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ABSTRACT

ERIC abstracts on educational planning, announced in RIE through December 1970, are presented. The key terms used in compiling this collection are "critical path method," "educational planning," "operations research," and "program budgeting." The following information is presented for each document: Author, title, place of publication, publisher, publication date, number of pages, ERIC document ("ED") number, price and availability, and abstract. A subject index is cross-referenced with the document listing. (RA)

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ERIC Abstracts on:

Educational Planning

ERIC Abstracts

A Collection of ERIC Document Resumes on

Educational Planning

Compiled by

ERIC Clearinghouse on
Educational Management
University of Oregon
Eugene, Oregon 97403

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PREFACE

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Besides processing documents and journal articles, the Clearinghouse has another major function--information analysis and synthesis. The Clearinghouse prepares bibliographies, literature reviews, state-of-the-knowledge papers, and other interpretive research studies on topics in its educational area.

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Philip K. Piele
Director

INTRODUCTION

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To compile each list, a search is made of the RIE indexes, using key terms that define the topic being searched. The terms used to compile this collection of documents on educational planning are CRITICAL PATH METHOD, EDUCATIONAL PLANNING, OPERATIONS RESEARCH, and PROGRAM BUDGETING. Relevance to the topic is the only criterion for listing a document. The listing is complete for all issues of RIE through December 1970. Not all of the listed documents were processed by this Clearinghouse.

Based on the document resumes in RIE, the following information is presented for each document: author, title, place of publication, publisher, publication date, number of pages, ERIC document ("ED") number, price of the document if it is available from the ERIC Document Reproduction Service, and the abstract. The documents are listed alphabetically by the authors' last names and are numbered.

A subject index, beginning on page 24, is cross-referenced with the document listing. The subject terms, arranged in alphabetical order, are identical to those contained in RIE's subject index.

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1. Abt, Clark C. An Education System Planning Game. 1965. 14 pages. ED 025 843 MF $0.25 HC $0.80.

Although games are not usually considered aids to planning, a special type of game can be helpful when problems are complex, factors determining resolution are imperfectly understood, and numerous views coexist. Objectives of the education system planning game are to illuminate major issues of educational planning, to increase the participants' awareness of the costs and benefits of alternative plans, and to stimulate an exchange of ideas concerning diverse approaches to education. The game is played by five teams. Two educator teams represent several levels of the educational establishment ranging from elementary school teachers to the U.S. Commissioner of Education. Their responsibility is to devise two separate plans within a fixed budget. A pair of student teams, representing advantaged and disadvantaged student populations, must choose one of the plans and estimate its impact on their achievement as measured by increased number of graduates and quality. A "reality daemons" team personifies social problems related to educational planning. They eliminate all implausible gains estimated by student teams and deduct for counterproductive side effects. Winners are the educator team with the most productive plan, the student team making the greatest achievement, and the "daemon" with the most objections.

2. Abt, Clark C. Serious Games. New York: The Viking Press, 1970. 176 pages. ED 039 447 Document not available from EDRS. (Available from The Viking Press, 625 Madison Avenue, New York, New York 10022, $5.95.)

The author explores use of games to instruct, inform, and educate. The first chapter discusses games in a general manner. The next five chapters present the use of games for improvement of education, for guidance in occupational choice and training, and for problem solving and decision making in physical and social sciences, government and industry. The last three chapters are devoted to the analysis of games as a thinking tool, to game designing, and to the evaluation of the cost effectiveness of games and their future. Three of the four appendices discuss the use of games in educational planning. The author indicates that games are effective teaching and training devices for students of all ages and in many situations, because they are highly motivating and can effectively communicate concepts and facts about many subjects.

3. Adams, Don. Educational Planning. Syracuse, New York: School of Education, Syracuse University, 1964. 152 pages. ED 014 807 Document not available from EDRS. (Available from Syracuse University Press, Box 87, University Station, Syracuse, New York 13210, $1.50.)

Six articles critically examine the process of educational planning from the underlying assumptions to the practical problems of implementation. In "Theoretical Considerations in Educational Planning," Anderson and Bowman discuss such topics as the definition of planning, educational planning and social democratization, planning for manpower production, the flow dynamics of educational systems, and designs for decisions. "Assessing the Educational Needs of a Nation" by Parnes defines the "need" for education, suggests approaches to assess educational needs, and assesses the educational needs in the Mediterranean countries. In "Organization of Educational Planning," Eide illustrates organizational development and factors behind the development of educational planning in the western countries, discusses planning as an administrative function, and suggests guidelines for the organization of educational planning. Hayward's "The Implemented Educational Plan" calls attention to the special opportunity offered in the prospect of an increasing flow of financing through foreign aid. Platt in "Manpower Planning in Thailand" analyzes the manpower aspects of Thailand, and Brembeck in "Educational Planning in Thailand" uses some of these findings along with others of his own to make recommendations for educational planning in Thailand.

4. Alameda County School Department. Fault Tree Analysis: A Research Tool for Educational Planning. Technical Report No. 1. Hayward, California: PACE Center, 1966. 97 pages. ED 029 379 MF $0.50 HC not available from EDRS.

   This ESEA Title III report describes fault tree analysis and assesses its applicability to education. Fault tree analysis is an operations research tool which is designed to increase the probability of success in any system by analyzing the most likely modes of failure that could occur. A graphic portrayal, which has the form of a tree, is constructed by a series of logical steps, showing at each stage precisely how a given failure can occur. Mathematical formulas based on the probability of occurrence of individual events are applied to determine the critical path leading to the top undesired event. Among the many advantages of this technique is its usefulness as a device for evaluation of processes as opposed to the more common evaluation of products. The document includes a history of fault tree analysis, principles of fault tree construction, a prototype fault tree with analysis, and evaluation of fault tree analysis as an educational research and planning technique. Although many technical problems are yet to be solved, fault tree analysis holds much promise for application to education.

5. Beeby, C. E. Planning and the Educational Administrator. Fundamentals of Educational Planning Series, No. 4. New York: UNIPUB, INC., 1967. 36 pages. ED 030 182 Document not available from EDRS. (Available from UNIPUB, INC., P. O. Box 433, New York, New York 10016, $1.00.)

Educational planning is defined as the exercising of foresight in determining the policy, priorities, and costs of an educational system, having due regard for economic and political realities, for the system's potential for growth, and for the needs of the country and of the pupils served by the system. As related particularly to an educational administrator, five aspects of this view are discussed: (1) the new long-term dimension of national educational planning, taking into account economic growth, human resource development, and "macro-planning," or the simultaneous consideration of a country's several development plans; (2) planning regarded as a linear operation involving preparation, adoption, and execution; (3) sensitivity to political realities, including national goals and influence groups; (4) the educational administrator as special guardian of the rights of the child, within the total framework of the country's economic and manpower needs, and (5) the educational system's capacity to meet the demands made on it by any proposed plan. The educational administrator must give due attention to other national leaders who help determine a country's long-range plans and exercise his special expertise in the diagnostic, strategy-adopting, and tactic-determining phases of educational planning.

6. Briner, Conrad. "Organization for Educational Problem Solving." Paper presented to the National Association of State Boards of Education, Salt Lake City, Utah, October 9, 1968. 18 pages. ED 025 005 MF $0.25 HC $1.00.

For education to be maximally effective at the local level, long-range planning must be developed at the state level and a constructive exchange of information concerning educational problems must operate throughout all levels of a state educational system. Administration of education at the state level must be organized to insure that seven major functions are effectively carried out: (1) sensing emerging needs for educational development in the state and for related changes in the state's educational system, (2) assigning priorities and allocating resources, (3) designing new educational programs and services, (4) evaluating both new and established educational programs and services, (5) disseminating information regarding new programs, (6) encouraging and supporting the adoption of new and approved instructional programs and services, and (7) assuring the quality of educational offerings in accordance with legislative mandates and state board regulations. A new organic system for state-level administration is described, incorporating an administrative axis and a major program axis.

7. Caldwell, Michael S. Input Evaluation and Educational Planning. Columbus: Evaluation Center, Ohio State University, 1968. 23 pages. ED 025 043 MF $0.25 HC $1.25.

Educational programs, regarded as inputs, may be developed within a procedural framework to achieve outputs of desired change and improvement. Eight criteria for assessing plans and strategies are relevance, legality, congruence, legitimacy, compatibility, balance, practicability, and cost effectiveness.

8. Carvell, Fred, and others. Occupational Forecasting and Trending: An Early Warning System for Educational Planning. Los Altos, California: Tadlock Associates, 1969. 33 pages. ED 033 224 MF $0.25 HC $1.75.

   This model for forecasting regional and national occupational trends for use in vocational education planning facilitates the incorporation of labor market and student needs into program planning. The study includes: (1) a literature search, which yielded eighty references related to occupational trend forecasting and exploratory programs, (2) a synthesized model for forecasting occupational trends and needed vocational programs, and (3) a conference, during which the model was subjected to intense examination. This volume is the summary report and includes a brief historical background of the problems and application of forecasting techniques and models, a description of the problems of relating forecasting trends to the educational process, an outline of the concept and rationale for the suggested forecasting model, and a summary of the organization, function, and interaction of each component of the suggested model.

9. Centner, S. I., and others. Systems Analysis and Higher Education Planning. Toronto: Systems Research Group, 1969. 62 pages. ED 035 205 Document not available from EDRS. (Available from Systems Research Group, 130 Bloor Street West, Toronto, Ontario, Canada.)

   The use of computer simulation model, C.A.M.P.U.S., as a systems analysis tool for effective educational management and planning is described. The components of the model are discussed as they relate to planning, programing, and budgeting. Problems that can be analyzed using C.A.M.P.U.S. are considered, and the implementation of the model is illustrated for two sample problems. Also included are a consideration of the creation of climate for its successful implementation and a summary of the advantages of C.A.M.P.U.S.

10. Cook, Desmond L. "Better Project Planning and Control through the Use of System Analysis and Management Techniques." Paper presented at the Symposium on Operations Analysis of Education, sponsored by the National Center for Educational Statistics, Washington, D.C., November 20-22, 1967. 17 pages. ED 019 729 MF $0.25 HC $0.95.

The combined application of system analysis and management techniques is an effective way to achieve optimum results in planning and executing projects in the field of education. Projects of this type are generally finite, complex, homogenous, and nonrepetitive. System analysis of a project includes disassembly into components and reassembly through a synthesis based upon a linear flow-chart approach incorporating time, cost, and performance variables. Suggestions include instructions for thinking of a project as a system, the importance of establishing specific goals, types of project control, and the contribution system analysis can make to the function of management in education.

11. Cook, Desmond L. "A Needed Reorientation of Educational Research for Educational Planning." Paper presented at the Mid-Winter Research Conference, University of Dayton, Dayton, Ohio, January 29, 1968. Columbus: Educational Research Management Center, Ohio State University. 11 pages. ED 025 014 MF $0.25 HC $0.65.

To be more useful in educational planning, educational research must be (1) more broadly conceived to incorporate tasks and techniques from disciplines outside of education, (2) more systematic in the sense that both research and development must be more programmatic in nature, and (3) reoriented so that the results of research, whether called basic, applied, or action, should suggest alternatives in educational planning. Forces which should cause these hypotheses to happen are (1) the entry of the business field into the educational enterprise, (2) the fact that federal support for education is becoming more program oriented, and (3) the increasing use in education of new systems analysis and program-budgeting tools.

12. Cook, Desmond L. "PERT Applications in Educational Planning." Paper presented at the annual meeting of the Association of Educational Data Systems, Philadelphia, Pennsylvania, May 3, 1966. 13 pages. ED 019 751 MF $0.25 HC $0.75.

This paper discusses the concepts of educational planning, the program evaluation and review technique (PERT), and the potential value that PERT has for educational planning. The discussion of planning is limited to short-run educational projects. The nature of PERT is discussed and its applicability to planning is established. Several benefits that result from the application of PERT principles to the planning function associated with educational research are noted: (1) PERT often results in clearer statement of project objectives and goals; (2) PERT requires that those involved in the project make explicit the means by which they plan to reach objectives; (3) PERT results in clearer definition of each actual task to be done; (4) PERT enables the

project manager to identify at an early stage the potential trouble spots in the project plan; (5) PERT assists a project manager to know where to replan in the event that the original plan is inappropriate for some reason; and (6) the use of network techniques facilitates the communication process since plans are portrayed in a graphic manner.

13. Coombs, Philip H., and others. Educational Planning: An Inventory of Major Research Needs. Paris: International Institute for Educational Planning, 1965. ED 015 136 Document not available from EDRS. (Available from the International Institute for Educational Planning, 7, Rue Eugene-Delacroix, Paris 16E, France.)

Urgent contemporary educational research needs as seen from the vantage point of both producers and consumers of research are identified in this report. The document, which covers twenty-five possible areas of research, suggests those research topics which, in the opinion of selected consultants, are considered to be particularly useful and important as well as feasible. Showing how such research can contribute to a better knowledge of the whole field of educational planning, the document treats each topic as a "project" and suggests in general terms how each might be approached, allowing researchers themselves to work out the details to fit their own conditions and inclinations. The projects are presented under six main headings: (1) educational costs and efficiency, (2) financing education, (3) teachers, (4) manpower aspects, (5) the planning process, and (6) international aspects of educational planning. This report is the third in a series of publications by the International Institute for Educational Planning. The Institute's first report was a comprehensive bibliography on educational planning. The second report was a directory of institutions doing research and training important to educational planning in thirty countries.

14. Correa, Hector. "Models and Mathematics in Educational Planning." Chapter 24 in The World Yearbook of Education, 1967: Educational Planning, edited by George Z. F. Bereday and others. London: Evans Brothers Ltd., 1967. 25 pages. ED 031 775 Document not available from EDRS. (Complete document available from Harcourt, Brace, and World, Inc., 757 Third Avenue, New York, New York 10017, 442 pages, $12.50.)

This paper explains the concept of models, their construction, and their use. It is suggested that mathematics is a helpful tool in model construction, and that models in general are indispensable in science. Models identify variables and illustrate causal relationships among the variables. An attempt is made to classify models from the point of view of the problems they attempt to solve. Included are the construction, verification, and application of mathematical models in pure science, case studies, and policy making. A description and classification of

the mathematical models available for educational planning are presented. In the final section is a brief description of the basis for the conflict between those who advocate and those who oppose the use of models. A fifty-six-item bibliography on mathematical models of education is included.

15. Correa, Hector. "More Schools or Better Schools?" Reprinted from Scientia Paedagogica Experimentalis, 3, 2 (1966). 20 pages. ED 026 736 Document not available from EDRS.

    Linear programing models are used in an attempt to answer the question of whether more or better schools should be developed. The criterion function is the maximization of the product of education, measured either in income or school years. The model is varied throughout the paper by confronting the criterion function with a variety of constraints, including limited resources, distribution of expenditures on graduates and nongraduates, income received as a result of different levels of education, interdependence of the different levels of the educational system, regional differences, and personal abilities of students.

16. Drewry, Galen N. "The Administrative Team and Long-Range Planning." Papers presented at a summer Conference (2nd) Concerned with Administrative Team Leadership, Athens, Georgia, 1967. ED 019 736 Document not available from EDRS. (Available from the Institute of Higher Education, University of Georgia, Athens, Georgia 30601, $1.00.)

    The papers in this report are the major presentations at the second Conference Concerned with Administrative Team Leadership, sponsored by the Southern Educational Foundation. Twelve senior colleges from Alabama, Georgia, North Carolina, and South Carolina were represented. Paper topics included (1) "Overall Institutional Considerations in Planning," (2) "The Elements of Planning and How They Fit a Team Approach," (3) "Fiscal and Physical Planning," (4) "Planning for Students," (5) "Academic Planning," and (6) "Team Play in Planning." Discussion sessions revealed a wide variety in team membership and procedures, with each institution seeking the adaptation best suited to its local situation and personnel. The importance of long-range planning as a concern of the entire administrative team, rather than of the president or development officer, was an important outcome of the conference. A third summer conference was planned.

17. Educational Service Bureau, Inc. Systems Planning in Public Education. Arlington, Virginia: Administrative Leadership Service, 1968. 32 pages. ED 026 743 Document not available from EDRS. (Available from Administrative Leadership Service, Division of Educational Service Bureau, Inc., 1507 M Street, N.W., Washington, D.C. 20005, $4.00.)

This study, based primarily on the experience of the city of Seattle, Washington, deals with the application of the systems approach to educational planning. Section One defines and describes the concept of a system and the systems approach, and gives a general introduction to the use of systems analysis. Section Two describes the development and use of the systems approach by the Seattle School District, with particular attention given to the process of planning for its use. In the third section, planning theory and the administrator's role receive attention, including the meaning of systems planning, dimensions of a plan, the planning process, and categories of educational plans. The final section discusses organization and procedures for planning, covering such topics as functions of an Instructional Development Council, origin of ideas and routing of plans for instructional improvement, improvement of management, authorization for planning, parts of a plan, integration of planning, and implementation of plans. The study ends by suggesting where interested school administrators can seek assistance in developing a systems approach to educational planning.

18. Eidell, Terry L., and Nagle, John M. PPBS and Data-Based Educational Planning. Eugene: Center for Advanced Study of Educational Administration, University of Oregon, 1970. 63 pages. ED 038 741 MF $0.50 HC $3.25.

    This document reports the Center's current thinking about PPBS and data-based educational planning. In the introduction, PPBS is defined, the usual conceptualization of PPBS is outlined, current pressure to adopt PPBS in public education is discussed, and current efforts at such implementation are reviewed. The second part deals with basic concepts of a systems model and provides a detailed explication of three interrelated models. The third part relates these three systems models to PPBS, refines the original conceptualization, and provides a framework that is used in the fourth part to discuss possible innovation strategies for implementing PPBS.

19. Helmer, Olaf. The Use of the Delphi Technique in Problems of Educational Innovations. Santa Monica, California: The RAND Corporation, 1966. ED 014 134 Document not available from EDRS. (Available from National Technical Information Service (formerly Clearinghouse for Federal Scientific and Technical Information), Springfield, Virginia 22151, as AD 644 591, HC $3.00, MF $0.95.)

    A number of pilot studies were conducted in an educational innovations seminar held in 1965 at the Institute of Government and Public Affairs, UCLA, to explore the potentialities of applying Delphi techniques to problems of educational planning. The respondents for these experiments suggested specific educational innovations and budget allocations

for these proposed innovations. A large number of the educational innovations listed for consideration were selected. It was generally thought that teacher salaries ought to be raised substantially in order to improve the quality of education. Large-scale exploratory work and reorganization of instruction and school programs were strongly supported. Although the substantive findings should not be weighted heavily, the approach is methodologically promising.

20. Hinds, Richard H. Educational Program Planning and Related Techniques. Annotated Bibliography. Unpublished Report. Miami, Florida: Dade County Public Schools, 1969. 15 pages. ED 029 375 MF $0.25 HC $0.85.

This annotated bibliography contains ninety-seven entries dealing with the problems and techniques of comprehensive program planning. It is designed for educators who feel that systems analysis, cost-benefit studies, and mathematical models have some relevance in the planning processes of a large school system. Three major sections are included: (1) Educational/Program Planning, including studies dealing with the needs and problems of comprehensive and long-range planning by educational institutions; (2) Program Analysis Techniques, containing entries presenting the use of specific techniques such as systems analysis and operations research in the analysis of educational and related problems; and (3) Planning-Programing-Budgeting Systems, including documents applying principally to the interface between planning and budgeting.

21. Hirsch, Werner Z. "Planning Education Today for Tomorrow." Los Angeles: Institute of Government and Public Affairs, University of California. Reprint from Urban Affairs Quarterly, 2, 1 (September 1966). ED 019 757 Document not available from EDRS.

In three areas of responsibility--policy consideration, program formulation, and program administration--educational planners are relatively unprepared to make decisions affecting urban education in both the immediate and the distant future. These three fundamental responsibilities involve (1) identifying educational objectives, opportunities, problems and solutions, (2) formulating educational programs to meet the needs that have been recognized, and (3) effectively administering the resultant programs. The establishment of a metropolitan educational outlook station is proposed as an interinstitutional planning center offering local units unified information and a common source of expert advice. Various ways to plan and utilize such a facility are outlined, including simulation techniques, benefit-cost analysis, and program budgeting. Potential problems that such a facility could help to solve include time-energy expenditure for the increasing proportion of older adults, poor utilization of intellectual talent, the best use of computerized information systems, and vocational training for the technologically displaced worker.

22. Katzenbach, Edward L. Planning Programming Budgeting Systems: PPBS and Education. Cambridge, Massachusetts: The New England School Development Council, 1968. 17 pages. ED 025 856 MF $0.25 HC $0.95. (Also available from The New England School Development Council, 220 Alewife Brook Parkway, Cambridge, Massachusetts 02138, Members $1.00, Nonmembers $2.00.)

Continuous change in education is requiring educational administrators to plan for the distant future with as much precision as they now do for the immediate future. Recently, major advances in the planning-budgeting process have become available to educators in the form of PPBS. Fiduciary budgets, which have been used in most schools since the early 1900s, have the following problems: (1) They are incremental budgets relying heavily on what was done the previous year; (2) they develop meaningless comparative data; (3) they do not reveal the source of funds; and (4) they are written only for the following year. Program budgeting, on the other hand, offers the administrator the opportunity to design a long-term plan for creative instruction. PPBS delineates program integration and highlights alternatives in a new way by aligning objectives and costs. PPBS differs from present budgeting procedures in that it (1) compels administrators to give some thought to alternatives, (2) stresses the significance of minor costs over a long period of time, (3) helps relate the cost of a program to its merits, and (4) links teacher aids, supporting activities, research, and development to subject matter in terms of time and cost.

23. Knorr, Owen A., ed. Long-Range Planning in Higher Education. Proceedings of the Annual Institute on College Self Study for College and University Administrators (6th, University of California, Berkeley, July 6-10, 1964). Boulder, Colorado: Western Interstate Commission for Higher Education, 1965. 136 pages. ED 026 847 MF $0.75 HC $6.90.

The following addresses concerning long-range planning in institutions of higher education are presented: (1) "Design and Change in American Higher Education," (2) "Planning in the College or University," (3) "A Case Study in Institutional Planning," (4) "The Institution and the System: Autonomy and Coordination," (5) "Housing the Educational Program: The Physical Plant as Educational Environment," (6) "Long-Range Financial Planning," (7) "System Analysis in Planning," and (8) "Resources for Planning: A Resume." Selections from the discussions following each formal address are presented, as are selected references pertaining to each presentation.

24. Kraft, Richard H. P., ed. Education and Economic Growth. Proceedings of the Annual Conference on the Economics of Education (1st, Tallahassee, Florida, December 15, 1967). Tallahassee: Educational Systems Development Center, Florida State University, 1968. 195 pages. ED 021 334 MF $0.75 HC $9.85.

This volume contains papers originally delivered at the First Annual Conference on the Economics of Education sponsored by the Educational Systems Development Center, held at Florida State University, December 15, 1967. The papers are organized under two broad headings: Planning Education for Economic and Social Development, and Strategies of Human Resource Development. The papers and their authors are: (1) Richard H. P. Kraft, "Introduction: Education and Economic Growth," (2) Hector Correa, "An Optimum Enrollment Policy for Developing Countries," (3) Nicholas DeWitt, "Problems of Educational Planning in Developing Countries," (4) Russell G. Davis, "On the Development of Educational Planning Models at Harvard, CSED: An Algebraic History of Activity in One Small Place," (5) Roy W. Jastram, "A Systems Approach to Educational Organization," (6) Richard H. P. Kraft, "Inter-Firm Correlations: The Contribution of Educationally Heavy Inputs to Increasing Profitability," (7) Friedrich Edding and Jens Naumann, "A Systems Look at Educational Planning," (8) Irvin Sobel, "A Strategy of Human Resource Development," and (9) Jens Naumann, "The Researcher and the Human Resources Decision-Maker: A Dialectic of Planning."

25. Kraft, Richard H. P., ed. Strategies of Educational Planning. Proceedings of the Annual Conference on the Economics of Education (2nd, Tallahasee, Florida, July, 1968). Tallahassee: Educational Systems Development Center, Florida State University, 1969. 309 pages. ED 027 615 MF $1.25 HC $15.55.

Eight papers focus on strategies for educational planning. In "Policy Formulation and Policy Implementation Relationships in an Educational System," Donald Miller asserts that performance relationships can be explained in terms of an educational system and its environment. Arnold Reisman and Martin Taft present "A Systems Approach to the Evaluation and Budgeting of Educational Programs." Richard Goodman examines the PPBS approach in "PPBS: Challenge to Educational Planners." Marvin Hoffenberg considers program budgeting for school system management in "Program Budgeting in Education: Some Organizational Implications." Richard Kraft examines the role of the educational planner in "Changing Manpower Needs and Educational Obsolescence: Implications for Vocational-Technical Education Planning." Desmond Cook discusses three "Economic Considerations in Educational Project Planning." An economic analysis of tomorrow's school is presented by C. W. McGuffey in "Economic Planning for the Future Development of Educational Facilities." Robert Campbell contrasts the economic approach to educational demand analysis with other approaches in "Approaches to the Analysis of the Demand for Higher Education: A Tool for Educational Planning."

26. LeVasseur, Paul M. "A Study of Inter-Relationships between Education, Manpower and Economy." Paper prepared for the Symposium on Operations Analysis of Education, Washington, D.C., November 19-22, 1967. Paris: Directorate for Scientific Affairs, Organisation for Economic Cooperation and Development. 44 pages. ED 021 310 MF $0.25 HC $2.30.

The model considered in this paper, the G.A.M.E. Educational Planning Model, provides a means of studying the interrelationships among education, manpower, and the economy. The model was originally constructed for use at the training seminar, Global Accounts for Manpower and Education (G.A.M.E.), held in Dublin, Ireland, September 4-20, 1967. Designed to quantify certain structural relationships within and among these systems, the model can be used in a manner which closely approximates the way in which planning is carried out in practice. The model is designed to analyze various planning decisions in terms of their consistency and, in cases in which dysfunctions are discovered, can be used in an iterative manner to arrive at mutually consistent and balanced plans. The model considers three separate systems: the Educational System, the Manpower System, and the Interindustry System. The body of the paper is concerned with a qualitative description of the model, while the mathematical description is contained in an appendix.

27. McIsaac, Donald N., Jr., and others. A Time-Cost Management System for Use in Educational Planning. Madison: Department of Educational Administration, University of Wisconsin, 1969. 110 pages. ED 025 935 Document not available from EDRS. (Available from University of Wisconsin, Department of Educational Administration, Information Systems, 415 W. Gilman Station, Madison, Wisconsin 53706.)

Prepared specifically for the Denver Public Schools, this manual provides some basic understanding of educational planning based upon the program evaluation and review technique (PERT) and the critical path method (CPM) techniques. The theory of PERT/CPM and the fundamental processes involved therein are explained in the first part of the manual, while the operating procedures that deal in particular with the Denver Public Schools are covered in the second part. The appendix contains material which specifically relates to educational planning in two Denver schools.

28. Mansergh, Gerald G., ed. Curricular and Fiscal Planning with Planning, Programming, Budgeting Systems. Special Monograph No. 2. Detroit, Michigan: Metropolitan Detroit Bureau of School Studies, Inc., 1969. 42 pages. ED 035 985 Document not available from EDRS. (Available from Metropolitan Detroit Bureau of School Studies, Inc., Fairmont Building, Wayne State University, 680 Merrick Street, Detroit, Michigan 48202, $1.50 member, quantity discount.)

The contents reflect the tone of the PPBS Workshop at Waldenwoods Conference Center, Hartland, Michigan, May 1-2, 1969. Planning-programing-budgeting systems provide the means for formulating more precise curricular objectives and coordinating curricular-fiscal planning within education. At the core of PPBS is the program budget that reports programs to be accomplished and allocates expenditures in terms of objectives relating to student achievement rather than in terms of objects to be purchased. The program structure can be based on four approaches: (1) subject matter, pertaining to curricular programs; (2) grade level, reflecting grade level groupings; (3) operating unit, focusing on individual schools; and (4) a hybrid approach, combining (1) and (2). The first phase of PPBS concerns the movement from planning to programing. It should include a clear statement of the school district's philosophy, a definite program format, and educational objectives. The second phase concerns the transition from programing to budgeting. The output of the first phase consists of dollar figures for both a program's expenditures and benefits. The budget makers verify these estimates and, with figures on total revenues, can provide information about the feasibility of all programs.

29. North Carolina State Board of Education. A Digest of Educational Planning. Raleigh: Division of School Planning, 1963. 25 pages. ED 024 229 MF $0.25 HC $1.35.

A scheme for the educational planning process is outlined and described in terms of the what, when, who, and how. The "how to plan" stage is broken into three steps: (1) identification and analysis of needs--self-evaluation and areas of study; (2) adaptation and implementation of plant improvement--selection and employment of specialists, preparation of educational specifications, and development of preliminary architectural plans; and (3) completion and evaluation of the educational planning process--preparation of final plans and specifications, selection of furniture and equipment, completion of new facility, and evaluation of the improvement program.

30. OPERATION PEP. Symposium on the Application of System Analysis and Management Techniques to Educational Planning in California (Chapman College, Orange, California, June 12-13, 1967). Burlingame, California: 1967. 319 pages. ED 023 181 MF $1.25 HC $16.05.

This is a collection of twenty-one reports presented at the two-day symposium which ended the eighteen-month planning phase for OPERATION PEP. The symposium was a culminating activity of a training program designed for one hundred California educators, in the application of systems analysis and management planning techniques. The reports, funded under Title III of ESEA, focus on the evolution of management science as a fundamental mode of performance for educational planners in California.

31. Organisation for Economic Cooperation and Development. "Mathematical Models in Educational Planning. Education and Development, Technical Reports." Papers presented at meeting organised by OECD, March, 1966. Paris: 1967. 290 pages. ED 024 138 MF $1.25 HC $14.60. (Also available from OECD Publications Center, Suite 1305, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006, No. 21117, $3.80.)

This volume contains papers, presented at a 1966 OECD meeting, on the possibilities of applying a number of related techniques such as mathematical model building, simulation, and systematic control theory to the problems of educational planning. The authors and their papers are (1) Richard Stone, "A View of the Conference," (2) Hector Correa, "A Survey of Mathematical Models in Educational Planning," (3) The Forecasting Institute of the Swedish Central Bureau of Statistics, "Projection Models of the Swedish Educational System," (4) Tore Thonstad, "A Mathematical Model of the Norwegian Educational System," (5) Peter Armitage and Cyril Smith, "The Development of Computable Models of the British Educational System and Their Possible Uses," (6) Jean Benard, "General Optimization Model for the Economy and Education," (7) C. C. von Weizsacker, "Training Policies under Conditions of Technical Progress: A Theoretical Treatment," (8) Paul Alper, "Introduction of Control Concepts in Educational Planning Models," and (9) Paul L. Dressel, "Comments on the Use of Mathematical Models in Educational Planning."

32. Organisation for Economic Cooperation and Development. Methods and Statistical Needs for Educational Planning. Paris: 1967. 358 pages. ED 023 171 MF $1.50 HC $18.00. (Also available from OECD Publications Center, Suite 1305, 1750 Pennsylvania Avenue, N.W., Washington, D.C. 20006, No. 21.605, $8.50.)

This handbook was compiled to assist OECD member countries in the long-term development of their educational statistics and to provide them with a basis of comparison for the collection of internationally comparable statistics useful to educational planners. Recent methodological approaches to long-term planning are also discussed. The statistics considered are those required to project in the medium- and long-term the main magnitudes in the educational system--pupils, graduates, teachers, buildings, costs, and expenditures. The chapter headings present a clear picture of exactly which aspects of educational planning are included: (1) Elements of an Educational Flow Model, (2) Sociological Aspects, (3) Manpower Requirements, (4) An Integrated Conceptual Framework, (5) The Costs of Education--Methods of Analysis and Projection, (6) A Statistical Tabulation Scheme, (7) The Collection and Processing of Data, (8) International Comparisons, and (9) Directions for Further Work.

33. Perkins, Joseph A., Jr. "PPBS and MIS: Their Role in Managing Education." Paper presented at the National School Finance Conference, New Orleans, Louisiana, March, 1969. 15 pages. ED 030 961 MF $0.25 HC $0.85.

Planning, programing, budgeting systems (PPBS) provide a new approach to the optimum use of limited school system resources in improving the learning process. In conjunction with management information systems (MIS), PPBS is a tool which school officials can use to communicate to taxpayers the necessity for current school programs and the manner in which tax dollars are being allocated. PPBS requires that general educational goals, based on perception of the needs of the community, be translated into specific, quantifiable objectives to be carried out in specified time periods. Programs for carrying out these objectives are then specified and compared for expected effectiveness and cost. Approved long-run and short-run programs are budgeted and put into operation. The various program operations are evaluated by a previously established criterion for fulfillment of the specified objectives. To estimate, evaluate, and report on operating systems within the multiyear PPBS framework, certain MIS data are required. The five major categories of MIS data are pupil data, program data, personnel data, facilities data, and financial data. On the basis of this data the school administration makes its decisions regarding programs and budgets.

34. Piele, Philip. Planning Systems in Education. Eugene: Center for Advanced Study of Educational Administration, University of Oregon. r & d perspectives, (Fall 1969). 5 pages. ED 025 855 MF $0.25 HC $0.35.

This literature review examines sixteen selected documents, processed by the ERIC Clearinghouse on Educational Administration, that deal with the application of several kinds of planning systems to educational programs. Particular attention is given to planning-programing-budgeting systems (PPBS), program evaluation review techniques (PERT), and various types of planning models.

35. Ruliffson, Willard Adams. An Analysis of the Rationale and Procedures for Long-Range Planning--Found in Selected Corporate Enterprises, Government Agencies or Departments, and School Systems--Which are Appropriate for Educational and Administrative Planning in Local School Systems. New York: Teachers College, Columbia University, 1968. 99 pages. ED 020 571 MF $0.50 HC $5.05.

This study reviews some of the current planning practices in school systems considered already involved in long-range planning, and describes further long-range techniques which could be adapted for

school systems from current corporate and governmental planning procedures. Individual interviews were conducted with selected management (or administrative) personnel in corporations, government, and school systems to identify the specific elements of a planning program appropriate for school systems. In addition, questionnaire responses from approximately two hundred school systems were tabulated, categorized, and analyzed. The interview information was compared with data from the other sources and synthesized as a basis for describing a process of long-range planning. Results indicate the necessity for organized long-range planning efforts. Neither systematic long-range planning nor a formalized structure for insuring an effective planning effort are found in most school systems today, but there is a willingness evident among school leaders to seek more imaginative approaches to planning. Future studies and practical experimentation in cooperative interaction between schools and corporate and government enterprises are warranted.

36. Salmon, Richard, and others. A Computer Simulation Modeling Tool to Assist Colleges in Long-Range Planning. Final Report. Kansas City, Missouri: Kansas City Regional Council for Higher Education, 1969. 58 pages. ED 032 013 MF $0.50 HC $3.00.

Long-range planning involves the establishment of educational objectives within a rational philosophy, the design of activities and programs to meet stated objectives, the organization and allocation of resources to implement programs, and the analysis of results in terms of the objectives. Current trends of educational growth and complexity demand increasingly accurate, rapid, and extensive planning, but the drudgery of assembling, processing, and analyzing large quantities of data often reduces planning efficiency. With the Higher Education Long-Range Planning (HELP) program, college and university officers may construct a mathematical model of an institution, simulate its behavior over a ten-year period under hypothesized conditions, and arrive at policy decisions that are likely to achieve desired objectives within the anticipated resources. The HELP approach involves philosophy (the "why" questions associated with an institution), objectives (the "what" type questions), programs (how activities will be conducted to achieve objectives), and resources (the allocation of personnel, facilities, funds, and time). Once a plan has been developed, it becomes the guide for implementation and analysis of results. The report discusses methods and model design and presents four planning models actually in use to illustrate how varied institutions utilize the HELP program in their long-range planning processes.

37. Savard, William G. A Dynamic General Planning Model for the Hawaii Department of Education. Honolulu: Hawaii State Department of Education, 1967. 22 pages. ED 020 560 MF $0.25 HC $1.20.

A planning model is suggested for the State Department of Education so that changes in the system and the program can most effectively accomplish the realization of long-range aims, intermediate goals, and immediate objectives. Steps to consider include evaluating resources, matching resources with aims, and formulating plans. A vital part of the model is a comprehensive information system composed of six major subsystems--pupil personnel, staff personnel, materiel, curriculum and instructional programs, physical facilities, and budget and finance. Feedback loops must be accurate, up-to-date, usable, and relevant to the plan or set of plans under consideration. A planning sphere is conceptualized to link ideas and arrangements necessary to implement the plan. A framework of relationships is proposed, outlining a taxonomy of programs--those that are operational and those that are supportive, as well as those whose plans and budgets are on the state level and on the level of the individual school.

38. Shaycoft, Marion F. "A New Multivariate Index for Use in Educational Planning." Palo Alto, California: American Institutes for Research. Paper presented at the American Psychological Association Convention, Washington, D.C., August 31-September 4, 1969. 19 pages. ED 035 026 MF $0.25 HC $1.05.

This paper presents a new multivariate index for use in educational planning. This new index is called a propinquity index. An individual's propinquity index with respect to a given occupational group is his geometric distance in n-dimensional space from the group centroid, where each dimension is the standard score on one of the original variables weighted by a value representing, at least approximately, the relevance of the corresponding variable in identifying group members. The propinquity index may be used in two ways in helping the individual develop his educational and vocational plans. Converted to a propinquile, it can constitute one of many separate items of information used in arriving at important decisions. In many circumstances, the propinquity index may function better as one of the predictors in a multiple regression equation to predict a dichotomous group membership criterion.

39. Sisson, Roger L. Some Results of a Simulation of an Urban School District. Philadelphia: Management Science Center, University of Pennsylvania, 1967. 68 pages. ED 012 096 MF $0.50 HC $3.50.

A computer program which simulates the gross operational features of a large urban school district is designed to predict school district policy variables on a year-to-year basis. The model explores the consequences of varying such district parameters as student population, staff, computer equipment, numbers and sizes of school buildings, salary, overhead costs, and inflation effects. Past and present values

of these parameters are used to calculate future trends. Administrative data which limit the model are students per staff member, space per student, and computer equipment per student. Community-established limits are the operating budget, capital budget, and computer budget. The simulator program can be used to determine the optimum policy to be adopted in terms of the foregoing parameters and limits. The Fortran program is included in the appendix.

40. Temkin, Sanford. A Comprehensive Theory of Cost-Effectiveness. Administering for Change Program. Technical Paper. Philadelphia, Pennsylvania: Research for Better Schools, Inc., 1970. 66 pages. ED 040 503 MF $0.50 HC $3.40.

This monograph provides a theoretical substantiation for benefit-cost analysis and cost-effectiveness analysis in school system planning. Nine examples of decision-making situations are presented. A simple case of a single objective to be attained with one plan being selected from a set of proposed plans with no resource constraints evolves into a more complex and more realistic case with multiple objectives and several activities or programs to be chosen from a host of possibilities under resource constraints. Cases include not only a priori decision-making schemes, but evaluation schemes as well. A summary of the nine cases offers specific recommendations about methods that can be used for generating and processing the kind of "data types" required for educational decision making. A thirty-six-entry bibliography is appended. This document is a rewritten chapter of a dissertation entitled, "A Cost-Effectiveness Evaluation Approach to Improving Resource Allocations for School Systems."

41. Theodores, James L., and others. Crisis in Planning. An Analysis of Some Factors That Influence the Kinds of Schools We Have, How They Got That Way, and What We Must Do About Changing Them. Columbus, Ohio: Council of Educational Facility Planners, 1968. 36 pages. ED 026 844 MF $0.25 HC $1.90. (Also available from Council of Educational Facility Planners, 29 West Woodruff Avenue, Columbus, Ohio 43210, $3.00.)

In this interpretation of the current status of educational facility planning practices throughout the nation, the deficiency in proper planning is lamented. Two basic causes underlie these conditions: (1) irrational school organization that divides people, resources, and energies into mutually exclusive but impotent camps, and (2) reliance upon folkways rather than technical proficiency and upon folklore rather than research in the design of school facilities. Some short-term recommendations include an increasing look to technology and research for better answers to design problems, while the long-term exhortation prescribes new

kinds of leadership from state education agencies, professional associations, and universities. Several steps that the Council of Educational Facility Planners can take in these directions are also outlined.

42. Tracz, George S. "An Overview of Optimal Control Theory Applied to Educational Planning." Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, February 5-8, 1969. 10 pages. ED 030 189 MF $0.25 HC $0.60.

Mathematical model building for educational planning in this country has been heavily influenced by the USOE DYNAMOD Model, a computerized Markov-type or input-output model. However, the input-output method is structurally inadequate to reflect the true behavior of the educational system. To introduce some elements of decision making into the model, some investigators have attempted to apply optimal control theory. Application of optimal control theory involves the addition of control variables, which are constrained in their values and thus reflect political or policy limits, to a general mathematical model consisting of equations defining the interdependence of sets of variables characterizing the educational system. Control theory models are theoretically attractive planning devices because they allow for the specification of a system's initial states and certain desired targets while providing for the selection of a policy which achieves these targets at a minimum cost while satisfying existing constraints. Although barriers to practical implementation exist, this approach promises to aid in revealing the values of a systems approach to social and economic problems.

43. Vincent, Howard L. Selected Bibliography: Application of Economic Analysis and Operations Research to Problems in Educational Planning. Washington, D.C.: National Center for Educational Statistics, Department of Health, Education, and Welfare, 1966. 9 pages. ED 014 129 MF $0.25 HC $0.55.

This document is a selected bibliography of works and journal articles on the application of economic analysis and operations research problems in educational planning.

44. Waterbury, Kenneth B. Long Range Planning for Public Schools, Presenting an Outline to Indicate Scope of Long Range Developmental Program, 1967-1977. Pennsylvania: Butler County Board of School Directors, 1968. 24 pages. ED 018 865 MF $0.25 HC $1.30.

School districts have a responsibility to develop a complete evaluation of every facet of their educational programs. They must project probable situations and change the educational program to meet those situations. The material presented in this document is in the form of a

suggested outline to help a school district develop the long-range planning program now required from every district in Pennsylvania. The outline covers the community, the educational system, school facilities, and school finances.

45. Western New York School Study Council. Development of an Operational Model for the Application of Planning-Programming-Budgeting Systems in Local School Districts. Program Budgeting Note 1, Introduction to Program Budgeting. Buffalo: 1968. 11 pages. ED 028 539 MF $0.25 HC $0.65.

Although the public is best served by governmental agencies which have integrated the major functions of planning, managing, and budgeting, it can be asserted that the planning function is paramount. A review of the evolution of public agency administration in the United States reveals that until recent years the planning function has been largely overshadowed by management control concerns. This lack of coordinated planning has resulted in many incremental agency budgets based on the short-term, parochial interests of individual agencies. The introduction of a planning-programing-budgeting system (PPBS) to the Defense Department in 1961 provided the impetus for the rapid ascendancy of the planning function in federal program administration. Since PPBS requires public administrators to plan specific program objectives and to select rationally, after systematic consideration of alternative means, those means most compatible with efficient achievement of interagency program goals, comprehensive long-range planning must supplement the traditional management and budgeting functions. Although the potential magnitude of PPBS as an administrative tool is yet unassessed, educational decision makers are expressing increased interest in the possible application of PPBS to school management.

46. Western New York School Study Council. Development of an Operational Model for the Application of Planning-Programming-Budgeting Systems in Local School Districts. Program Budgeting Note 2, Program Budgeting in the Federal Government. Buffalo: 1969. 16 pages. ED 028 540 MF $0.25 HC $0.90.

Many educational administrators are skeptical of school district attempts to use the planning-programing-budgeting systems (PPBS) tool. This skepticism seems, in large part, to be the result of two factors: (1) a general lack of understanding of the concrete operational steps involved in the implementation of PPBS, and (2) a feeling that the qualitative nature of educational objectives would inhibit the utility of such a tool in educational administration. A review of the Federal Bureau of the Budget guidelines concerning PPBS implementation in federal agencies, coupled with an analysis of PPBS staffing requirements, should help

the administrator understand the process of practical implementation. The generally positive evaluation of the contributions of PPBS made by administrators of such federal agencies as the United States Information Agency, the Agency for International Development, the State Department, and the Peace Corps serve as evidence of the utility of PPBS in organizational units faced with the difficulties of measuring qualitative objectives. The experience of these agencies may encourage school districts to experiment with PPBS.

47. Williams, Gareth L. "Towards a National Educational Planning Model." Paper prepared for the Symposium on Operations Analysis of Education, Washington, D.C., November 19-22, 1967. 18 pages. ED 021 311 MF $0.25 HC $1.00.

This paper discusses educational planning activities in which the Organisation for Economic Cooperation and Development (OECD) has had some involvement. Only a part of these activities are dealt with--national educational planning within the context of economic and social development. An attempt is made to show how OECD's work in educational planning has led almost inevitably to the adoption of a "systems approach." Emphasis is placed on the relative merits of the "manpower" approach and the "social demand" approach to educational planning, and on how these two approaches have not been about educational planning as such, but about different criteria for establishing the objectives or goals of the educational system. An example is given of a model of the dynamic structure of the educational system in terms of student flow.

48. Wilson, Charles Z. "The Use of Computer Simulation Techniques in Educational Planning." Paper presented at the annual meeting of the American Educational Research Association, Los Angeles, February 5-8, 1969. 20 pages. ED 029 382 MF $0.25 HC $1.10.

Computer simulations provide powerful models for establishing goals, guidelines, and constraints in educational planning. They are dynamic models that allow planners to examine logical descriptions of organizational behavior over time, as well as permitting consideration of the large and complex systems required to provide realistic descriptions of behavior processes. Four types of simulations are particularly applicable to educational planning. Descriptive simulations provide models of human systems that explain their behavior and can be used to test theories by comparing real past behavior with simulated behavior. Intellective simulations capture organizational qualities deemed important by the analyst and are suited to discovering the effects of proposed changes. Normative simulations are designed for analyzing such organizational problems as communications difficulties, social interaction patterns, hierarchical structures, and the implications of various strains and stresses. Finally, man-machine simulations involve

interaction between a human actor and a simulated environment. Their success as management games suggests their relevance to the training of educational administrators.

49. Woods, Bill M. Information System Development: Phase I, Management Planning. New York: Engineering Index, Inc., 1968. 67 pages. ED 028 785 Document not available from EDRS. (Available from National Technical Information Service (formerly Clearinghouse for Federal Scientific and Technical Information), Springfield, Virginia 22151, PA 178 753, MF $0.95, HC $3.00.)

Objectives of this study of the operations of Engineering Index were to: (1) determine the need for a planning capability, (2) blueprint a mechanism to accomplish planning, and (3) recommend priorities requiring planning attention. Topics considered in the study are planning, the role of the board of directors and trustees, organizational structure, personnel, space, editorial management, time lag, production, marketing, and products. Recommendations for improved operations at Engineering Index include: (1) establishment of a Planning Advisory Committee; (2) creation of a full-time position of Manager, Planning and Research Division; (3) preparation of a grant proposal for submission to the National Science Foundation (NSF) which should include support for the ongoing input into the computerized data base for plastics and electrical-electronics engineering, publication of the Plastics Monthly Bulletin, further development of the User Participation Program, experimental work with the Mohawk Data Recorder, and writing of conversion programs for the IBM 360 computer; and (4) preparation of another grant proposal to NSF to cover a marketing study; evaluation of the pilot project; research into language, categorization and indexing problems; and the development of programs for effective file partitioning, computer representation and console display of the indexing and categorization structure, and Selective Dissemination of Information.

50. Wurtele, Zivia S. Mathematical Models for Educational Planning. Professional Paper. Santa Monica, California: System Development Corporation, 1967. 32 pages. ED 035 296 Document not available from EDRS. (Available from National Technical Information Service (formerly Clearinghouse for Federal Scientific and Technical Information), Springfield, Virginia 22151, PB 177 729, MF $0.95, HC $3.00.)

The utilization of computer programed mathematical models for educational planning has a brief but rapidly accelerating history. This paper describes and, to some extent, evaluates several of these models. It also discusses several theoretical problems associated with formulation and implementation. Models surveyed include: (1) the educational

system, or some of its components, and (2) the economy, in which education is one of several interrelated activities. The final chapter contains general remarks on the role of mathematical models as tools for educational planning.

51. Yingling, Karl W. The Financial Phase of Long Range Planning for Public Schools: Presenting a Method for Projection. Pennsylvania: Butler County School Board, 1968. 18 pages. ED 020 563 MF $0.25 HC $1.00.

This document presents a method for estimating future financial needs and resources in a long-range plan for school districts. Required assumptions for a ten-year projection are discussed, and specific advice on computing the necessary elements is given. Difficulties associated with each element are emphasized, and some solutions are proposed. Attention is given to the need for evaluating projected and actual income and costs at the close of each fiscal year. An appendix shows sample projection tables and projection graphs.

SUBJECT INDEX