is maintained or changed, such as knowledge and understanding, skills and competencies, attitudes and values, certification status, income, standard of living, social interactions, and art forms or expression). Four levels of specificity are included in the Structure for this dimension, which means that any category of "type-of-outcome" can be identified by a four-digit code number. The five major categories (the top-level categories) are coded and defined as follows:

Category Code Number	The Major "Type-of-Outcome" Category Names and Definitions
1000	*Economic Outcomes*—Maintenance or change in economic characteristics and conditions of individuals, groups, organizations, and communities, e.g., in economic access, in economic mobility and independence, in economic security, and in income and standard of living.
2000	*Human Characteristic Outcomes*—Maintenance or change in human makeup and characteristics (other than knowledge and understanding) of individuals, groups, organizations, and communities, e.g., aspirations, competence and skills, affective characteristics, perceptual characteristics, physical and physiological characteristics, personality and personal coping characteristics, recognition and certification, and social roles.
3000	*Knowledge, Technology, and Art Form Outcomes*—Maintenance or change in the knowledge and understanding, technology, or the art forms and works possessed or mastered by individuals, groups, organizations, and communities, e.g., discoveries and inventions, technical developments, syntheses and reformulations of knowledge, new schools of thought in art and works created in those new traditions, renovation of art works.
4000	*Resource and Service Provision Outcomes*—Maintenance or change in the *direct* resources and services (other than those included above) provided to individuals, groups, organizations, and communities, e.g., providing facilities, events, advisory assistance, analytic assistance, teaching, health care, and leadership.
5000	*Other Maintenance and Change Outcomes*—Examples would be: maintenance or change in the format, arrangement, activity, or administrative operation of an organization or institution; maintenance or change in the aesthetic/cultural level of the local community; maintenance or change in family or community activities, practices, and traditions.

Figure 3.4 lists the names and code numbers for all second- and third-level categories of the "type" dimension, separately for each top-level category. Definitions for each of these more-detailed categories, along with examples of indicators or measures for each specific type of outcome, are given in Appendix B. *The majority of the outcome indicator examples listed in Appendix B concern outcomes for individuals, but it should be remembered that composites of these are in many cases outcomes for communities and other populations, for example, geographic mobility, economic security, and annual or lifetime earnings.*

The fourth level of detail for this dimension (identified by the fourth digit in the type-of-outcome code number) consists of two categories that have already been referred to throughout the discussion of the dimension, namely, "maintenance" and "change." These two types of outcome goals require quite different orientations and approaches in planning and management, and they have been considered by different people throughout the decades to represent the fundamental purposes of postsecondary education (for example, *preserving* the culture versus *improving* the condition of mankind). Too often planners think only of bringing about change, and do not even think to consider maintenance outcomes in their planning. Similarly, many times educators have failed to distinguish whether a particular goal is focusing on maintenance, change, or both maintenance and change—this in spite of the quite different approaches and orientations required when emphasizing maintenance as compared to emphasizing change. For these reasons, it was decided to make these categories a part of this dimension. Definitions for each category follow:

xxx1. *Maintenance*—Outcomes that result in keeping the status quo; in stabilization, reproduction, or preservation. Examples include preserving cultural values, restoration of artifacts and paintings, keeping up the educational level of the family, and skill maintenance provided by in-service education.

xxx2. *Change*—Outcomes that result in alteration of the status quo; in reorganization, modification, revision (improvement or otherwise), or replacement. Included are economic and social mobility, degree or certification awarded the student, increased knowledge and skill level, new art forms, technological innovations, medical discoveries, and so forth.

As shown above, a "type dimension" fourth-level digit of "1" indicates a maintenance outcome, while a fourth-level digit of "2" indicates a change outcome. As is true for the categories at any other level of detail, a zero indicates "no distinction for the categories at this level" or "both the categories at this level apply."

Some people, while acknowledging the historical social importance for higher education of the "maintenance" concept of an educational outcome, have questioned its practical, direct usefulness in administrative planning for institutions and programs. Therefore, perhaps an example should be cited. Lenning, Munday, and Maxey (1969) conducted a study where they examined student educational growth, adjusted for initial level of ability, using analysis of covariance, in four subject areas: English, mathematics, social studies, and natural sciences. Student educational growth was operationally defined as change in ACT retest score for each area after two years of college experience. For each of five colleges and universities, the educational growth in each subject area was compared for those taking courses in the area to those not taking courses in the area. It was discovered at one private liberal arts college that *both* groups decreased appreciably on retest in the area of mathematics—exhibited negative educational growth. In conversing with institutional officials, it was discovered that many of their students taking math went directly into calculus. Since the test measures primarily basic mathematics skills, such as algebraic manipulation, a reasonable hypothesis for the negative growth in math seems apparent: their mathematics students probably were getting little or no practice in using basic math skills in the more advanced math courses they were taking, and they were becoming "rusty" on those skills as a result. Such findings on a campus may suggest to mathematics faculty that they should consider building some periodic, short practice exercises using basic math skills into the more advanced mathematics courses, so that the students maintain proficiency in those skills.

The categories and subcategories for this "type-of-outcome" dimension are based on and extend from a variety of previous work. Much careful

Figure 3.4

CODED LISTING OF THE SECOND- AND THIRD-LEVEL SUBCATEGORIES FOR EACH FIRST-LEVEL CATEGORY OF THE TYPE-OF-OUTCOME DIMENSION[a]

Category Code Number	Entity Being Maintained or Changed
1000	*ECONOMIC OUTCOMES*
1100	Economic Access and Independence Outcomes
1110	Economic Access
1120	Economic Flexibility, Adaptability, and Security
1130	Income and Standard of Living
1200	Economic Resources and Costs
1210	Economic Costs and Efficiency
1220	Economic Resources (including employees)
1300	Economic Production
1310	Economic Productivity and Production
1320	Economic Services Provided
1400	Other Economic Outcomes
2000	*HUMAN CHARACTERISTIC OUTCOMES*
2100	Aspirations
2110	Desires, Aims, and Goals
2120	Dislikes, Likes, and Interests
2130	Motivation or Drive Level
2140	Other Aspirational Outcomes
2200	Competence and Skills
2210	Academic Skills
2220	Citizenship and Family Membership Skills
2230	Creativity Skills
2240	Expression and Communication Skills
2250	Intellectual Skills
2260	Interpersonal, Leadership, and Organizational Skills
2270	Occupational and Employability Skills
2280	Physical and Motor Skills
2290	Other Skill Outcomes
2300	Morale, Satisfaction, and Affective Characteristics
2310	Attitudes and Values
2320	Beliefs, Commitments, and Philosophy of Life
2330	Feelings and Emotions
2340	Mores, Customs, and Standards of Conduct
2350	Other Affective Outcomes
2400	Perceptual Characteristics
2410	Perceptual Awareness and Sensitivity
2420	Perception of Self
2430	Perception of Others
2440	Perception of Things
2450	Other Perceptual Outcomes
2500	Personality and Personal Coping Characteristics
2510	Adventurousness and Initiative
2520	Autonomy and Independence
2530	Dependability and Responsibility
2540	Dogmatic/Open-Mindeo, Authoritarian/Democratic
2550	Flexibility and Adaptability
2560	Habits
2570	Psychological Functioning
2580	Tolerance and Persistence
2590	Other Personality and Personal Coping Outcomes
2600	Physical and Physiological Characteristics
2610	Physical Fitness and Traits
2620	Physiological Health
2630	Other Physical or Physiological Outcomes
2700	Status, Recognition, and Certification
2710	Completion or Achievement Award
2720	Credit Recognition
2730	Image, Reputation, or Status
2740	Licensing and Certification
2750	Obtaining a Job or Admission to a Follow-up Program
2760	Power and/or Authority
2770	Job, School, or Life Success
2780	Other Status, Recognition, and Certification Outcomes
2800	Social Activities and Roles
2810	Adjustment to Retirement
2820	Affiliations
2830	Avocational and Social Activities and Roles
2840	Career and Vocational Activities and Roles
2850	Citizenship Activities and Roles
2860	Family Activities and Roles
2870	Friendships and Relationships
2880	Other Activity and Role Outcomes
2900	Other Human Characteristic Outcomes
3000	*KNOWLEDGE, TECHNOLOGY, AND ART FORM OUTCOMES*
3100	General Knowledge and Understanding
3110	Knowledge and Understanding of General Facts and Terminology
3120	Knowledge and Understanding of General Processes
3130	Knowledge and Understanding of General Theory
3140	Other General Knowledge and Understanding
3200	Specialized Knowledge and Understanding
3210	Knowledge and Understanding of Specialized Facts and Terminology
3220	Knowledge and Understanding of Specialized Processes
3230	Knowledge and Understanding of Specialized Theory
3240	Other Specialized Knowledge and Understanding
3300	Research and Scholarship
3310	Research and Scholarship Knowledge and Understanding
3320	Research and Scholarship Products
3400	Art Forms and Works
3410	Architecture
3420	Dance
3430	Debate and Oratory
3440	Drama
3450	Literature and Writing
3460	Music
3470	Painting, Drawing, and Photography
3480	Sculpture
3490	Other Fine Arts
3500	Other Knowledge, Technology, and Art Form Outcomes
4000	*RESOURCE AND SERVICE PROVISION OUTCOMES*
4100	Provision of Facilities and Events
4110	Provision of Facilities
4120	Provision or Sponsorship of Events
4200	Provision of Direct Services
4210	Teaching
4220	Advisory and Analytic Assistance
4230	Treatment, Care, and Referral Services
4240	Provision of Other Services
4300	Other Resource and Service Provision Outcomes
5000	*OTHER MAINTENANCE AND CHANGE OUTCOMES*
5100	Aesthetic-Cultural Activities, Traditions, and Conditions
5200	Organizational Format, Activity, and Operation
5300	Other Maintenance and Change

[a] The fourth-level categories, into which any of the categories listed here can be divided, are "maintenance (a fourth digit of "1") and change (a fourth digit of "2")

work went into their formulation.[8] However, some users of the Structure may wish to bypass particular levels, or combine or modify some of the categories at those levels, and the Structure is designed to facilitate such modification. It is important that a structure such as this be flexible and modifiable.

The "Time" Dimension

Time has always been considered an especially important factor for many student outcomes. Particular teaching content and activities do not have much effect until the time a student is "ready" for them, and there are presumably specific times when curriculum materials and emphases of different types will have maximum influence. For example, an understanding of the principles of advanced calculus cannot readily occur until the student has mastered basic freshman mathematics. Similarly, many students may not be ready to choose a college major until after they have chosen a vocation. Another time consideration is that some educational outcomes would be expected to occur earlier than others, and many will differ in how long they last or persist (for example, short-duration outcomes versus long-duration outcomes). Such factors have important implications for goal setting and determining priorities, as well as for other planning activities. To illustrate, outcomes that occur at or prior to graduation are more often a direct focus of planning than are impacts of those outcomes after graduation, because the institution has some direct control over them. On the other hand, if the relationship of those outcomes to the later impacts can be ascertained, the later impacts may also have *some* influence on priorities and on communication to the public about outcomes. As stated by Havighurst (1952), to support his time-related concept of developmental tasks:

> There are two reasons why the concept of developmental tasks is useful to educators. First, it helps in discovering and stating the purposes of education in the schools. Education may be conceived as the effort of the society, through the school, to help the individual achieve certain of his developmental tasks. The second use of the concept is in the timing of educational efforts. When the body is ripe, and society requires, the self is ready to achieve a certain task, the teachable moment has come. [p. 5]

It is not surprising, then, that Schwartz and Tiedeman (1957) included a time dimension in their general classification of educational outcomes, as did Astin (1970) in his taxonomy of student output measures in higher education. Although requiring different time categories from those relevant for student outcomes, time is important also for planning and analysis of nonstudent outcomes—for example, research and scholarship outcomes, art forms and works outcomes, and economic outcomes for society. Thus, "time" was made a dimension of the NCHEMS Outcomes Structure. Agreement could not be reached on time categories to include in the dimension, however, so it has no defined categories (just Time 1, Time 2, Time 3, and so on).

For student outcomes, strong proponents can probably be found for any one of the following four categorizations: (1) year by year; (2) Astin's (1970) suggestion for use in analysis of "end of sophomore year," "at graduation," "one year out of college," and succeeding points in time; (3) Havighurst's (1952) categories of "adolescence," "early adulthood," "middle age," and "later maturity";[9] and (4) "short-term outcomes" and "long-term outcomes," where the defined boundary between the two classes depends on the situation and perceptions of the classifier. Undoubtedly some people would favor categorizations other than the possibilities mentioned above, including combinations and modifications of those cited.

Another problem, even if the categories are limited to student outcomes, is that the time categories of interest are different depending on the philosophy of the user and the particular use or need in his or her context. To illustrate, a

[8] The "focus" categories and subcategories (the top three levels of categories for the "type-of-outcome" dimension) development started from the NCHEMS Inventory of Higher Education Outcome Variables and Measures (in Micek and Wallhaus, 1973) and involved a synthesis and modification of many "type" classifications found in the literature, with particular influence being exerted by classifications based on or tested out using the results of educational, psychological, and sociological research Astin (1970), Bloom (1956), Brubacher (1968), Chickering (1969), Dressel and Mayhew (1954), French (1957), Goodman (1371), Gronlund (1971), Gross and Grambsch (1968), Havighurst (1952), Healy et al (1971), Holland and Richards (1965), Klingberg (1970), Krathwohl et al. (1964), Lenning et al. (1974, 1975), Pace (1972), Peterson (1971), Schalock (1972), Schalock et al. (1972), and Vernon (1950). In deciding among discrepancies, and when definitions of terms were needed that dictionaries could not provide, text books in the pertinent discipline were referred to, and technical specialists were consulted as needed The "change in status" categories (the fourth-level categories) for this dimension were primarily motivated by formulations of Derr (1973) and Parsons (1951).

[9] The potential importance of long-term follow-up of college graduates (for example, at "middle age") is great. For example, in a personal conversation with the senior author of this document, David R. Witmer reported that his current research has found income at age 40 to be the best predictor of social economic rate of return from college attendance.

curriculum developer will probably need a quite different set of time categories than will a campus administrator concerned with general campus-wide outcomes. For these reasons, it was decided to leave any specific categorizing (and definitions for those categories) up to each individual using the Outcomes Structure. For some purposes, users of the Structure may decide not to use the time dimension of the Structure, or they may decide to use it for only certain types of outcomes (for example, for student *impacts*, but not for student *outputs* or for nonstudent outcomes).

The NCHEMS Outcomes Structure

This section includes a more detailed overview of the NCHEMS Outcomes Structure than was shown in Figure 3.2 on page 23. Since the "time" dimension was not assigned defined categories, the focus of discussion here will be on the matrix formed by the intersection of the "audience" and "type-of-outcome" dimensions. This does not negate the importance of the "time" dimension, however, nor the fact that at least some users of the Structure will want to decide on appropriate time categories and classify outcomes along that dimension also. As implied in the preceding section, time is as essential a dimension from which to view educational outcomes as either of the other two dimensions of the Structure.

Figure 3.5 is a more detailed drawing of the audience/type-of-outcome matrix than shown in Figure 3.2. Note that there are a total of 696 cells even though the third- and fourth-level categories for the "type-of-outcome" dimension are not represented in the drawing. Such a large number of cells is perhaps too many for anyone to keep track of, let alone the 5,220 subcells resulting when the additional two levels of detail for the "type-of-outcome" dimension are added. But it should be remembered that the majority of those using the Structure will probably be concerned with only one or two of the major cells, and perhaps only some of the subcells within each of those cells will be of concern. By glancing through the audience and type-of-outcome category labels, the user of the Structure can quickly discover the cells and subcells on which attention should be focused.

As demonstrated in Figure 3.5, putting the code numbers for the two dimensions together (separated by a period), with the "audience" code listed first, gives codes for the cells. Reference to Figure 3.4 or Appendix B allows even more detail than Figure 3.5. Examples of more detailed outcomes than shown in Figure 3.5 are code number 11.2282 (change in physical and motor skills for students) and code number 31.2241 (maintenance of expression and communication skills in the local community).

For those wishing to also classify according to "time," a third set of figures could be added. Suppose, for example, that a user of the Structure developed the following categories and subcategories for "time," and assigned the indicated code numbers to each, which could be included with the code numbers for the other two dimensions (as a third set of numbers) to classify outcomes.

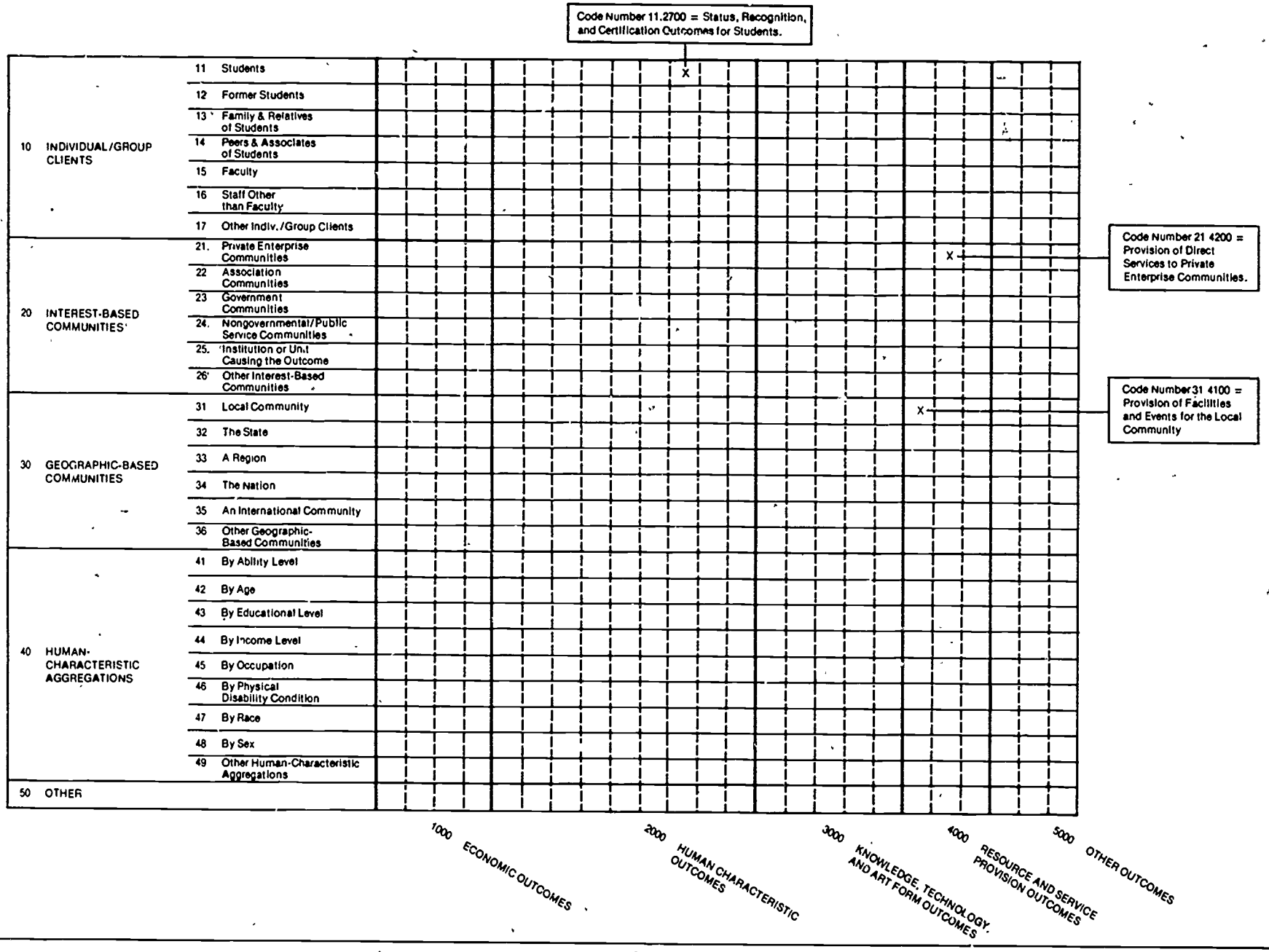
10. Short-Duration Outcomes	
11. Short-duration outcomes appearing at or prior to graduation	12. Short-duration outcomes appearing after graduation

20. Long-Duration Outcomes	
21. Long-duration outcomes appearing at or prior to graduation	22. Long-duration outcomes appearing after graduation

Examples of code numbers in this three-dimension classification follow: 13.1002.20—long-duration economic change outcomes for family and relatives of students or former students, 13.1002.22—long-duration economic change outcomes appearing after graduation for family and relatives of students or former students, 13.1132.22—long-duration change in income and standard of living appearing after graduation for family and relatives of students or former students, and 31.3001.21—long-duration knowledge, technology, and art form maintenance outcomes appearing at or prior to graduation for the local community (an example would be art students at the college helping local community residents preserve art objects).

Figure 3.5

A MORE DETAILED DRAWING OF THE AUDIENCE/TYPE-OF-OUTCOME MATRIX



For some purposes of postsecondary education decision making, the amount of detail shown in Figure 3.5 will be sufficient. For other purposes, however (and especially within the institution), *all four levels of detail* within the "type" dimension are needed—for example, in communication about very specific outcomes, in computer storage and retrieval of specific outcome information, in curriculum development, in planning for a course that focuses on just a few of the cells in the Outcomes Structure, and in developing a comprehensive list of specific outcome-oriented objectives in a broad area.

For some of these purposes, such as certain curriculum development and formulating outcome objectives for a course, even more detail may be needed than provided by the finest categories in the "type-of-outcome" dimension of the Structure. Suppose, for example, that a major objective in one program is to change student attitudes (Outcome Category 11.2312). The person may wish to subdivide this into the still finer categories of political attitudes, racial-ethnic attitudes, religious attitudes, personal ethics, and so forth, before trying to generate lists of specific outcomes. Other users of the Structure may need more detailed subcategories for the audience dimension (as discussed earlier), or for both dimensions. Appendix C discusses and gives guidelines for adding subcategories to any dimension of the Outcomes Structure (extending the structure). That appendix is meant only for those who determine that the Structure is not detailed enough in certain areas for their purposes.

Summary

A classification system for postsecondary education outcomes, called the Outcomes Structure, was developed that has three dimensions labeled as follows: "Audience," "Type-of-Outcome," and "Time." The first two dimensions have been assigned various categories and subcategories. No set categories that would be acceptable to most people in most postsecondary education contexts could be ascertained for the third dimension, "Time."

The "Audience" dimension of the Outcomes Structure refers to the things or persons intended to, or that actually do, receive or be affected by the outcome of concern. The categories and subcategories assigned to the "Audience" dimension are as follows: *Individual/Group Clients* (students, former students, family and relatives of students or former students, peers and associates of students or former students, faculty, staff other than faculty, other individual/group clients), *Interest-Based Communities* (private enterprise communities, association communities, governmental communities, nongovernmental/public service communities other than the institution producing the outcome, institution or institutional unit causing the outcome, other interest-based communities), *Geographic-Based Communities* (local community, the state, a region, the nation, an international community, other geographic-based communities), *Aggregates of People* (subpopulations based on ability level, age, educational level, income level, occupation, physical disability condition, race, sex, and other such aggregates), and *Other Audiences*.

The "Type-of-Outcome" dimension identifies the basic entity the outcome is focusing on, and whether or not the outcome of concern involves a change in status. The five major categories of "Type-of-Outcome" are listed below along with their associated subcategories. In addition, each of these categories and subcategories can be divided into "maintenance" and "change."

Economic Outcomes—Economic Access and Independence Outcomes (access; flexibility, adaptability, and security; income and standard of living), Resources and Costs (costs and efficiency; resources), Production (productivity and production; economic services provided), and Other Economic Outcomes.

Human Characteristic Outcomes—Aspirations (likes and dislikes; interests; desires, aims, or goals; motivation or drive level; other aspirational outcomes), Competence and Skills (academic; citizenship and family membership; creativity; expression and communication; intellectual; interpersonal and leadership; occupational; physical and motor; other skill outcomes), Morale, Satisfaction, and Affective Characteristics (feelings and emotions; mores, customs and standards of conduct; attitudes and values; beliefs, commitments and philosophy of life; other affective outcomes), Perceptual Characteristics (perceptual awareness and sensitivity; perception of self; perception of

others; perception of things; other perceptual outcomes), Personality and Personal Coping Characteristics (adventurousness and initiative; autonomy and independence, dependability and responsibility; dogmatic/open-minded, authoritarian/democratic; flexibility and adaptability; habits; psychological functioning; tolerance and persistence; other personality and personal coping characteristics outcomes), Physical and Physiological Characteristics (physical fitness and traits; physiological health; other physical or physiological outcomes), Status, Recognition, and Certification (admission to a follow-up program or job; completion or achievement awards; credit; image, reputation, or status; licensing; power and/or authority; other status, recognition and certification outcomes), and Social Activities and Roles (adjustment to retirement; affiliations; avocational and social activities and roles; career and vocational activities and roles; citizenship activities and roles; family activities and roles; friendships and relationships; other activity and role outcomes).

Knowledge, Technology, and Art Form Outcomes—General Knowledge and Understanding (general facts and terminology; general processes, general theory), Specialized Knowledge and Understanding (specialized facts and terminology; specialized processes; specialized theory), Research and Scholarship (research and scholarship knowledge and understanding; research and scholarship products), and Art Forms and Works Outcomes (architecture; dance; debate and oratory; drama and acting; literature and writing; music; painting, drawing and photography; sculpture; other fine arts).

Resource and Service Provision Outcomes—Provision of Facilities and Events (provision of facilities; provision or sponsorship of events), Provision of Direct Services (teaching; advising, analytic assistance; treatment, care, and referral services; provision of other services), and Other Resource and Service Provision Outcomes.

Other Maintenance and Change Outcomes—Aesthetic-Cultural Activities, Traditions and Conditions; Organizational Format, Activity, and Operation; Other Maintenance and Change.

Most users of the Outcomes Structure will need to focus on only a few categories of the structure. To determine the specific categories of concern, it is best to start with the braodest categories and narrow down from them. For those who need to separate outcomes into classes through use of a coding scheme, a code number is provided for every category and subcategory in the Structure. Furthermore, provision is made for the user of the Structure to subcategorize even further for one or more of the most specific subcategories within any category, and to assign code numbers to those added subcategories. This process has been called "extending the structure," and involves the use of other taxonomies and/or logical analysis.

Because the Outcomes Structure is intended to be flexible and adaptable, it is appropriate to modify it by eliminating unimportant (to the user) categories and subcategories, modifying particular categories and subcategories, substituting new dimensions for any of the three proposed, eliminating a dimension, or leaving out the code numbers. It should be recognized, however, that modifications may preclude using information derived from the Structure for comparisons outside the institution or agency making the modifications.

Chapter 4
PRINCIPLES AND CRITERIA FOR DEVELOPING AND EVALUATING THE OUTCOMES STRUCTURE

Introduction

As should be clear by now, the Outcomes Structure is an evolutionary product. It rests upon significant bodies of previous work and, the authors hope, will continue to grow and develop as time passes. Furthermore, as is evident from Lenning's review of previous attempts to structure outcomes (1977b), there are many dimensions that are logically defensible and that have potential usefulness as the framework for a classification of postsecondary education outcomes.

The Guiding Principles and Criteria

Because there were a large number of potentially useful dimensions to choose from in developing the Outcomes Structure, and because such a classification can be organized in a variety of ways, it seemed necessary to formulate some overall guiding principles or criteria for the development of the NCHEMS Outcomes Structure. Several developmental principles for the Structure were suggested intuitively by the needs of postsecondary education planners and managers: the principles of (1) *practical utility* and (2) *congruency with other decision-making tools*. Then, after reviewing literature in the field of taxonomy and studying the previous attempts to classify outcomes, seven other "guiding principles of classification" were added for use in developing the Structure: (3) comprehensiveness, (4) no overlap, (5) reliability, (6) neutrality, (7) hierarchy, (8) reality, and (9) flexibility. These various principles or criteria are discussed below.

1. *Practical Utility.* Chapter 1 outlined a number of important needs of planners and other decision makers in postsecondary education that potentially could be met by an outcomes structure. To recap, these include: (a) the need for a tool to organize, file, and retrieve significant volumes of outcomes information in a consistent and systematic way; (b) the need for agreed-upon outcome terms and definitions for more effective communication of outcomes information to many diverse groups; (c) the need for a device to assist in the identification of outcomes for which adequate quantitative measures are lacking; (d) the need for aids to help postsecondary institutions improve their goal definition and the translation of their goals into concrete objectives; (e) the need for planners and managers to show more succinctly how their institution differs from its counterparts; (f) the need for an aid in developing needs-assessment survey questionnaires aimed at different groups; and (g) the need for improved analysis and evaluation of institutional and program outcomes. The first principle for developing the Outcomes Structure was that it be designed to help meet these needs to the greatest extent possible. If an outcomes structure is to be a viable instrument, it must have real and perceived practical utility, especially for decision makers in postsecondary education.

2. *Congruency with Other Decision-Making Tools.* Related to the first principle of demonstrated practical utility is a second concerning the need for congruency with other commonly used decision-making tools, including those that have been developed by NCHEMS and by others. In order to have maximum utility, the Structure should interface as much as possible and complement such tools or aids. Outcomes information has limited utility in and of itself and must be combined with other types of information for adequate understanding of various programmatic and institutional activities and their results.

   Because a large proportion of users of other NCHEMS products would be expected to use the NCHEMS Outcomes Structure, it was

considered especially important that the Structure interface appropriately with planning and management tools developed by NCHEMS. (It should, as much as possible, also complement pertinent planning and management tools developed outside of NCHEMS, such as Pace's Kit, the ETS Institutional Goals Inventory, and the Battel needs assessment model.) The *Program Classification Structure* (Collier, 1978), which helps institutions and the postsecondary education systems of institutions enumerate and organize their programs and activities, was discussed in Chapter 2. Another general framework designed to help organize the large bodies of information necessary for effective planning is the NCHEMS *Program Measures* (Topping and Miyataki, 1973). The *Program Measures* document was intended to aid users of the Program Classification Structure (PCS) by describing six categories of quantitative indicators that could provide information about each of the program elements lodged in the PCS:

1. Resource Measures—the physical and human resources utilized within the program element during a stated time period.

2. Financial Measures—the source of funds and expenditures for physical and human resources utilized at a specified level of activity within a program element during a stated time period.

3. Activity Measures—the level and type of operations carried on within a program element during a stated time period.

4. Target Group Measures—the people, places, or things toward whom or at which the activities of a program element are aimed or directed during a stated time period.

5. Beneficiary Group Measures—the people or groups of people who benefit directly or indirectly from either the activities or outcomes of a program element during a stated time period.

6. Outcome Measures—the outcomes achieved or the products generated by the activities of a program element during a stated time period.

It was intended that these various categories of program measures could be arrayed against the PCS categories and that each type of information would then be generated about each component of interest within the PCS. This two-way matrix is summarized in Figure 4.1.

Figure 4.1

PCS/PROGRAM MEASURES FRAMEWORK

STRUCTURE	PROGRAM MEASURES					
PCS Program by PCS Levels	Resource	Activities	Financial	Target Groups	Beneficiary Groups	Outcomes
Instruction						
Research						
Public Service						
Academic Support						
Student Service						
Institutional Administration						
Physical Plant Operations						
Student Financial Support						
Independent Operations						

While the above two NCHEMS tools focus on formal educational activities, a third tool focuses on the institutional environment. The NCHEMS "Inventory of Institutional Environment Variables and Measures" (Micek and Arney, 1974a) should have an especially close relationship with the Outcomes Structure. Environmental phenomena are closely intertwined with outcomes for at least two reasons. One is the fact that the nature and degree of various outcomes is influenced and mitigated by these environmental phenomena. Thus, a student's satisfaction with his institutional program is conditioned in part by the surrounding environment of the institution.

A second reason for considering environmental factors in close juxtaposition with outcomes is the fact that one person's environment may well be another person's outcome. This is true particularly in the support program area. One point of view would consider physical facilities, such as libraries or student housing, as a part of the environment that is a necessary support for the instructional and research programs of the institution. On the other hand, institutions do allocate resources to the creation of this environment and thus it is, at least in part, an end or outcome in and of itself. One should note that our inadequate ability to measure outcomes directly quite often leads to the use of environmental phenomena as proxies for various outcomes. Thus, the number of books in a library's collection might well be considered a proxy for student growth and development outcomes.

For the present, the Outcomes Structure and the Inventory of Institutional Environment Variables and Measures are treated as separate entities. This does not preclude the possibility that these two products will be combined into a single structure at some later stage of development.

As noted in Chapter 1, the NCHEMS Inventory of Higher Education Outcome Variables and Measures (in Micek and Wallhaus, 1973) is a significant conceptual forerunner of the Outcomes Structure proposed in this document. The Inventory was a first attempt to develop a relatively complete characterization of educational institution outcomes and a set of operational indicators or measures associated with those outcomes. Structurally, the Inventory has the following major categories:

Section 1.0: Student Growth and Development Outcome Variables

- 1.1.0: Knowledge and Skills Development
- 1.2.0: Social Development
- 1.3.0: Personal Development
- 1.4.0: Career Development

Section 2.0: Development of New Knowledge and Art Form Outcome Variables

Section 3.0: Community Development and Service Outcome Variables

- 3.1.0: Community Development
- 3.2.0: Community Service
- 3.3.0: Longer Term Community Effects

As can be seen from the above, the Inventory is somewhat traditional in that it accepts the major divisions of outcomes or activities typically associated with higher education institutions. This naturally imposes certain limitations that the present structure is intended to remove. However, there is no implication that the bulk of the outcomes covered by the Inventory are in any way unimportant, nor that the Inventory will no longer be useful to planners and managers. Indeed, one constraint imposed upon the development of the proposed Outcomes Structure was that it should permit the incorporation of all the outcomes identified in the Inventory of Higher Education Outcome Variables and Measures. The Structure's "type-of-outcome" categories corresponding to each category of the NCHEMS Inventory are listed in Appendix D.

The *Outcome Measures and Procedures Manual* (Micek, Service, and Lee, 1975) is fundamentally a set of data acquisition procedures that are associated with only a subset of the full range of educational outcomes. The Outcomes Structure will serve a purpose in relation to this manual in that it will indicate which educational outcomes are susceptible to quantitative assessment and which are not.

An additional NCHEMS product for which the Outcomes Structure has potential implications for its continued development is the *Student*

Outcomes Questionnaires (Bower and Renkiewicz, 1977 a and b). These validated sets of data questionnaires and an associated manual are for use in different types of postsecondary institutions and are designed to assist institutional officials in conducting six kinds of student outcomes studies—student entry studies, students-in-progress studies, attrition studies, program completer studies, short-term follow-up studies, and long-term follow-up studies.

A number of other NCHEMS planning and management tools potentially relate to the Outcomes Structure, but those discussed are the ones of greatest significance. There are others, however, where future versions could be very much affected by what comes out of the Outcomes Structure. For example, the *Information Exchange Procedures* (to aid institutions in exchanging basic institutional information for planning purposes) and the *Academic Unit Planning and Management* manual (to aid department heads in their planning and decision making) both have outcomes modules that were influenced by previous NCHEMS outcomes products. Similarly, several tools being developed for state-level planners will have outcomes components, and outcomes will undoubtedly be a concern in a number of planning and management tools developed by NCHEMS in the future.

3. *Comprehensiveness.* One of the major problems with previous attempts at structuring outcomes was that they did not cover the entire array of possible educational outcomes. Therefore, a third principle for development of the Outcomes Structure was that it be as *comprehensive* as possible, or, as Wilhoyte (1965) labels it, the principle of "completeness." Derr (1973) used the term "exhaustive" and stated that two conditions were implied by this criterion: (1) there should be a definite place within the taxonomy for every member of the relevant universe; and (2) when all of the subclasses are added together they should equal the class from which they were formed. In other words, the Structure was to be designed so that literally *all* outcomes of postsecondary education could be included—including process variables that some would consider outcomes while others would not, such as number of books in the library and faculty/student ratio. There should be a place in the Structure for any outcome that can be conceived of today, as well as a place for factors that will come to be considered outcomes in the future.

4. *No Overlap.* The fourth principle for developing the Structure was that it include *mutually* exclusive categories to the greatest extent possible. This tends to conflict somewhat with the previous principle because attempts at greater comprehensiveness typically create more potential for overlap among categories. Nevertheless, it was felt that the utility of the Structure with respect to classification of outcomes would be significantly decreased if the principle of mutual exclusiveness were not applied.

5. *Reliability.* The Outcomes Structure was to be subject to the principle of reliability. As used here, this includes several principles used by previous developers of outcome-related classifications. Bloom's (1956) "logic" (logical and logically ordered subdivision) and "internal consistency" (terms are to have a consistent definition and to be used in a consistent manner throughout the classification) are subsumed under this term. So is Derr's (1973) "independent judges" criterion, which requires consistency in the classification of specific educational outcomes by different people. Also included is the principle stated by Simpson (1961) and other taxonomists that there be definite, separate classes and clear-cut definitions for each class, so that educational outcomes can be placed into the Structure with reasonable ease and consistency. The consistency of the definitions used is all-important to the success of the classification system.

6. *Neutrality.* A sixth principle was that the Structure and its components be a *neutral* tool. This follows a principle suggested by Bloom and his associates (1956). In other words, normative issues concerning whether a particular outcome is desirable or undesirable were *not* to be treated. Thus, for example, the Structure should permit incorporation of both positive economic benefits to the community from an institutions' presence (such as faculty spending) and negative economic benefits (such as land removal from the tax base).

There are several reasons for this position with respect to values. The most obvious is the fact that value systems differ and that the separation of good from bad outcomes will be accomplished differently by different individuals and groups. For example, an outcome such as liberalization of student attitudes can rather easily be seen to be positive or negative depending upon one's perspective. To put the matter somewhat more formally, the normative dimension was not to be included in the Structure simply because desirability versus undesirability is not an attribute of outcomes in and of themselves, but rather results from the perceptions and value systems of those who encounter such outcomes. A second and somewhat more pragmatic reason is also pertinent. The Outcomes Structure is intended to place some boundaries around the question of what constitutes the outcomes of postsecondary education. Logically speaking, then, it should include both positive and negative outcomes. Furthermore, the Structure is intended to be a vehicle for consensus building with respect to that boundary-setting question. Thus, arbitrary imposition of one particular set of values at this point in time is simply not appropriate.

Preventing values from entering into a classification system is extremely difficult, if not impossible, but they must be kept out as much as possible. The reason for the extreme difficulty is that factors other than the terms used may introduce the authors' values into the system. In particular, the dimensions and categories used, and the order in which they are listed, may be more amenable to and suggestive of certain outcomes than others. Ornell (1974) has expressed this problem especially well:

> The mechanism by which systems of classification impinge on questions of value is, in essence, that classifications tend to throw emphasis onto certain qualities, and tend to diminish the apparent significance of others. Behaviors which do not fit conveniently into the classification are broken up, and thereby apparently diminished in weight. Hegel's classification of movements of social thought into *theses* and anti-theses may have looked innocuous enough when it was first formulated. Surely, it must have been said, it is a tautology that one can always divide movements of social thought into these two categories? Does this not have the certainty of other analytic truths, such as "it is either raining or not raining"? Yet we now see that the dichotomy subtly prejudges the issue of whether, at any given time, there is a definite social "thesis;" and it can hardly be disputed that its effect is to encourage a polarization of society into prematurely identified positions. . . . it hardly needs to be said, therefore, that it is important to look at a given classification of educational objectives critically: to try to identify the hidden assumptions embodied in it, and to delineate the kinds of value-systems in education to which it may be usefully related. What one cannot do with intellectual credibility is to assume that the business of classifying educational objectives is a purely technical matter, which is independent of the central philosophical questions relating to the aims and values of education.
>
> Turning to Bloom's taxonomy of the cognitive domain, we find a way of subdividing objectives which puts "synthesis" and "evaluation" squarely at the top of the hierarchy. It may be argued that these are self-evidently "higher" objectives than those of analysis and application. But if we see this order of objectives as "self-evident," may we not be already presupposing the kind of value system which fits the taxonomy most neatly? [pp.3-4]

7. *Hierarchy.* A seventh principle used was the need for some hierarchy. Various hierarchies have been used in previous outcome-related classifications (for example, simple to complex, concrete to abstract, internalized to not internalized, short-term to long-term, duality to relativism). The point here is not that one particular hierarchy is better than another but rather that the inclusion of hierarchical order has some definite advantages for a classification. One of the advantages was pointed out by Blackwelder (1967) when he stated that "literally hundreds of facts" about a particular species are indicated merely by its location in the hierarchy of the zoological classification. Vickery (1968) noted another: "later additions to the array can be interpolated helpfully" (p. 41).

8. *Reality.* The Structure was to be based upon *reality.* In other words, the classifications used should reflect (to the extent they are shown) the most important or essential relationships among the different educational outcomes. Thus, the classification should conform to observed relationships or correlations among educational outcomes, and between outcomes and other factors. Furthermore, the classifications should conform to the latest, most relevant, and most accepted theory about different outcomes. Blackwelder (1967) has

referred to this as the principle of "correspondence"; Simpson (1961) labels it "objectivity."

9. *Flexibility.* Finally, it was deemed important that the Outcomes Structure have *functional flexibility.* Naturally, any classification should be designed to have maximum relevance to the context in which it is used. As Vickery (1968) stated, "characteristics of classes and subclasses should be chosen for their relevance to the purpose of the classification, their ascertainability, and their relative permanence" (p. 38). Since the Outcomes Structure is intended for a variety of different users, at different levels in an institution and outside of the institution, it is important that it be flexible and readily adapted by different users. It was specifically decided that this Structure should be useful for both analysis and classification.

Does the Structure Meet the Evaluative Criteria?

Only widespread trial use of the NCHEMS Outcomes Structure will show how well it meets the established criteria. However, reviewers of the Structure provided evaluative information prior to the completion of this document such that the authors believe the Structure will, for most uses, meet the criteria.

1. *Practical Utility.* Over 100 people from diverse backgrounds provided reactions to the Structure. In general, they expressed the opinion that it has potential to be of practical use to decision makers in postsecondary education institutions, and to researchers in the area of outcomes, and that it may be useful to some decision makers at the state and federal levels. A number of faculty members expressed the opinion that it could be useful in course planning (for which it was not designed) as well as in program planning. Several students and one student personnel administrator expressed the opinion that it even could be useful to students in planning what they want to get out of college.

   Based on a draft version of the applications document (Lenning, 1977a), the Structure was used at the University of Colorado to test the adequacy of several outcome lists, developed over a period of three years, which their staff was confident were comprehensive enough for the needs of the institution. The person who coordinated development of the lists was hired by NCHEMS to apply the Structure in the manner outlined in the draft manual. She had no previous knowledge of the Structure or the procedures outlined, and was not given any orientation to them. Nevertheless, she reported later that she was able to understand quickly the Structure and procedures, and had no trouble applying them (though this may be accounted for by her extensive previous work with outcomes concepts while developing their outcome lists). To the staff's surprise, application of the Structure revealed that several outcome areas they considered to be very important had been left out of their lists. Based on this discovery, they are revising their lists where indicated and modifying their freshman student questionnaire accordingly. For more information about this case study, see Endo and Lenning (1978).

   The Structure also was tested in a preliminary way at eight small liberal arts colleges by a project that NCHEMS conducted jointly with the Outcomes Learning Task Force of the Council for the Advancement of Small Colleges (Lenning, 1977c; Lenning and Lundin, 1977). For four of the colleges there were campus coordinators for the project who met ahead of time as a group with NCHEMS personnel to be oriented to the Structure and to be involved in planning for the project.

   Each campus was visited by a team composed of an NCHEMS staff member and a CASC Task Force member. The visits focused on introducing faculty to the use of the Outcomes Structure at departmental and institution-wide levels in relation to student-learning outcomes. A workshop of one-half day was used as orientation, followed by interviews during which the faculty members were asked to use the Structure to:

   (1) Identify student groups that should be considered separately for planning purposes within their program or area of most concern;

   (2) Rate, for each of those student groups, the relative importance of various type-of-outcome categories;

   (3) List specific, concrete outcomes—within selected categories—that they rated especially important;

(4) Identify specific evidence which would indicate that those outcomes had occurred; and

(5) Identify student experiences and activities that would do the most to promote those specific outcomes.

The interviews showed that the Structure could stimulate awareness of objectives of a program or an institution, as well as increase ability to examine outcomes more systematically and concretely. Some faculty commented that they found the Structure to be an aid in expressing the intended results of their work with students. A number indicated ways they believed the Structure would be useful (see Figure 4.2), and, in each case where there was time, interviewees were asked to rate the usefulness of the Structure. Responses to the rating question are shown in Figure 4.3. A number of those interviewed also commented on cautions and potential problems that might occur with use of the structure. These comments are listed in Figure 4.4.

Pairs of CASC Task Force members visited the four other colleges and interviewed faculty, administrators, and students. At these four institutions the interviews started with a discussion of student activities, after which an attempt was made to relate those activities to the outcome categories of the Structure type-of-outcome dimension. Many faculty members resisted the attempt to shift the focus to outcomes; they felt more comfortable talking about activities. The interviews did note that in most cases the Structure performed a useful function, however (Lenning and Lundin, 1977):

> The "CASC approach" was not built around the Structure, but utilized it in the attempt to make the transition from a focus on activities to linking activities to outcome areas. In this sense it was central to understandings of the relationships of activities to the larger purposes toward which these activities are directed. Without the Outcomes Structure categories, the faculty members could have focused on activities without any systematic examination of the larger purposes. The Outcomes Structure was also noted to serve as a taxonomic device for communicating outcomes across disciplinary lines. [p. 17]

One of the participating colleges (Spring Arbor College), as a follow-up to the campus visit, attempted still another application of the Structure. The campus coordinator, Dr. Ralph Sickmiller, used the second-level-of-detail categories of the type-of-outcome dimension to classify institutional and institutional-unit goals each into one of the five first-level categories of that dimension. The goals consisted of priority *Institutional Goals Inventory* statements and statements self-constructed by institutional faculty and staff. For the institution, and separately for each unit, a goal-profile line graph was drawn that indicated the number of goal statements found for each broad category. Comparisons of profiles with one another suggested that this procedure may have practical usefulness in defining goal differences and commonalities among units.

Other tests of practical utility will be necessary to substantiate the usefulness of the Structure in other contexts, but these preliminary tests proved encouraging with regard to this criterion.

2. *Congruency With Other Decision-Making Tools.* The Structure is a revision and an extension of the NCHEMS Inventory of Outcome Variables and Measures, an instrument successfully utilized in conjunction with the NCHEMS products mentioned in the preceding section. Careful consideration was given to making the Structure complementary to those NCHEMS products. Concerning outside decision-making tools, the ETS *Institutional Goals Inventory,* the ETS *Institutional Functioning Inventory,* the ETS *Student Reactions to College,* and the ACT *Institutional Self-Study Survey* were examined directly to see if any outcomes measures in those instruments could not fit into the Structure. The same was true of a large number of previous attempts to structure outcomes (Lenning, 1977b). In addition, many scales from various psychometric instruments reviewed in Buros' *Seventh Mental Measurements Yearbook* (1972) are referred to in Appendix B as examples of possible measures of specific types of outcomes. At this time the staff sees no serious incompatibility with decision-making tools developed either inside or outside of NCHEMS. However, again the real test of this criterion will be in attempts to use the Structure.

Figure 4.2

USES FOR THE STRUCTURE THAT VARIOUS INTERVIEWEES REPORTED PERCEIVING[a]

- Can be an aid in planning our program.
- Vehicle for curricular change.
- Helps one be systematic in thinking about outcomes (2).
- Encourages emphasis on desired goals rather than activities.
- Can serve as a stimulus to think in *specific* outcome terms.
- Defining goals and objectives for the college, divisions, and course.
- Forces us to be more systematic in thinking about what we are trying to accomplish.
- Useful for proposal development.
- Setting goals and objectives.
- Useful in setting goals and prioritizing them on a value basis.
- Could be useful also for personal planning of college students concerning what they want from their college careers (3).
- Could help us develop needs assessment focuses.
- It has made me stop and think about what we are trying to accomplish, and is making the objectives in the back of my mind conscious.
- Outcomes Structure may facilitate curricular reorganization by helping to eliminate overlap in content.
- Should help to increase efficiency.
- Structure may facilitate generation of a list of contents of a portfolio of what students can do.
- It is systematic, all-inclusive, adaptable, and helps to prioritize.
- Could speed the process of planning and development.
- Forces you to think about things you wouldn't otherwise think about in a concrete manner.
- Helps to specify goals and determine priorities.
- Can help us understand the why of outcomes.
- Able to focus more on the inadequacies of programs.
- Hadn't thought in this way before; made me aware of and knowledgeable about some of the outcomes I am striving for.
- Similar in some respects to the AIDP forms, but better.
- Useful for dialogue—for raising questions.
- Can provide stimulation to guide direction.
- Could be a unique tool for helping to determine what direction we should be going.
- Gets at the concrete things we value in our thinking and our actions, and balances one against the other.
- Could be useful to students in evaluating options—at the sophomore or junior level, and especially if undecided.
- Could use it to help define our goals.
- Spreads things out and serves as a valuable checklist.
- This project caused me to sort this department out a little bit.
- This is probably being done somewhat and systematically in our department already (education department), but our range of objectives has been too limited and we have not taken an adequate look at the relationships between faculty persons' actions and the desired outcomes. Process 2 for the Structure could especially be useful in this case.
- I have thought in similar ways before and found it useful. I will be having a retreat for my staff in January, and am considering use of this device at that retreat.

[a] Reprinted from Lenning (1977c)

3. *Comprehensiveness.* With the "other" category for each dimension, and the flexibility to add categories as needed, one should be able to classify almost any educational outcome, both now and in the future. The reviewers reported no problem with this; in fact they thought it was quite comprehensive. The various trial uses of the Structure that were conducted also suggest that it is comprehensive. Process variables that some would consider outcomes, while others would not, can also be categorized—for example, introduction of new teaching methodologies into the institution's programs (codes 3320 and 5200), number of volumes in the library (code 4110), and faculty/student ratio (code 5200). It is clear, however, that the "research and scholarship" section of the Structure (code 3300) needs to be refined and expanded, through additional levels of detail. This may also be true of other sections, for example, "organizational format, activity, and operation" (code 5200).

4. *No Overlap.* The dimensions used have rather clear-cut categories with straightforward definitions, which should help reduce overlap. Most of the reviewers reported no serious problems with this criterion, although it is impossible to reduce overlap completely, especially at the level of the most detailed categories. The reviewers did report that they noticed some overlap, but felt it was not serious.

5. *Reliability.* Clear-cut categories and straightforward definitions should help increase the reliability of classification, but this was not borne out in a classification exercise with three independent judges. The three judges classified a long list of outcomes taken from the literature, and ended up classifying many of the items differently. In some cases, one was able to classify to a much more detailed level. In other cases, they gave different interpretations to what the outcome statement meant. (Some of the statements were very broad and vague, similar to items often found in institutional mission statements.) Yet, after the task was completed and they had a chance to discuss it, the judges indicated that had they been able to work together and to discuss each outcome statement, they were confident they would have been able to come to an agreement easily. This seemed to the staff to be a more important factor. The categories for which the judges did have serious problems were modified to alleviate the perceived problem.

Figure 4.3

EXPRESSED OPINIONS OF RESPONDENTS CONCERNING THE USEFULNESS OF THE STRUCTURE [a]

	Did Not Discuss It [b]	Definitely Useful	May Be Useful	Not Useful	Said That They Did Not Understand It Enough To Judge
College A					
Administrators	5	11	3	3	1
Faculty	10	13	9	0	2
Students	4	6	1	1	0

[a] Each number indicates how many people in that group (identified in the left margin) gave a particular response (identified by the column heading).

[b] In these interviews, the time allotted for the interview expired before this question could be raised.

From Lenning and Lundin (1977)

Figure 4.4

CAUTIONS AND POTENTIAL PROBLEMS WITH THE NCHEMS OUTCOMES STRUCTURE THAT WERE MENTIONED BY VARIOUS INTERVIEWEES [a]

- Need to get students and alumni involved in outcome planning also.
- Need to show people how it will help.
- This kind of self analysis is very important, but will it make any difference on the campus?
- Might work if you have the right setting, like a workshop away from the campus.
- Don't use it unless you have the time and energy to change.
- One needs time away from day-to-day pressures in order to implement this.
- Resistance to the "bureaucratese" in which the document is written—I don't want to go to the trouble of using it unless you can show me that it is directly relevant to my department and its students.
- Potentially very time consuming—safeguards should be built in to insure that the time drain is not too great (find out the outcomes of the system that can be achieved in a short time).
- It may promise more than it delivers.
- Is the system *really* hierarchical—is hierarchy the appropriate model?
- Need funds for the department to develop long term workshops to incorporate use of the Structure.
- If it is presented properly, students could become interested in the Structure.
- I like it. Dynamite! It could be such a long-term thing, however.
- Difficult to reach consensus on such things—needs a good leader.
- Takes too much time—what is needed is funds for a week's staff retreat in a retreat setting.
- More useful at small colleges than elsewhere because we have more of a chance to see and understand the activities which lead to outcomes (the why of outcomes) and we get to know our students very well.
- Need to start using this in goal setting at the institution-wide level. If you start at the department level will go in all directions so that when people get together at the institution-wide level will be so far apart will never be able to reconcile.
- It is easier to think of outcomes in specific and concrete terms at the department level, so should start applying the Structure to reach consensus at that level before you try to reach some consensus on college-wide goals.
- Need to have total faculty involvement at the departmental level if you are going to make good use of the Structure.
- An excellent instrument if used and the system instructions understood and participated in by most of the faculty in the small college. The problem may lie in attitudes—a strong disposition and loyalty to the liberal studies and classical structure . . . time constraints, and using the Structure as they envision it. Once it is learned and implemented, however, the negatives could be reversed and it could speed the processes of planning and development.
- A problem with the Structure concerns differences in definitions, and it includes jargonese.
- As a student majoring in religious education I tend to think in more general terms. Therefore, it is limiting—it limits my options. I would prefer a completely open-ended approach.
- It would be useful to the extent that it serves rather than enslaves. Minimal outcomes should be emphasized. Should let more happen beyond the stated outcomes.
- I question its real utility, although it is an asset in that it is systematized.
- I heard from a staff member who attended the workshop yesterday morning that a lot of good ideas were presented, but that they were perhaps overly idealistic.
- People need to see the connections sooner to their on-going tasks. Needed is a week at a retreat setting working with faculty on institutional goals and objectives, and how to implement them.

[a] Reprinted from Lenning (1977c)

6. *Neutrality.* Value-laden words were eliminated from the Structure whenever they were noticed. In addition, categories within a class were listed alphabetically in the Structure, the exceptions being "maintenance" and "change" in the "type-of-outcome" dimension and both levels of the "audience" dimension, where a logical and seemingly neutral progression seemed to be called for. None of the reviewers reported problems with this criterion.

7. *Hierarchy.* Both dimensions that had categories assigned were hierarchical in nature. One comment was that this seemed in many places like a "make-shift" hierarchy rather than a natural one. Most reviewers did not comment on this criterion. An indication of how well this criterion is met awaits extensive on-campus testing and use in varied contexts.

8. *Reality.* The extensive literature reviewed by Lenning and associates (1974, 1975) was considered in developing the Structure. Most reviewers had no problem with the "reality" criterion, although some concern was expressed that the Structure is quite different from the traditional view of outcomes held by academicians—for example, one reviewer felt that the knowledge and understanding section in the type-of-outcome dimension should be listed before the human characteristic outcomes section, because most faculty consider knowledge and understanding to be more important. In addition, it will be noted in Figure 4.4 that one reviewer reported that the Structure seemed too idealistic. Widescale testing should show how "real" the Structure appears to be to a greater number of potential users.

9. *Flexibility.* The "other" categories, the ease with which categories or entire category levels can be combined or bypassed, and the encouragement that is given to users to modify and adapt the Structure to meet their needs should mean that it is flexible. The reveiwers thought it was flexible. But, again, only trial use of the Structure will show how well it meets the established criterion.

Conclusion. The reliability criterion was definitely not met in the trial use with three judges, but such a failure does not seem so serious now as it once seemed, especially when the perceptions of the judges are considered. The remainder of the criteria seemed generally to be met, although to varying degrees. However, as emphasized throughout this section, most of them will really not be tested until the Structure is tried out on numerous campuses across the nation—especially the practical utility, hierarchy, reality, and flexibility criteria. Furthermore, some of the potential uses of the Structure have not been tried out even in a preliminary way.

Responses to Important Questions Posed by Reviewers

Figure 4.4 shows various perceived problems about the NCHEMS Outcomes Structure raised by one or more interviewees in the joint CASC/NCHEMS project. Additional questions were raised by a few of the other reviewers. A number of these questions should be responded to and clarifications stated as seen from the perspective of the authors.

1. *By breaking outcomes into component types and ever more detailed categories, is it not possible to focus so much on specifics that one loses sight of the overall, combined, whole which is more than the sum of the parts?* This is a real danger, but it does *not* mean it is improper or lacks value to focus on the componenets that constitute the whole. Rather, it cautions us to constantly, as we examine a part, keep in mind the relationship of the part to the other parts and the whole. It is difficult, if not impossible, to adequately describe the whole without focusing also on each important component, for example, describing or analyzing what it means to be an "educated person."

2. *Could not this attempt to objectify outcomes and develop standard categories and definitions lead to a stifling of diversity, innovation, and change—especially if the Structure is used by administrators to spell out the outcomes desired and the process to meet those outcomes in such specific, precise terms that there is little room for innovativeness on the part of faculty members?* Institutions and programs can be unique in the clientele served, the outcomes that are attempted or attained, and the means used to reach those outcomes. Preliminary use of the Structure shows that the audience dimension provides a comprehensive universe of categories of potential clients from which to choose, and that the type-of-outcome dimension provides a comprehensive universe

of outcomes categories from which to choose. Thus, using the lists of categories as a checklist could stimulate consideration of specific unique audiences and types of outcomes that might not have been considered otherwise.

Although administrators could use the Structure to stifle innovation, they also could stimulate faculty to be more specific and concrete in delineating the outcomes intended, and thus encourage consideration of alternative ways of bringing about the outcomes, based on the desired end results. The Outcomes Structure can clearly be used to help stimulate such concreteness in thinking, as demonstrated by the joint CASC/NCHEMS project.

3. *Would not the process of using the Structure take more of my time and energy than I can afford?* To use the Structure as an aid to development of a *complete* program of goals, objectives, and priorities for a complex institution and its programs is an extremely lengthy process. But that process would be lengthy whether or not the Structure was used. It is possible that the systematic approaches developed for using the Structure, the definitions and concepts outlined, and use of the Structure as a checklist of the universe of alternative possible focuses could shorten the process appreciably. Futhermore, certain applications of the Structure do not have to be time consuming to be useful—for example, stimulating systematic and more-concrete thinking by faculty and staff of what they are trying to accomplish in their programs and courses, of why they are trying to accomplish those ends in particular ways, and of how to show others that they are accomplishing their goals. Similarly, experiences at the University of Colorado suggest that one who is properly oriented to outcome concepts can use the Structure to evaluate the coverage of extensive lists of goals relatively quickly and efficiently.

4. *Does not the use of psychological jargon for some terms in the Structure diminish its usefulness as an aid to communication?* Jargon of any type should be avoided whenever possible, and an attempt was made to avoid its use in developing the Structure. But, for certain outcomes, particularly student outcomes, psychological terminology appeared to be the most generic and descriptive, and the most widely accepted. Council for the Advancement of Small College visitors to the campuses did perceive that the Structure could aid in "communicating outcomes across disciplinary lines." Nevertheless, it is to be hoped that extensive use of the Structure will suggest better terms in some areas of the Structure.

5. *Does not the fact that the code numbers are disconcerting to some people reduce the Structure's usefulness for them?* Possibly, but it need not be so. Code numbers for each category were included for two purposes: (1) to give people a shorthand that would allow them to record outcomes and communicate them to knowledgeable others verbally or in writing in a more succinct and efficient manner, and (2) for use in outcomes information storage and retrieval systems. For other uses, the codes could be ignored. This is what happened in follow-up applications of the Structure at Spring Arbor College. Interestingly, in the CASC/NCHEMS interviews, when the respondents referred to particular outcome categories, they generally referred to the code numbers rather than the category name—for example, "Outcome 2240" rather than "expression and communication skill outcomes." Thus, some people who initially find the codes disconcerting may later become accustomed to using them and actually find them useful. But users of the Structure are encouraged to modify it as appropriate for best meeting their context and needs.

6. *The orientation of the Structure is foreign to the orientation of most educators—they just don't think this way. Would it not have been better and more acceptable to them if it were closer to their orientation in its form and content?* The authors tried to make the Structure as generic, theoretically and philosophically neutral, and comprehensive in its coverage as possible, and this guided the development of the Structure. One person who raised this question suggested moving the knowledge and understanding categories in front of the human characteristic outcome categories, because "they are more important to most educators." But such a change would have made the Structure less neutral than retaining the categories in alphabetical order. The NCHEMS Inventory of Outcome Variables and Measures, the forerunner of the Outcomes Structure, was closer in its orientation to that

of the typical educator who will use the Structure. However, that very characteristic led to criticism by some that many of the terms used were value-laden (it was not philosophically and theoretically neutral), that it was too selective in its coverage (not comprehensive), and that it was too specific in its orientation and lacked some internal consistency (not generic).

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APPENDICES

Appendix A

Previous Attempts to "Structure" Educational Outcomes and Outcome-Related Concepts*

Classifications Focusing on Outcomes for Individuals

A. Classifications Focusing on Intellectual Development

1. The Harvard List of General Educational Behavioral Goals
2. The Bloom and Associates Taxonomy of Cognitive Objectives
3. Guilford's Structure of Intellect
4. The 1961 Proclamation of the Educational Policies Commission
5. Taba, Levine, and Elzey's Categories of Thought Processes
6. Gagné Learning Model
7. The Florida Taxonomy of Cognitive Behavior
8. Payne's Lists of Cognitive Objectives from Ebel and the AAAS Commission on Science Education

B. Classifications Focusing on Emotional, Cultural, and Social Development

9. The Cardinal Principles of Education Set Forth in 1918
10. Bobitt's Ten Goals for Education
11. The Principal Aims of Education Set Forth in 1938
12. The Krathwohl, Bloom, and Masia Taxonomy of Affective Objectives
13. Harvey's Proposed Model for Educational Effects on Belief Systems
14. Crawford and Twelker's Affective Outcomes of Simulation Games
15. The Klopfer Structure for the Affective Domain in Relation to Science Education

C. Classifications Focusing on Physical and Psychomotor Development

16. The Ragsdale Categories of Motor Activities
17. Guilford's System of the Psychomotor Abilities
18. The Abernathy and Waltz Framework for Human Movement
19. The Simpson Taxonomy of Psychomotor Objectives
20. Cratty's Framework for Psychomotor Learning Outputs
21. Fleishman's "Structure" of Psychomotor and Physical Proficiency Abilities
22. The Kibler, Barker, and Miles Classes of Psychomotor Objectives
23. Singer's Model for the Psychomotor Domain
24. Harrow's Taxonomy for Psychomotor Objectives

*Excerpted from O T Lenning *Previous Attempts to Structure Educational Outcomes and Outcome Related Concepts A Compilation and Review of the Literature* Boulder Colorado National Center for Higher Education Management Systems at WICHE 1977

D. Broader Classifications

25. General Educational Goals from the Eight-Year Study
26. Payne's Classification of Rath's Early Discussion on Educational Objectives
27. The Major Types of Educational Objectives Formulated by the Eight-Year Study Evaluation Staff
28. General Education Goals for Members of the Armed Forces
29. The Clapp Commission Classification of College Outcomes
30. Vernon's Educational Attainment Maps
31. 1950 Purposes of Public Education in California
32. The Framework Developed by the Mid-Century Committee on Outcomes
33. Havighurst's Developmental Task Framework
34. A Framework for Objectives in General Education Suggested by the Work of Dressel and Mayhew
35. The Survey of Behavioral Outcomes of General Education in High School
36. Findley's Ultimate Goals of Education
37. Gerberich's Ten Types of Learning outcomes
38. Mayer's Aims of Education
39. Downey's Conceptual Framework for the Dimensions of the Task of Public Education
40. Schwartz and Tiedeman's Continuum of Behaviors
41. Taba's Types of Behavioral Objectives
42. The Clark-Trow Typology Framework of College Outcome Goals Developed by ACT
43. The Pace and Baird Outcomes—Personality—Environment Framework
44. Michael and Metfessel's Major Educational Goal Categories
45. Tyler's 1968 Listing of Purposes of Education
46. Chickering's Developmental Vectors for the Young Adult
47. Astin's Taxonomy of Student Output Measures in Terms of Type of Outcome, Type of Data, and Time
48. The Perry Framework for Student Development
49. Plowman's Classification System for Educational Objectives
50. Gronlund's Classification of Learning Outcomes
51. The Research for Better Schools Classification of Educational Objectives
52. The German "LOT-Projekt" Model for Classifying Educational Objectives
53. Healy and Associates Taxonomy for Performance Objectives
54. College Student and Alumni Activity and Accomplishment Scales
55. Alumni Survey College Goal Scales
56. Impact and Attainment Areas Covered in Pace's Higher Education Measurement and Evaluation Kit
57. Ebel's Command of Substantive Knowledge Framework
58. Schalock's Models for Educational Outcomes
59. Tri-County Goals Development Project Student Learning Classification System

Classifications Focusing on Outcomes for Society

60. Hand, Hoppock, and Zlatchin's Society-Oriented List of Educational Objectives
61. Bowen's Categories of Social Benefits of Higher Education
62. Schalock and Associate's Classification of Outputs of Educational Research and Development Efforts
63. Derr's Taxonomy of Social Purposes of Public Schools

Classifications Focusing on Outcomes for Both Individuals and Society

64. Goals for Higher Education of President Truman's Commission on Higher Education

65. Gross and Grambsch's Listing of Goals for Universities
66. Testing Program Advisory Committee Outlines of Outcomes that Need To Be Measured
67. Brubacher's General Educational Aims Derived from History
68. The AASA Imperatives in Education
69. Sanford's Framework of Aims for College Education
70. The Swedish LIGRU Scheme for Classifying Educational Objectives
71. Jellema's Goals for the Church-Related Liberal Arts College
72. Goodman's Classifications of Educational Outputs
73. Brown's "Growth" Classification
74. Plowman's Model for Desired Educational Effects
75. The ETS Institutional Goals Inventory
76. Gross's Approach to Classifying Objectives
77. Raine's Taxonomy of Community Service Functions for Community Colleges
78. Derr's Combined Classification of School Purposes
79. Carnegie Commission's Purposes of Higher Education
80. Lenning and Associates' College Benefits Classification
81. Lenning's "Benefits Pyramid"
82. The NCHEMS Inventory of Higher Education Outcome Variables and Measures
83. Bowen's Target Group Classification of Outcomes

Appendix B

Definitions and Outcome Measure or Indicator Examples for the Type-Of-Outcome Subcategories

The code number for each category is given in the left margin (if the focus is on only maintenance the fourth digit would become "1," or if the focus is on only change the fourth digit would become "2"). Category definitions are provided in the next column, and several examples of possible indicators or measures of such outcomes are provided in the right-hand column for each category. *The measures and indicators listed are only illustrative examples.* The majority of examples given are for individuals, but it should be remembered that composites of these can often serve as indicators of communities and other populations. Future NCHEMS work will include the development of relatively comprehensive lists of indicators for selected categories of the Structure.

Category Code Number	1000 ECONOMIC OUTCOMES*	
1100	*Economic Access and Independence Outcomes*—Outcomes that relate to the entrance into, obtainability, flexibility, and levels and amounts of monetary or pecuniary situations, conditions, and characteristics.	
	(Categories)	(Examples of Outcome Measures or Indicators)
1110	*Economic Access*—The amount of openness or ease of admittance to economic opportunities, advancement.	Percentage of students obtaining their first full-time job in the field of their choice within a specified time after graduation. The number of alternatives for an entry level job open to minority group graduates compared to minority group nongraduates.
1120	*Economic Flexibility, Adaptability, and Security*—The amounts of self-sufficiency, liberty, frugality, thrift, self-government, confidence, certainty, safeguards, stability, and adjustment that are exhibited in economic matters	Geographic mobility of college graduates compared to those not attending college. Self-report of college graduates about the economic security for them and their families, and the contribution of college to this.
1130	*Income and Standard of Living*—Amount of profits, return on investment, necessities and comforts of life, wealth, and other signs of economic "well-being" that are obtained or possessed. Included is direct support provided to individuals and the community through local purchases by the educational institution and through staff salaries and wages.	Amount of annual and lifetime earnings of those attending college compared to those not attending college. Average student and/or former student reported scores on scales measuring perceptions and evaluations of their current and desired socio-economic level.
1200	*Economic Resources and Costs*—Outcomes that relate to the amount and type of material, energy, effort, people, organization, and other economic assets that are available or that are expended in economic activities and production.	
	(Categories)	(Examples of Outcome Measures or Indicators)
1210	*Economic Costs and Efficiency*—The amounts of sacrifice, effort, expenditure, and waste present in economic activities and production.	The absenteeism and tardiness on-the-job of college graduates as compared to nonstudents The number of firms that use the college degree as an inexpensive screening device that allows them to hire qualified employees at minimum initial cost to the firm.
1220	*Economic Resources (including employees)*—The assets available that can aid economic production, distribution, and gain.	Percentage of college graduates employed in management positions within a specified time after graduation. Average number of patents and/or copyrights received per student, former student, and/or faculty member
1300	*Economic Production*—Outcomes that relate to the creation of goods, services, and economic value.	
	(Categories)	(Examples of Outcome Measures or Indicators)
1310	*Economic Productivity and Production*—The value of goods and services that are created or produced by and within specific enterprises of "audiences" or clients of the educational institution, and especially in relation to the resources expended in the enterprise.	Percentage of college graduates who can adequately do their personal typing and complete their own income tax forms as a result of having attended college. Expert judges' ratings of the amount of increased worker production and higher worker motivation that results from having attended college
1320	*Economic Services Provided*—Amount and type of direct-assistance activities provided by the educational institution or its subunits in the economic area	Dollar amount of goods and services bought in the local community by the institution, its staff, and its students. Number of hours of consultation in the business area provided to area companies and institutions by the university's college of business.
1400	*Other Economic Outcomes*—An example would be that a company with a large payroll located in this community rather than another similar community because there is a more prestigious college here	

*Many of the subcategories for this category were suggested by the economic outputs classification developed by Goodman (1971).

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES	
2100	*Aspirations*—Levels, patterns, and directions (in persons, groups, organizations, or communities) of interests, desires, drives, ambitions, goals, and intentions.	
	(Categories)	(Examples of Outcome Measures of Indicators)
2110	*Desires, Aims, or Goals*—Places, conditions, things, or other ends that individuals and/or groups crave, toward which they have ambition, or that they intend to reach because of importance to them	Changes in observed desires from college entrance to graduation. Changes in the reported aspirations for graduate school as a class proceeds through undergraduate school. Self-report of changes in goals and aspirations as a result of college.
2120	*Dislikes, Likes, and Interests*—The persons or types of persons, objects, content areas, occupations and other things and situations for which there is a preference or antipathy	The reported likes and dislikes of persons before college as compared to after graduation, and comparison with such change over the same period of time for those the same age not attending college. Score or change in score on an interest inventory, e.g., Strong Vocational Interest Blank, Kuder General Interest Survey, Kuder Occupational Interest Survey, ACT Interest Inventory * Self-report of changes in interests as a result of college.
2130	*Motivation or Drive Level*—The intensity of striving toward a goal that is elicited by a need or other stimulus	Score or change in score on an instrument that measures "need for achievement" or "achievement motivation," e.g., the Strong Vocational Interest Blank Academic Achievement Scale, the College Student Questionnaire Motivation for Grades Scale, the California Psychological Inventory Achievement Scales, Personal Value Inventory. Self-report of changes in motivation level as a result of college.
2140	*Other Aspirational Outcomes*	
2200	*Competence and Skills*—Levels, patterns, and direction of ability, capability, proficiency, and talent of different kinds.	
	(Categories)	(Examples of Outcome Measures or Indicators)
2210	*Academic Skills*—The amount of ability or competence in taking tests, earning good grades, persisting in college, etc without regard to the amount of cognitive learning that has taken place	Grades earned when the effect of ability, motivation, and other such factors have been controlled. Persistence in college when the effects of ability, motivation, and other such factors have been cancelled out. Score or change in score on a test of study skills, e.g., Brown-Holtzman Survey of Study Habits and Attitudes, Comprehensive Test of Basic Study Skills
2220	*Citizenship and Family Membership Skills*—The ability or competence to perform relative to the rights, duties, and privileges of a member of a family, community, state or nation; for example competence in managing family finances, being an effective consumer, and evaluating political issues	Self-report of abilities pertaining specifically to citizenship and home membership that college accentuated Evaluation by others of citizenship and home membership skills mastery exhibited Score or change in score on the Vineland Social Maturity Scales

*As an example, one could at graduation compare interest test scores of college students to a group of their high school classmates not attending college who had similar interests in high school. As another example, one could look at interest test change scores for college students, adjusted for initial level.

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES (continued)	
2230	*Creativity Skills*—The amount of ability or competence in designing, producing, or otherwise bringing into existence original perspectives, explanations, and implementations.	Score or change in score on a test that measures originality and creative ability, e.g., Minnesota Test of Creative Thinking, Test of Creative Ability, Guilford's Alternate Uses Test, Sixteen Personality Factors Questionnaire Creativity Scale. Evaluation by judges of creative ability demonstrated in a building or forming task.
2240	*Expression and Communication Skills*—The amount of ability or competence in conveying information, attitudes, or emotions on a one-to-one basis and/or to large or small groups or populations, by whatever media, in order to inform, challenge, uplift, and/or persuade, etc., and in receiving and interpreting such communications—through reading, writing, speaking, listening, touching, body movement, silence, and cultural arts like acting, painting, sculpturing, singing, playing musical instruments, etc.	Score or change in score on tests that measure the ability to communicate or express oneself. Judges' rating in a debate or speech contest. Judges' rating of expression in a music, art, or ballet contest.
2250	*Intellectual Skills*—The amount of ability or competence in formulating and analyzing problems, comprehending and understanding, synthesizing information, evaluating information, implementing a solution to a problem, and in locating, retaining, and filtering relevant knowledge.	Score or change in score on a test that measures ability to analyze and solve problems and to make inferences, e.g., California Test of Mental Maturity, Watson-Glazer Critical Thinking Appraisal, California Psychological Inventory Intellectual Efficiency Scale. Self-report of changes in analytical ability as a result of college.
2260	*Interpersonal, Leadership, and Organizational Skills*—The amount of ability or competence in effectively living and interacting with others, social organizing, being a congenial friend and companion, establishing courses of action for others, and influencing others to follow	Leadership awards. Self perceptions and evaluation of interpersonal and leadership ability. Perceptions by judges of interpersonal and leadership skills. Score or change in score on a test that measures leadership and interpersonal ability, e.g., California Psychological Inventory Leadership Scale, Chapin Social Insight Scale.
2270	*Occupational Skills*—The amount of ability or competence in the special, unique skills required by particular occupations, and in seeking, gaining, and maintaining a particular level and kind of employment.	Spatial relations test scores for someone who is, or is going to be, an artist. Demonstrated ability in writing FORTRAN or COBOL for someone who is, or is going to be, a computer programmer. Score or change in score on the Bennett Mechanical Comprehension Test.
2280	*Physical and Motor Skills*—The ability or competence in tasks requiring physical coordination, dexterity, manipulation, and other muscular or motor skills.	Score or change in score on tests that measure motor skills, e.g., Crissey Dexterity Test, Minnesota Rate of Manipulation Test Judges' scores on skill events in athletic competition such as gymnastics, diving, and figure skating
2290	*Other Skill Outcomes*—Examples are the ability to teach effectively, to handle one's leisure, etc	
2300	*Morale, Satisfaction, and Affective Characteristics*—Levels, patterns, and directions of characteristics typified by emotion.	
	(Categories)	(Examples of Outcome Measures or Indicators)
2310	*Attitudes*—The disposition or tendency to respond either positively or negatively to particular persons or types of persons, things, situations, etc It is a predisposition to act in a certain way AND *Values*—A strong preference based on a conception of what is desirable, important, and worthy of esteem Values affect an individual's actions and thoughts toward others.	Score or change in score on an attitude scale, e.g., Thurstone and Chave's Scale for Measuring Attitudes Toward the Church, College Student Questionnaire Part I, Adorno Ethnocentrism Scale, Shaw and Wright Scales for the Measurement of Attitudes Self-report of one's attitudes and the effect of college on them. Score or change in score on an instrument that assesses values, e.g., Alport-Vernon-Lindsey Study of Values, Differential Value Profile, Work Values Inventory. Self-report of one's values and the effect of college on helping to clarify them

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES (continued)	
2320	*Beliefs, Commitments, and Philosophy of Life*—The acceptance and internalization of particular propositions or declarations; the particular things that one is convinced are true. The held view of what "man" is, the purposes and reasons for a person's existence, and the system of principles and laws that should govern his/her thought, morals, character, and conduct or behavior. Included is the promotion of and the adherence to the conventions, practices, and teachings of religious organizations or sects.	Score or change in score on instruments that assess beliefs, e.g., Harvey's Conceptual Systems Test, Inventory of Beliefs. Self-report of one's beliefs and commitments and the effect of college on them. The membership and participation in, and support of, a particular religious organization or cause prior to as compared with after college. Self-report of one's philosophy of life and the effect of college on clarifying and organizing it.
2330	*Feelings and Emotions*—The disposition or tendency to respond or not respond subjectively to stimuli and the ability to control or not control such expressions, i.e., feelings of anguish or distress, anticipation, anxiety, concern, contentment, empathy, excitement, fear, frustration, happiness and joy, humor, lethargy, love, pleasure, satisfaction, sorrow, etc.	Openness and acceptance of feelings before college compared to after college. Development of an *appreciation* of different cultures and a wide range of human values as a result of college. Greater reported satisfaction with life as a result of college
2340	*Mores, Customs, and Standards of Conduct*—Social and cultural practices, rules, and conventions designed to guide personal and corporate behavior. They have strong ethical or moral significance according to tradition and are enforced by social disapproval of violations.	Self-report of the effect of college on assimilation or internalization of the customs of community or society. Score or change in score on the California Psychological Inventory Socialization Scale. The adherence to particular mores or social customs prior to college as compared to after college. The amount of subjectivity and emotion guiding one's standards of conduct prior to college as compared to after college.
2350	*Other Affective Outcomes*	
2400	*Perceptual Characteristics*—Levels, patterns, and directions of consciousness, awareness, and sensitivity exhibited, and the view(s) or concept(s) of self, others, surroundings, events, ideas, etc.	
	(Categories)	(Examples of Outcome Measures or Indicators)
2410	*Perceptual Awareness and Sensitivity*—The amount of consciousness or awareness of, or sensitivity to, stimuli that are exhibited by individuals or groups.	Increased sensitivity to needs and emotional cues provided by others Increased alertness to the opportunities confronting one.
2420	*Perception of Self*—The view held about oneself; the characteristics that are perceived, i.e., self concept.	Development of positive self-regard and self-confidence as a result of college. Score or change in score on a self-concept scale, e.g., Adjective Check List, California Psychological Inventory Self Acceptance Scale, Tennessee Self Concept Scale.
2430	*Perception of Others*—The manner in which other individuals and particular groups of others are viewed or perceived; the characteristics that are perceived.	Reports by observers about how a person's respect for others has changed as a result of college. Self-report of how one's view of others has changed as a result of college.
2440	*Perception of Things*—The view one holds (i.e., the characteristics noted) of ideas or other things being examined with the physical senses.	Increased respect for the ideas of others as result of college. Movement as a result of college experiences from seeing things as all "black and white" to complex "grays."
2450	*Other Perceptual Outcomes*	

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES (continued)	
2500	*Personality and Personal Coping Characteristics*—Levels, patterns, and directions of human conditions, factors, and traits related specifically to the mind and mental processes (other than skills, knowledge, and understanding).	
	(Categories)	(Examples of Outcome Measures or Indicators)
2510	*Adventurousness and Initiative*—Willingness to take chances and risks; how daring an individual is; willingness to take a stand or speak out; willingness and capacity to initiate personal action or to become actively involved.	Reports by impartial observers of changes in initiative that seem to have resulted from college attendance. Self-report of the effect of college on one's willingness to take a chance, e.g., to take an educated guess on an exam. The frequency that one exhibits speaking out on issues as the college career progresses.
2520	*Autonomy and Independence*—The amount of freedom from control and influence of others that is exhibited	Score or change in score on personality scales that measure autonomy and independence, e.g., Sixteen Personality Factors Questionnaire Group-Dependent vs. Self-Sufficient Scale, Edwards Personality Inventory Independent in His Opinions Scale, College Student Questionnaire Independence Scales, Omnibus Personality Inventory Autonomy Scale. Self-report of willingness to volunteer or "stand up for one's rights" and the effect of college attendance on such willingness.
2530	*Dependability and Responsibility*—The amount of reliability, trustworthiness, and accountability for own behavior that is exhibited.	Reports by observers of changes in dependability and responsibility that have occurred during college. Score or change in score on scales that measure dependability and responsibility, e.g., California Psychological Inventory Responsibility Scale, Edwards Personality Inventory Assumes Responsibility Scale, Sixteen Personality Factors Questionnaire Expedient vs. Conscientious Scale.
2540	*Dogmatism, Authoritarianism, and Open-Mindedness*—The amount of open-mindedness, assertiveness, unassertiveness, and/or unquestioning obedience to authority that is exhibited.	Reports of expert observers about changes in open-mindedness that have taken place during college. Score or change in score on a scale that measures dogmatism and/or authoritarianism, e.g., Rokeach Dogmatism Scale, California Psychological Inventory Dominance Scale, Omnibus Personality Inventory Religious Orientation Scale.
2550	*Flexibility and Adaptability*—The amount of adjustment to new and changing situations and circumstances that is exhibited	Score or change in score on a scale that measures flexibility, e.g., California Psychological Inventory Flexibility Scale, Omnibus Personality Inventory Practical Outlook Scale, Sixteen Personality Factors Questionnaire Practical vs. Imaginative Scale. Reports by observers of changes in adaptability and flexibility that have occurred during college. Self-report of the effect of college on adaptability and flexibility.
2560	*Habits*—The tendency to perform certain actions or to behave in characteristic, automatic ways	Observations by others of changes in habit orientation that have occurred during attendance. Self-report of changes in habits that have resulted from college
2570	*Psychological Functioning*—The amount of psychological adjustment, contact with reality, self-understanding, and self-actualization (optimum self-realization) that is exhibited.	The amount of realization of one's actual strengths and weaknesses, and of what is reality. Score or changes in score on an instrument that measures psychological adjustment, e.g., Minnesota Multiphasic Personality Inventory, Sixteen Personality Factors Questionnaire, Moody Problem Check List. Reports by expert observers about changes in the psychological functioning of individuals that have occurred during college attendance

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES (continued)	
2590	*Tolerance and Persistence*—The amount of endurance, tenacity, forbearance, patience, and restraint that is exhibited.	Observations by others of changes in tolerance and persistence during college. Score or changes in score on an instrument that measures tolerance and persistence, e.g., Edwards Personality Inventory Persistence Scale, California Psychological Inventory Tolerance Scale.
2690	*Other Personality and Personal Coping Outcomes*	
2600	*Physical and Physiological Characteristics*—Levels, patterns, and directions of human body traits and processes (other than skill functioning).	
	(Categories)	(Examples of Outcome Measures or Indicators)
2610	*Physical Fitness and Traits*—Physical and physiological characteristics such as toughness, endurance, strength, speed, flexibility, dexterity, physical energy, muscular control, size, vocal characteristics, etc.	Score or change in score on physical fitness tests, e.g., AAHPER Youth Fitness Tests, Basic Fitness Tests. Self-report of "feeling in better physical shape" as a result of college.
2620	*Physiological Health*—The physical well-being of individuals; how well the system of normal bodily operations is functioning.	Medical doctor's health physical examination report at college entrance compared to at college graduation. Self-report of the effect of college attendance on how well alumni take care of their bodies.
2630	*Other Physical or Physiological Outcomes*	
2700	*Status, Recognition, and Certification*—Levels, patterns, and direction concerning recognition of accomplishments, power, prestige, reputation, etc.	
	(Categories)	(Examples of Outcome Measures or Indicators)
2710	*Completion or Achievement Award*—A certificate, diploma, or some other award for having completed a course or program, for some demonstrated proficiency, or for accomplishment of some type	An honorary degree. Graduation diploma. Alumni achievement award. Sales award or a job promotion. Danforth Fellowship Award Being named a Rhodes Scholar.
2720	*Credit Recognition*—Formal or informal acknowledgement of work completed or of confidence, trust, approval, etc.	Graduate school grades. Credit hours given for completing a course. By-line credit for a movie, play, book, or article. Financial credit rating issued by a bank or credit bureau.
2730	*Image, Reputation, or Status*—The amount of fame, distinction, respect, and standing in the eyes or the profession, the community, or some other group	Being on the social register. Being listed in *Who's Who* Oral and written acknowledgements from others. Being interviewed by the press, radio, or TV. Writing an autobiography that is published or having a biography written about you.
2740	*Licensing and Certification*—Formal written authority that a person or firm is qualified and has met the test to practice some skill or speciality occupation.	Entry into the state bar Passing a cosmetology licensing exam. Being a certified public accountant. An insurance company that has been licensed to sell in a state.

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES (continued)	
2750	*Obtaining a Job or Admission to a Follow-Up Program*—Success in being selected for a postgraduate employment position or a special educational program at a higher level.	Entrance to a university after graduation from a community college. Entrance to law, medical, or graduate school. Being selected by the civil service. Being selected for a company executive position. Being hired in the special field for which the training applied.
2760 2770	*Power and/or Authority*—The amount of acknowledged authorization or ability to influence, command, enforce obedience, or set policy as a right of rank, position, delegated jurisdiction, skill, strength, wealth, etc.	Appointment or election to a position of authority. Earning promotion to a position of authority. Influencing important community or public decisions. Getting acknowledged credit for the important job having gotten done.
	Job, School, or Life Success—Evidence of success in one's occupation or career, in graduate or professional school, or in some other aspect of one's life that is covered in any of the above categories.	Self report of success in career. Teacher's rating of success in graduate school. Employer's rating of overall on-the-job performance.
2780	*Other Status, Recognition, and Certification Outcomes*	
2800	*Social Activities and Roles*—Levels, patterns, and directions of social functions assumed and carried out.	
	(Categories)	(Examples of Outcome Measures or Indicators)
2810	*Adjustment to Retirement*—Altering self and lifestyle to meet the needs and adapt to the limitations of the retirement years	Percentage of college educated retirees reporting productive retirement years compared to reports of those who never attended college. Self-report of the effect of having attended college on the retirement years.
2820	*Affiliations*—Finding appr ate organizations and institutions to join and associate with, ar being accepted by them.	Number of affiliations and changes in affiliations for college graduates as compared to those never attending college. Self-report of the effect of having attended college on the affiliations sought and on the affiliation won.
2830	*Avocational and Social Activities and Roles*—Finding, pursuing, and achieving rewarding nonwork activities, hobbies, and parts to play in society, and exhibiting that pattern of behavior that is expected of persons having the status that has been earned.	The social roles and avocations of college graduates as compared to those who never attended college. Self-report of the effect of having attended college on the avocational and social roles sought, and on those practiced.
2840	*Career and Vocational Activities and Roles*—Exhibiting the patterns of behavior expected and/or that are needed for the part in the "world of work" that has been accepted or entered into	The career roles of college graduates as compared to those who never attended college. Reports of employers concerning the advancement and roles of college trained employees versus the advancement and occupational roles of those who never attended college
2850	*Citizenship Activities and Roles*—Facilitating and contributing to governmental functions and to the overall well being of individuals, the community, and larger society	Percent voting in a municipal or state election Financial and other contributions given to service organizations. Percent running for public office or campaigning for someone who is

Category Code Number	2000 HUMAN CHARACTERISTIC OUTCOMES (continued)	
2860	*Family Activities and Roles*—Contributing to and facilitating family functions, i.e., parent roles, sibling roles, son/daughter roles, etc.	The family roles of college graduates as compared to those who never attended college. Self-report of effect of the college on the roles played in one's family.
2870	*Friendships and Relationships*—Socially interacting with and entering into and sustaining intimate, in-depth, and satisfying associations with others.	Characteristics of friends and relationships of college educated people versus those never attending college. Self-report of the effect of college on friendships and social relationships.
2880	*Other Activity and Role Outcomes*	
2900	*Other Human Characteristic Outcomes*	

Category Code Number	3000 KNOWLEDGE, TECHNOLOGY, AND ART FORM OUTCOMES	
3100	*General Knowledge and Understanding**—Familiarity with, analysis and comprehension of, and application of facts and principles across broad areas of study—*breadth* of knowledge and understanding—as a result of dissemination through educational teaching-learning activities.	
	(Categories)	(Examples of Outcome Measures or Indicators)
3110	*Knowledge and Understanding of General Facts and Terminology*—Knowing about and understanding, and having an adequate vocabulary to be able to describe, the reality, existence, and circumstances of particular sensory (observed, heard, felt, etc.) phenomena, objects, people, products, events, conditions, etc., or components thereof.	Students' scores or changes in score on standardized or classroom tests that measure knowledge and understanding of general terminology and/or facts. For example, the Miller Analogies Test focuses entirely on knowledge and understanding of general terminology, and tests like the College Level Examination Program (CLEP) or the Graduate Record Exam (GRE) general exam include coverage of general terminology and facts. Students' self-report of knowledge and understanding about general terminology and facts.
3120	*Knowledge and Understanding of General Processes*—Knowing about and understanding customs, rules and standards for judgments, guidelines, processes, methods, procedures, techniques, trends, and other ways of applying and making use of terminology and facts.	Students' scores or changes in score on standardized or classroom tests measuring comprehension of general conventions, processes, and methodologies. Students' grades in a general application survey course.
3130	*Knowledge and Understanding of General Theory*—Knowing about and understanding principles and generalizations, theoretical formulations, hypothesis, supposition, conjecture, etc.	Students' scores or changes in score on standardized or classroom tests measuring comprehension of general theories in a broad field of study. Students' grades in a general survey course on theories of philosophy.
3140	*Other General Knowledge and Understanding.*	
3200	*Specialized Knowledge and Understanding**—Familiarity with, analysis and comprehension of, and application of facts and principles in particular specialized fields of study—depth of knowledge and understanding—as a result of dissemination through educational teaching/learning activities.	
	(Categories)	(Examples of Outcome Measures or Indicators)
3210	*Knowledge and Understanding of Specialized Facts and Terminology*—Knowing about and understanding, and having an adequate vocabulary to be able to describe the reality, existence, and circumstances of particular sensory (observed, heard, felt, etc.) phenomena, objects, people, products, events, conditions, etc., or components thereof.	Students' scores or changes in score on standardized or classroom tests that measure knowledge and understanding in a narrow, specialized area of study. Professional certification and licensing exams usually focus on this type of knowledge, as do tests like the College Level Examination Program (CLEP) subject exams or the Graduate Record Exam (GRE) area exams. Students' self-report of knowledge and understanding about specialized terminology and facts.

*The subcategories used for this category came from Bloom (1956).

Category Code Number	3000 KNOWLEDGE, TECHNOLOGY, AND ART FORM OUTCOMES (continued)	
3220	*Knowledge and Understanding of Specialized Processes*—Knowing about and understanding customs, rules and standards for judgments, guidelines, processes, methods, procedures, techniques, trends, and other ways of applying and making use of terminology and facts.	Students' scores or changes in score on standardized or classroom tests measuring comprehension of conventions, processes, methodologies, and techniques unique to particular specialized professions or disciplines. Students' grades in a specialized professional course or program.
3230	*Knowledge and Understanding of Specialized Theory*—Knowing about and understanding principles and generalizations, theoretical formulations, hypotheses, supposition, conjecture, etc.	Students' scores or changes in score on standardized or classroom tests measuring comprehension of specialized theoretical formulations and models. Students' grades in a course that goes into depth about one or more theories or models unique to a specialized discipline or profession.
3240	*Other Specialized Knowledge and Understanding*	
3300	*Research and Scholarship*—Knowledge and understanding, techniques, and physical products resulting from basic and applied research and scholarship.	
	(Categories)	(Examples of Outcome Measures or Indicators)
3310	*Research and Scholarship Knowledge and Understanding*—The discovery, development, preservation, and professional dissemination of knowledge and understanding resulting from activities conducted in basic and applied research and scholarship.	Average number of basic research publications, applied research publications, textbooks, or monographs, etc., per student, former student, and/or faculty member over a specific period of time. Number of faculty members and/or former students in the sciences listed in *American Men of Science*.
3320	*Research and Scholarship Products*—Applied techniques (for example, a new therapy treatment in the field of medicine or a new technique in the field of music) and physical products (for example, a new or refined serum) developed from basic and/or applied research and scholarship.	Average number of patents and/or copyrights received per student, former student, and/or faculty member over a given period of time. Average number of awards and citations received per student, former student, and/or faculty member (over a given period of time) for discovery or development of technological products.
3400	*Art Forms and Works*—Reproducing and preserving existing artistic forms and works, and developing new or revised artistic forms and works.	
	(Categories)	(Examples of Outcome Measures or Indicators)
3410	*Architecture*—Outcomes involving the design for construction of buildings, landscape, living complexes, etc.	Number of architectural works completed by students, former students, and/or faculty. Number of awards and other recognitions received for architectural works on the campus commissioned by campus officials.
3420	*Dance*—Outcomes involving preservation or development of forms, works, and performances in the art of dance.	Number of former students receiving recognition for performances in this area. Number of students involved in dance auditions and public performances.
3430	*Debate and Oratory*—Outcomes involving preservation or development of forms and performances in the oratory arts.	Competition record over a period of years of the college's debate team. The average number of graduates each year who go on to some kind of oratorical career.
3440	*Drama*—Outcomes involving the preservation or development of forms, works, and performances in the professional and amateur theatrical arts.	The number of students who enter a professional acting career, and the number acting on an amateur basis. The number of drama performances put on for the local community each year.
3450	*Literature and Writing*—Outcomes involving the preservation or development of forms and works in the production of prose, verso, and other writings.	The average number of literary works each year published by students, former students, and/or faculty members. The number of students and faculty each year who have entered a formal state or national writing competition.

Category Code Number	3000 KNOWLEDGE, TECHNOLOGY, AND ART FORM OUTCOMES (continued)	
3460	*Music*—Outcomes involving the preservation or development of forms, works, and performances in the professional and amateur theatrical arts.	The number of musical productions put on each year by the college that are open to the public. The number of students involved in public music recitals and other performances.
3470	*Painting, Drawing, and Photography*—Outcomes involving the preservation or development of forms or works in the graphic and pictorial arts.	The number of paintings, and their quality in the campus art gallery. The number of awards won over a certain period of time for pictorial works by students, former students, and faculty members.
3480	*Sculpture*—Outcomes involving the preservation or development of forms or works in the carving, chiseling, casting, modeling, or other sculpturing areas.	The number of sculptures that have been commissioned by the college and placed throughout the campus. The forms of sculpture that have been developed on the campus.
3490	*Other Fine Arts*	
3500	*Other Knowledge, Technology, and Art Form Outcomes*	

Category Code Number	4000 RESOURCE AND SERVICE PROVISION OUTCOMES	
4100	*Provision of Facilities and Events*—The availability, use, and participation in campus happenings, buildings, equipment, and other resources by students, other individuals, and particular groups or communities.	
	(Categories)	(Examples of Outcome Measures or Indicators)
4110	*Provision of Facilities*—Availability and use of campus grounds, buildings, rooms, equipment, etc.	Number of facilities made available to the students during a particular period of time. Total number of hours each facility was used by people in the community, and the number of people-hours of use over a specific period of time
4120	*Provision or Sponsorship of Events*—Availability and participation in happenings on the campus or off that are provided or stimulated by the college or one of its components.	The number of people who attended athletic events, cultural events, or other events provided and/or sponsored by the college in any one year. The number of column inches of newspaper coverage received by specific events in local, regional, and national newspapers.
4200	*Provision of Direct Services*—The availability, use, and receipt by students, other individuals, and particular groups or communities of assistance, care, or other service	
	(Categories)	(Examples of Outcome Measures or Indicators)
4210	*Teaching**—Activities and programs designed to instruct and to impart knowledge, skills, attitudes, etc	Average number of courses taught and number of contact hours per semester in the regular program. Extension courses provided in any one calendar year.
4220	*Advisory and Analytic Assistance*—Activities and programs designed for the purpose of (upon request) offering suggestions, recommendations, counsel, information, calculations, and studies	Number of advisory and analytic assistance services offered to students, staff, and/or to the public. Number of person-hours spent by staff in providing this assistance over a specific period of time
4230	*Treatment, Care, and Referral Services*—Helping and direct assistance services, other than those above, provided by the institution, institutional units, and/or institutional staff	The treatment, care, and referral services offered by the institution and its staff, and health services, day care for children of working mothers, counseling, crisis referral, and drug treatment and the amount these services are used The reported satisfaction of users of these services with the treatment and care received.

*Some people would consider teaching to always be a producer/facilitator activity that leads to outcomes Others would, however, consider teaching to be an output that results from the interaction of faculty, equipment, students, and other educational resources Those who hold the first viewpoint should just ignore this category

Appendix C

How One Can Extend the Outcomes Structure

Suppose that members of a committee in the political science department at Alpha College (a fictitious college) were doing curriculum planning, and they knew that the members of the department were concerned strictly with outcomes of teaching for students. Suppose further that they decided to limit their "audience" focus to: (1) undergraduate students majoring in political science and (2) undergraduate students taking political science courses who are not political science majors. They, in effect, added an additional level of categories for the audience dimension (they have extended this dimension), so a three-digit audience code is necessary to represent the situation. The "audience" code for the first group of students becomes 111 and the code for the second group is 112.

The next task for the curriculum committee members was to decide what outcomes to focus on, and they decided first to limit their focus to "knowledge, technology, and art form change" and "human characteristic change"—"type-of-outcome" dimension codes 3002 and 2002. In effect, they decided to limit their focus to the following major subcells of the audience/type-of-outcome matrix:

"AUDIENCE" DIMENSION

111. Undergraduate Students Majoring in Political Science

112. Undergraduate Students Taking Political Science Courses Who Are Not Political Science Majors

111.2002	111.3002
112.2002	112.3002

2002. Human Characteristics Change

3002. Knowledge, Technology, and Art Form Change

"TYPE-OF-OUTCOME" DIMENSION

Next the committee members went to the detailed subcategories shown in Figure 3.4 and described in Appendix B for type-of-outcome codes 2000 (human characteristics outcomes) and 3000 (knowledge, technology, and art form outcomes). After looking over the code 2000 categories, they decided to examine the even more detailed subcategories for the following categories: aspirations (2100); competence and skills (2200); morale, satisfaction, and affective characteristics (2300); perceptual characteristics (2400); and social roles (2800). Within these categories, they then decided to formulate specific outcome objectives, separately for both of their student groups, in the following subcategories: change in interests (2122); change in desires, aims, or goals (2112); change in citizenship and family membership skills (2222); change in creativity skills (2232); change in expression and communication skills (2242); change in intellectual skills (2252); change in interpersonal, leadership, and organizational skills (2262); change in attitudes and values (2312); change in mores, customs, and standards of conduct (2342); change in perceptual awareness and sensitivity (2412); change in career and vocational roles (2842); and change in citizenship roles (2852). For their students majoring in political science they decided also to formulate specific objectives in the subcategory: change in occupational and employability skills (2272).

Next, the committee went back to the "change in intellectual skills" subcategory (code number 2252) and extended it to even more detailed subcategories—adding a fifth digit to the code

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111.2002	111.3002
112.2002	112.3002

2002. Human Characteristics Change

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Next, the committee went back to the "change in intellectual skills" subcategory (code number 2252) and extended it to even more detailed subcategories—adding a fifth digit to the code

number to distinguish categories at that level of detail—using Bloom's Taxonomy of Cognitive Objectives (see Figure C.1) as follows:

Ability to *Translate* Political Science Literature (code number 22521)

Ability to *Interpret* the Political Science Literature (code number 22522)

Ability to *Extrapolate* from the Political Science Literature (code number 22523)

Ability to *Apply* Political Science Literature (code number 22524)

Ability to *Analyze* Political Science Data (code number 22525)

Ability to *Synthesize* Political Science Data (code number 22526)

Ability to *Evaluate* Political Effectiveness (code number 22527)

For code 3000 subcategories, the committee members decided to focus on change in general knowledge and understanding (3102) for both groups of students, and change in specialized knowledge and understanding (3202) for only those majoring in political science. They also decided to be concerned with all of the types of general and specific knowledge and understanding listed in Figure 3.4 and Appendix B, but they decided that they needed still more detailed "knowledge and understanding" subcategories than provided there. For those detailed "knowledge and understanding" categories, they decided to focus on seven subject matter areas: (1) business and management, (2) communications and debate, (3) economics, (4) group process, (5) philosophy and ethics, (6) political science, and (7) public relations. For example, they wished to emphasize political science subject matter objectives for all three subcategories of general and specific knowledge and understanding, as shown below. (Note that here they also added a fifth digit to the coding scheme, where the fifth digit of "6" referred to political science subject matter.)

General and Specific Knowledge and Understanding of Facts and Terminology in Political Science (code number 31126 or 32126)

General and Specific Knowledge and Understanding of Process in Political Science (code number 31226 or 32226)

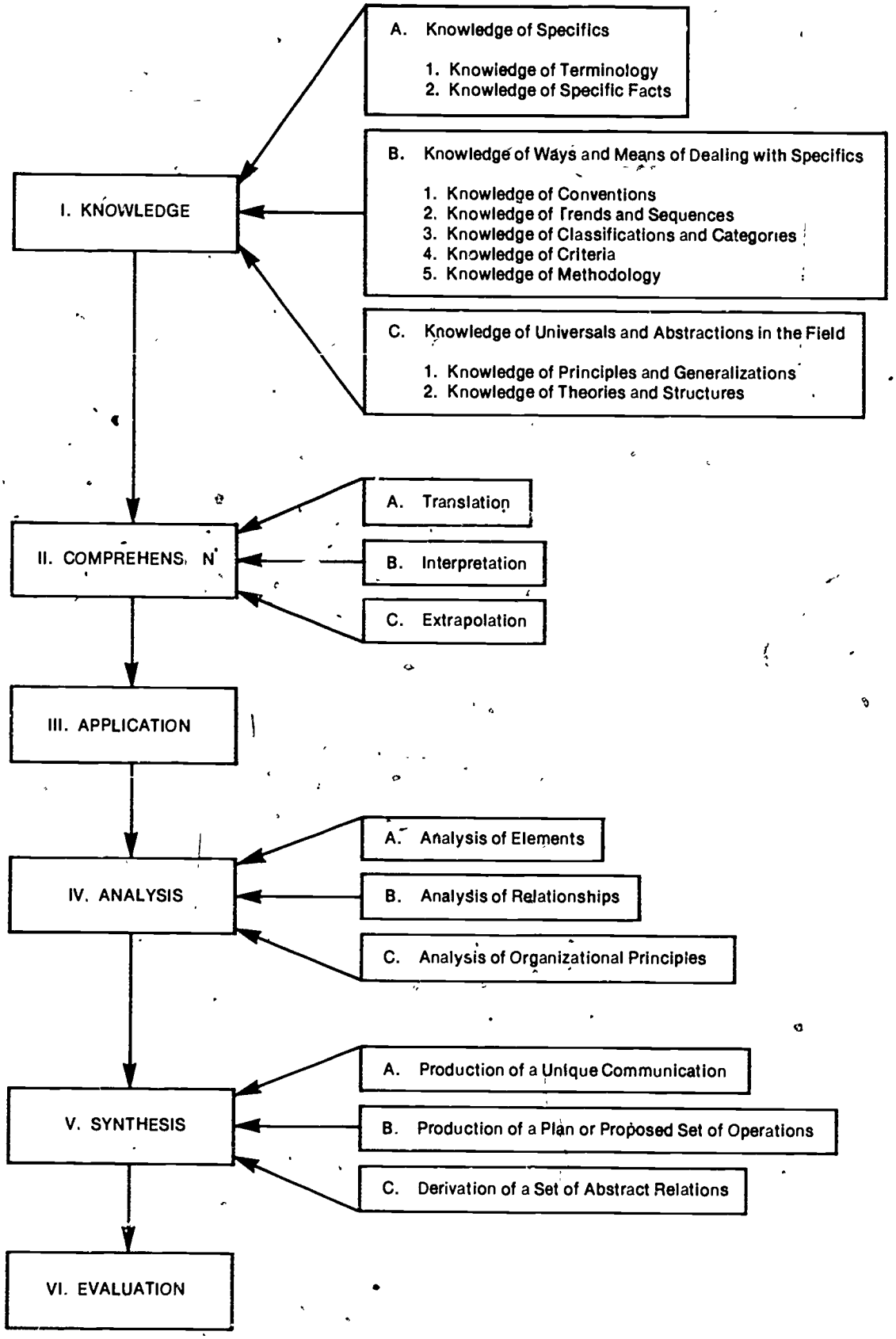
General and Specific Knowledge and Understanding of Theory in Political Science (code number 31326 or 32326)

It should be emphasized once more that this is a fictitious case that was meant to be illustrative rather than realistic. However, the example does suggest a way in which the Structure could be applied and extended. There are a number of other specialized, narrowly focused classifications that could be used in a similar manner to extend the Structure (see Lenning's 1977b compilation for possibilities). For example, a person designing a college physical education curriculum or a certain course in that area, would undoubtedly include "change in physical and motor skills (code number 2282)" as one of the subcategories for which he or she would develop specific objectives. And he or she might find it quite useful to break this subcategory into component subcategories using one of the psychomotor taxonomies that have been developed, such as the taxonomies developed by Guilford (1958), by Simpson (1972), by Cratty (1969), by Fleishman (1972), by Singer (1972), or by Harrow (1972). As another example, several of the affective (2300) categories could be further subdivided into still finer categories outlined by Krathwohl, Bloom, and Masia (1964): receiving, responding, valuing, and organization. Furthermore, each of these has still finer subcategories which could form a sixth level of specificity. Similarly, a person designing a social studies curriculum might wish to subcategorize "attitudes and values" according to their focus. For example, these subcategories could perhaps be divided into the following subcategories found in the NCHEMS Inventory of Higher Education Outcome Variables and Measures: attitudes toward and values concerning knowledge and skills, political attitudes and values, racial/ethnic attitudes and values, personal ethics, social conscience, socio-economic attitudes and values, and vocational attitudes and values.

Some people needing to extend the Structure on one or more dimensions may wish to develop their own additional categories of detail rather than use categories developed by others, and such an approach is certainly proper if the categories are valid and meet the person's needs. For example,

Figure C.1

THE BLOOM (1956) TAXONOMY OF COGNITIVE OBJECTIVES



Jim Manis at the University of Washington—a student in a graduate course there that used the review edition of this document as one of its basic texts—felt strongly that for the "audience" dimension, "physical disability condition subpopulations," should be split into "nonhandicapped," "situationally handicapped," and "permanently handicapped" in order to be useful in planning ways to facilitate educational outcomes for handicapped (disabled) people. Then, for the two disability categories, he felt another level of detail was needed—for example, mobility without aids, mobility with aids, mobility only with a wheelchair, mobility with a seeing eye dog, and so on, for "permanently handicapped."

Appendix D

Structure "Type-Of-Outcome" Categories Corresponding to Each Category of the NCHEMS Inventory of Higher Education Outcome Variables and Measures

OUTCOME CATEGORY OF THE NCHEMS INVENTORY	CORRESPONDING CATEGORY OR CATEGORIES OF THE OUTCOMES STRUCTURE*
1 1.1.00 Knowledge Development	3002 Knowledge, Technology, and Art Form Change Outcomes
1 1.1.01 General Knowledge	3102 Change in General Knowledge and Understanding
1 1 1.02 Specialized Knowledge	3202 Change in Specialized Knowledge and Understanding
1 1.2.00 Skills Development	2202 Change in Competence and Skills
1.1.2.01 Application of Knowledge Skills	2252 Change in Intellectual Skills
1.1.2.02 Critical Thinking and Reasoning Skills	2252 Change in Intellectual Skills
1.1.2.03 Creativity Skills	2232 Change in Creativity Skills
1.1.2.04 Communication Skills	2242 Change in Expression and Communication Skills
1.1 2.05 Motor Skills	2282 Change in Physical and Motor Skills
1 1.3.00 Knowledge and Skills Attitudes, Values, and Beliefs	2312 Change in Attitudes and Values
	2322 Change in Beliefs, Commitments, and Philosophy of Life
1.1.3.01 Intellectual Disposition	2122 Change in Desires, Aims, or Goals
1 2.1.00 Social Skills Development	2262 Change in Interpersonal, Leadership, and Organizational Skills
1 2 1.01 Interpersonal Participation	2262 Change in Interpersonal, Leadership, and Organizational Skills
1 2.1.02 Leadership	2262 Change in Interpersonal, Leadership, and Organizational Skills
1 2.1.03 Citizenship	2222 Change in Citizenship and Family Membership Skills
1 2.2.00 Development of Social Attitudes, Values, and Beliefs	2312 Change in Attitudes and Values
	2322 Change in Beliefs, Commitments, and Philosophy of Life
1.2.2.01 Political	2312 Change in Attitudes and Values
1.2.2.02 Racial/Ethnic	2312 Change in Attitudes and Values
	2432 Change in Perception of Others
1.2 2.03 Personal Ethics	2312 Change in Attitudes and Values
1.2.2.04 Social Conscience	2312 Change in Attitudes and Values
	2322 Change in Beliefs, Commitments, and Philosophy of Life
1.2 2.05 Socioeconomic Aspirations	2102 Change in Aspirations
1.3.1.00 Student Health Development	2622 Change in Physiological Health
	2572 Change in Psychological Functioning
1.3 1 01 Physical Health	2622 Change in Physiological Health
1.3 1 02 Mental Health	2572 Change in Psychological Functioning
1 3 2.00 Student Personal Attitudes, Values, and Beliefs	2312 Change in Attitudes and Values
	2322 Change in Beliefs, Commitments, and Philosophy of Life
1.3.2.01 Religious and Spiritual	2322 Change in Beliefs, Commitments, and Philosophy of Life
1.3.2.02 Change/Stability	2312 Change in Attitudes and Values
	2442 Change in Perception of Things
1.3.2 03 Self-Concept	2422 Change in Perception of Self
1 4.1 00 Career Preparation	2272 Change in Occupational and Employability Skills
	3102 Change in General Knowledge and Understanding
	3202 Change in Specialized Knowledge and Understanding
1.4.1 01 Academic Preparation	2212 Change in Academic Skills
1.4.1.02 Vocational Preparation	2272 Change in Occupational and Employability Skills
	3102 Change in General Knowledge and Understanding
	3202 Change in Specialized Knowledge and Understanding
1.4 2.00 Career Attitudes, Values, and Beliefs	2312 Change in Attitudes and Values
	2322 Change in Beliefs, Commitments, and Philosophy of Life
1 4.2 01 Achievement Orientation	2132 Change in Motivation or Drive Level
1 4 2 02 Educational Aspiration	2102 Change in Aspirations
1 4.2.03 Educational Satisfaction	2332 Change in Feelings and Emotions
1 4.2.04 Vocational Aspirations	2102 Change in Aspirations
2 0 0 01 Discovery of New Knowledge	3312 Change in Research and Scholarship Knowledge and Understanding
2.0.0 02 Interpretation and Application of New Knowledge	3312 Change in Research and Scholarship Knowledge and Understanding
2 0 0 03 Reorganization of New Knowledge	3312 Change in Research and Scholarship Knowledge and Understanding

(Continued)

(Continued)

*More than one Outcomes Structure category may pertain to a single NCHEMS Outcomes Inventory category in order to best conform to that category

OUTCOME CATEGORY OF THE NCHEMS INVENTORY (Continued)	CORRESPONDING CATEGORY OR CATEGORIES OF THE OUTCOMES STRUCTURE (Continued)
3.1.0.00 Community Development**	2002 Change in Human Characteristics
3.1.0.01 Community Educational Development	2002 Change in Human Characteristics
3.1.0.02 Faculty/Staff Educational Development	2002 Change in Human Characteristics
3.2.0.00 Community Service**	4002 Resource and Service Provision Outcomes
3 2 0.01 Extension Services	4202 Provision of Direct Services
3.2.0.02 Personal Services	4202 Provision of Direct Services
3.2.0.03 Extramural Cultural and Recreational Services	4102 Provision of Facilities and Events
3.2.0.04 Financial Impact on the Community	4202 Provision of Direct Services 1000 Economic Outcomes
3 3.0.00 Longer Term Community Effects**	0002 Change Outcomes
3.3.0 01 Social Impact	2002 Human Characteristics Outcomes
3.3.0.02 Economic Impact	1000 Economic Outcomes

**The "audience" dimension would account for "community" and the "time" dimension of the Outcomes Structure would account for "longer term."