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ABSTRACT

Summarized are activities of the Wausau District Public Schools (Wisconsin) toward developing a model for cost efficiency analysis in special education. The model links input-output analysis and task analysis features. Introductory information includes varying impressions of cost efficiency concerns and the current status of project development. Discussed are the following elements of a cost efficiency study model: input-application-output, feedback, outcome analysis, cost allocation, pupil accounting systems, technical support systems, and related technical issues. Application of these elements in a cost efficiency system design for a local education agency is described. Reported are outcomes of pilot tests of the model and its components including simulation of resource allocation and design of a student accounting registration procedure. Among project findings cited are problems encountered such as lack of efficient pupil accounting systems--and areas in which progress was made--such as development of task analysis classifications for special education. Appendixes include: documentation, inputs and outputs for simulated resource allocations; a staff questionnaire; and a student registration form. (LS)

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SUMMARY REPORT

Planning Project No. 59-74-0290-P

ESEA Title III

THE DEVELOPMENT OF A COST-EFFICIENCY MODEL TO ASSIST IN SPECIAL EDUCATION PROGRAM DECISION-MAKING AND FINANCING

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Wausau, Wisconsin 54401

June 1975

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TITLE III

COST-EFFICIENCY

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ABSTRACT

This report summarizes activity of the Wausau District Public Schools (WDPS) to develop a model for Cost-Efficiency analysis in special education. The resultant model links commonly used input-output analysis and task analysis features. This linkage is important if applications of cost-efficiency within local education agencies (LEA's) are to be productive.

The central input-output model feature that was adopted is a modification of a four element conceptual framework of education subject to economic analysis developed by R. A. Rossmiller and others at the Wisconsin Research and Development Center for Cognitive Learning. The four elements are: (1) resource inputs for the external-to-school environment, (2) components of the educational system, (3) outputs of the educational system, and (4) feedback.[1] Linked task analysis elements involve (1) cost allocation, (2) pupil accounting, and (3) technical support in knowledge and analysis capability forms.

It is not possible for a LEA to independently perform advanced cost-efficiency activities in special education. The knowledge base of the typical LEA is too restricted, most lack equipment or procedures for advanced data analysis and too few students are present in special education programs for effective study of instructional program alternatives. However, the LEA's can engage in necessary development of pupil accounting and cost allocation procedures if they have external help. Need for supplemental knowledge is continous. It is perhaps best provided through a coordinative effort at the state level. Needs for data analysis support are intermittent. They can be provided by either a state university or one of the limited number of educational support agencies that has both a large computer and a well developed library for statistical analysis.

This development effort has led to preparation of pupil accounting procedures for establishing a basic student file system. This system will be put into effect during the 1975-76 school year. Cost analysis has been initiated through trial use of a task classification system for professional personnel. Also, a statistical program for decision-making based upon professional judgements was pilot tested. This program, which enables exploration of the problem of program definition, indicator selection and prognosis for program impact seems to press the ability limits of special education personnel to use their judgements and values to logically allocate resources.

At its conclusion, this Title III development grant enabled the WDPS to organize its cost-efficiency development within a long range framework and to take necessary first steps for its implementation. Additional collaborative work is needed with external agencies to supplement and hasten the progress that would be made by the district alone.

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[1] Richard A. Rossmiller, Joseph J. Marinelli, and Terry G. Geske, Economic Analysis of Education: A Conceptual Framework, Theoretical Paper (Madison, Wis.: Wisconsin Research and Development Center for Cognitive Learning, University of Wisconsin-Madison, 1975).

INTRODUCTION

Intent of Proposal

The proposal for funding under which this work was begun called for the application of a system analysis format to model development for special education program decision-making. The proposal contained elements of uncertainty about the best ways to approach model building. Among these uncertainties were (1) the role multivariate analysis procedures might presently play, (2) the adequacy of existing measurement procedures for student assessment, (3) the nature of the different kinds of programs that might be proposed for development in special education, and (4) the relationships model development should have to still-developing mandates of Chapter 89, Wisconsin Laws of 1973.

Thus, as is customary in the application of development grants, it was anticipated development of a cost-efficiency model would involve examination of a large number of alternatives and selection of those which seemed most promising for subsequent useful applications.

Audience Perception of Cost-Efficiency Concerns

The primary author of this report found, as work was begun on the project, that several individuals and groups of persons had very different impressions of what was to be sought through model development. Some persons seemed to believe the project would have concern for theoretical model building along systems lines and that little if any practical testing of ideas would occur. A second group had greatest interest in cost allocation and seemed to feel this problem would constitute the primary activity. A third group perceived the project to have greatest concern

for outcome analysis. Outcome analysis was perceived to be measurement of the performances of the special education students who were enrolled in programs.

A fourth cluster of impressions was that development of goals and objectives would be the primary concern of the project grant. Program development would, it was surmised, lead to the initiation of new (sub) programs within the existing special education field.

In fact, the grant was not sufficient to accomplish all of these undertakings nor would its conduct have itself been efficient if it sought to do so. It is likely very substantial decisions about cost-efficiency can be made without the institution of fully detailed cost allocation procedures. There were no situations within the district where comparative outcome analysis for existing programs could have been justified. Theoretical model building without concern for immediately usable outcomes would have been unwise. Program development would have been excessively costly to undertake within a framework for system development. The development of goals and objectives is an important, distinct domain which cannot be entered without awareness of values individuals apply; development of goals and objectives is very time-consuming and a task which is never finished.

The expectations of different audiences for accomplishments of this project could not all be met. However, some progress was made in each area of initial concern and several topics not specifically addressed in the original proposal were given detailed attention. Among these were student accounting, task analysis as it related to Chapter 89, and simulated multivariate decision-making. These project outcomes were attained with substantially lower expenditures than originally budgeted. The Wausau District Public Schools have reached a level of proficiency in cost-efficiency analysis well advanced of the position they occupied one year earlier.

Status of Project Development

A model has been developed within which the overall issues of system analysis for special education in the WDPS can be oriented. Specific steps have been taken to facilitate long range development of additional capability for cost-efficiency analysis. New student accounting procedures are being adopted. They will enable more efficient record keeping in special education and will facilitate longitudinal follow-up of students as is usually necessary for effective output analysis to occur.

The district has accumulated useful experience by staff members in analysis of technical problems associated with cost-efficiency. The staff has had initial opportunities to reflect upon problems of program definition for cost-efficiency purposes and of output indicator determination. This increased staff experience is a necessary precedent to continued work in outcome analysis.

Improved understanding of personnel time allocation during initial phases of conduct of Chapter 89 activities has been accumulated. Because Chapter 89 implementation calls for important changes in proportions of personnel time allocation to tasks over the first several program years this information alone, updated and refined, is sufficient to engage in many effectiveness analyses. It is anticipated this type of subsystem study will receive closest attention during the next fiscal year.

The WDPS have also built increased sensitivity to other areas where cost-efficiency concerns may be directed without adoption of a full scale cost allocation procedure. Transportation is perhaps the most important of these other areas.

External resources are needed if there is to be rapid progress in comprehensive full scale cost allocation and if indicator selection for

pupil outputs is to proceed rapidly. External support is also needed if possible benefits from simulated cost allocation through professional judgement are to be exhaustively studied. This planning project concludes with progress having been made and progress continuing to be made. Understandings were acquired which will permit application of additional resources to be made directly to development areas judged by this study to be potentially most profitable.

ELEMENTS OF A COST-EFFICIENCY MODEL

The term "model" as used in this report refers to considerations and operations involved in special education cost-efficiency work. When used this way the term does not imply the existence of rigorous, empirically based relationships as does model building in the physical sciences. Instead, figures and narrative are used to produce a reference containing ideas and guidance for the development of capabilities to conduct cost-efficiency studies. Two processes (the happings of providing special education) and products (the outcomes of those happenings) may have costs efficiency studies. Processes (the happenings of providing special efficiency analysis may, and usually will, have concern for only subsets of processes and products. In the sections that follow features of model-building relevent to special education are described and related technical issues are emphasized.

Inputs-Application-Output

One of the best known early system analysis models for education was the student-change model of an educational system presented by Henry S. Dyer at the 54th Annual Convention of the National Association of Secondary School Principals in February 9, 1970. Known to some as "Dyer's wheel" it focused on student characteristics before and after conduct of an educational process or program. These "before" and "after" characteristics constituted, repectively, the inputs and outputs of his thinking at that time. The educational process was perceived to be immersed in or rimmed by influences caused by conditions in the home, the community and the school setting itself. The model thus attented to

inability to understand educational outcomes without giving consideration to conditions external to an immediate act of instruction. It depicted interrelationships between the educational process and the external conditions, a feature that must of necessity be included in any model development for cost-efficiency study in special education. A copy of Dyer's wheel is included as Appendix A.[2]

Feedback

The model presented by Dyer was intended to emphasize how school processes produce influences on student performance within a total family and community setting. The author who has perhaps most greatly influenced thinking about how information about school processes and their outcomes is used to make decisions is Stufflebeam. His ideas have been disseminated across this nation, usually as the CIPP (context, input, process, product) Model. The CIPP Model, which was developed in the mid-1960's, was usually presented as a series of interconnected circles with the circle used to illustrate how information acquired through evaluation would be cycled back to different users. Among the recognized user groups were project directors, local education agency administrators, state education agency administrators and others. Concern for feedback is a desireable feature to seek in model development for cost-efficiency study in the field of special education. Some of the variety of thought about feedback and decision-making that exists can be found in Chapter 3

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[2] Dyer, H.S., Can We Measure the Performance of Educational Systems -- And If So, Why Should We?, a paper presented to NASSP, 54th Annual Convention, Washington, D.C., February 1970.

of a book edited by Stufflebeam and others.[3]

Outcome Analysis

For effectiveness to be studied in a fully meaningful manner it is necessary that outcomes be measured. It is also important, if programs are to improve through change, that outcomes of different types of programs be determined with sufficient precision that differences in those outcomes may be reliably specified. Because of the small numbers of students enrolled in special education programs this is a very serious problem. As is common in other fields of education, special education lacks precision in its statements of goal and objectives. Furthermore, measurement procedures that are adequate for determination of differences in program outcomes in other fields may be unsuitable in special education because of the slower rate of progress achieved by special education students. Feldt has presented an interesting article that deals with this practical problem. Through study of pupil and class norm data acquired by administration of the Iowa Test of Basic Skills (1964) he drew the following conclusion about minimum sizes needed for treatment groups:

> With "highly effective" treatments and simple random assignment of subjects to conditions, 60 to 85 subjects is derived as the minimum number per group. With "moderately effective" treatments, the minimum number is 235 or more. Use of stratified samples reduces the minimum by 15 to 40 percent.[4]

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[3] Stufflebeam, D.L., and others, Educational Evaluation for Decision Making, Itasca, Illinois: F.E. Peacock, Inc., 1971, pp. 49-105.

[4] Feldt, L.S., "What Size Samples for Methods/Materials Experiments?" Journal of Educational Measurement, Vol. 10, No. 3, Fall 1973, pp. 221-226.

Cost Allocation

Cost allocation involves the identification of resources committed to a program, the determination of their monetary value and placement or crediting of the costs with program features. In educational programs by far the highest fraction of costs are for instructional personnel.

Financial accounting handbooks are prepared by state departments of education to describe and control classification of expenditures of greatest concern. An important feature of these procedures is that costs are not directly related to programs such as those operating within special education; it has been very unusual for costs to be related directly to individual pupils.

Cost-efficiency cannot be fully studied without provision for more refined allocation of costs to pupil's learning experiences than has been the case to date. Therefore, cost-efficiency model development cannot be successfully undertaken without special attention being given to this problem.

Pupil Accounting Systems

Many of the goals of education call for the production of lasting effects on life styles, values and accomplishments of students. Outcomes of educational processes must have durable effects upon student performance. Therefore, to have successful analysis of the outputs of an educational system it is essential that the evaluating agency be able to monitor student performance over time. For this reason, because educational outputs cannot be analyzed without concern for interrelationships among home, community and external school variables which impinge upon children, and because cost allocation should if possible be made to individual students

as units, model development for cost-efficiency must also provide for development of efficient student accounting procedures.

The rapid growth of computer technology and accumulation of experience with pupil data systems in the largest local education agencies of the nation make possible the adoption by agencies without pupil accounting systems of the best of procedures developed at other local and state agency sites. No fully comprehensive student accounting system exists but this critical cost-efficiency system component does not have to be developed in entirety; elements can be selected and adopted from among those used by other agencies.

Technical Support Systems

The development of a cost-efficiency model for a local education agency is, as the title of the activity implies, essentially a basic research and development endeavor. As is the case with other research and development efforts the local education agency cannot be expected, by itself, to generate all of the necessary parts of the system. Two particularly critical support elements are needed: (1) knowledge, and (2) technical service support. The LEA cannot, for example, generate all basic information it needs about program impacts. It cannot self-sustainingly engage in across-the-board basic research studies of program impact. It cannot by itself generate teacher effectiveness studies nor can it evaluate all materials and related procedures available to it for use. Universities and other agencies produce the preponderance of new information used by LEA's. Therefore, the LEA has continuing dependance on external agencies for efficient transmission of new knowledge to it.

In addition, the LEA must have technical service support. It is not

profitable for the LEA to maintain programs or facilities for complex data analysis nor does it possess capabilities to evaluate prospective benefits of new technologies. Thus the LEA must join with others or receive technical support from universities and other external groups. Development of a comprehensive cost-efficiency model for special education should take this need into account.

Related Technical Issues

In the preceding five sections of this chapter the most important topical concerns for model development were briefly described. Several additional issues of an essentially technical nature must be kept in mind as model development proceeds. First, is the current status of program planning budgeting systems (PPBS) development. This movement, which grew rapidly in the late 1960's and culminated in an impressive effort to institute such systems in the State of California seems now to be in a (temporary?) state of contraction. The development of PPBS constituted a formidable technical problem. Before its technical features could be resolved to the satisfaction of all interested parties the California Legislature abandoned the program. Conflicts of value among political coalitions may have been the primary contributors to this outcome. However, other groups once interested in the promises made for PPBS have also been unable to initiate and maintain rapid progress in this development area. Readers interested in better understanding how value conflicts may frustrate technical developments and applications of systems for optimum resource allocation may find an article by Kirst interesting to read.[5]

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[5] Kirst, M. W., "The Rise and Fall of PPBS in California." Phi Delta Kappa, April 1975, pp. 535-583.

A second important technical issue has concern for the importance of being able to do follow-up studies of student performance. Most of the educational research that has been conducted to date has been cross-sectional. Cross-sectional data is collected at a point in time; for example, a measure of the performance of all hearing-impaired children in an instructional unit on June 5, 1975. In 1970 Hilton and Patrick published an important and definitive article on this topic. They compared three sources of data for studies of growth --- matched-logitudinal, unmatched-logitudinal, and cross-sectional. Their study supported the conclusion that matched-logitudinal data, with matching performed to link the different scores of individual children over time with each other, is more reliable and therefore more likely to produce valid analytic results.

A prior, related study was conducted by Dyer, Linn and Patton. Their concern was less with individual performance and more with the prediction of school system means on achievement tests. However, the results of a comparison of four methods of obtaining discrepancy measures led to a similar conclusion. Their study involved data collected over a three year period of schooling. Their conclusion was: "...discrepancy measures based on unmatched-longitudinal or cross-sectional samples of students cannot be regarded as reasonable substitutes for discrepancy measures based on a carefully matched-longitudinal sample.[7]" These two articles,

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[6] Hilton, T.L., and Patrick, C., "Cross-Sectional Versus Longitudinal Data: An Empirical Comparison of Mean Differences in Academic Growth." Journal of Educational Measurement, Vol. 5 No. 1, Spring 1970, pp. 15-24.

[7] Dyer, H. S., Linn, R. L., and Patton, M.J. "A comparison of Four Methods of obtaining Discrepancy Measures Based on Observed and Predicted School System Means on Achievement Tests." Americal Educational Research Journal, Vol. 6, No. 4, November 1969, pp. 591-605.

which were prepared from work with real data, strongly suggest many cost-efficiency procedures will not themselves be efficient or productive if they do not provide for the collection of longitudinal data.

At the same time the previous articles were being prepared Werts and Linn, working on the same problems, prepared a general linear model for the study of growth. Their paper had concern for the identification of causal relationships in data. The paper concludes with a reminder that to be able to perform statistical computations on data may provide us with very little useful understanding. Artifacts of both measurement and the analysis can make a model treacherous to use.

Comprehensive cost-effectiveness analysis of alternatives for special education program implementation will almost always involve quasi-experimentation. This endeavor involves, along with the technical issues already cited, need for great sensitivity on the part of the analyst for the types of outcomes that may or may not be plausible when new programs are initiated. A particularly rich reference for these understandings is an article by Wiley and Bock. These writers were interested in the sizes of groups needed to draw conclusions about innovative programs but also wished to understand what contributions instruction might make to improve student performance in such areas as spelling, arithmetic computation, social studies and science. They concluded that a study involving as few as six schools with two classrooms in each school could enable detection of a mean difference between experimental groups of as much as .32 grade equivalents. Whereas a building might be effective in the production of computational skills and a school district

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8 Werts, C. E. and Linn, R. L. "A General Linear Model for Studying Growth." Psychological Bulletin, Vol. 73, No. 1, 1970, pp. 17-22.

might have uniformity within it in computational attainments, performances in areas such as paragraph meaning might be much more variable among schools with comparable efforts. The influences other than the classroom performance of a teacher can contribute heavily to student performance. Summary reflections by the authors can provide stimulating reading and useful insights concerning the prognosis for cost-efficiency study of program outcomes when a type of program has been carefully formulated and described.[9]

Perhaps the outstanding authority in the nation with practical experience in the study of change is Donald T. Campbell, who has been interested in quasi-experimental models of the type that most often must be used in special education cost-efficiency work and has written extensively on the topic. Most of the analytic concerns that have been identified to date were summarized by him in an address to the 1970 Invitational Conference on Testing Problems; the contents of his address contain many valuable ideas.[10]

One additional article may be of interest to persons contemplating the values of benefit analysis. This is a reflective discussion by Lohnes that arose from general concern for the schooling of intelligence. If cost-efficiency procedures are to be developed for special education, reflections such as his should be heeded. They suggest cost-efficiency analysis of outcomes frequently may not be profitable. He noted:

> Instead of seeking a best instructional system, research might better seek to reveal the correlations between degrees of

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[9] Wiley, David E. and Bock. R. Darrell. "Quasi-experimentation in Educational Settings: Comment." The School Review, Winter 1974.

[10] Campbell, D. T. "Temporal Changes in Treatment-effect Correlations: A Quasi-Experimental Model for Institutional Records and Longitudinal Studies." Proceedings of the 1970 Invitational Conference on Testing Problems, Educational Testing Service, Princeton, N.J., 1971.

implementation of various treatment dimensions and degrees of achievements of various types. It might also try to discover whether these treatment-outcome correlations are influenced by non-linear involvements of organismic inputs making moderator effects or treatment-aptitude interactions available. This implies analysis of canonical correlations, multiple partial correlations, and homogeneity of regressions systems. But first, it implies that dimensions of treatment programs be conceptualized, scaled and measured in school trials.[11]

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[11] Lohnes, Paul R. "Evaluating the Schooling of Intelligence." Educational Researcher, February, 1973, pp. 6-11.

A COST-EFFICIENCY SYSTEM DESIGN FOR A LOCAL EDUCATION AGENCY

Overall Design

The overall cost-efficiency study model that was developed in this project involves a synthesis of selected task analysis and input-output elements. The focal element in the model is a modification of the work by Rossmiller, Marinelli and Geske.[12] The activities of a cost-efficiency analyst must show concern for these program constituents.

For the efficiency analyst to study inputs to special education programs, describe the application of resources and produce information to be returned to others about the merits of program outcomes, it is necessary that support systems be available to the analyst. Accounting procedures used in the agency that employs him must themselves permit efficient allocations of costs for the time, personnel and other resources that are applied in programs. Cost allocation procedures should be fully compatible with those of the State Education Agency (SEA). Those currently in operation in Wisconsin are not fully adequate for needs of the analyst nor are those in most other states. Therefore, important cost allocation development needs exist in this and similar LEA's.

Pupil accounting system support is also needed by the analyst. In a very small LEA it is relatively easy to maintain and access records for the small numbers of special education students who are present. Their performances over time, in response to the applications of various resources on their behalf, can be efficiently recorded and stored although, even in the smallest agencies, lack of a comprehensive student accounting system may make the preparation of summaries of data for

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[12] Rossmiller, R.A., Marinelli, J.J. and Geske, T.G., op cite.

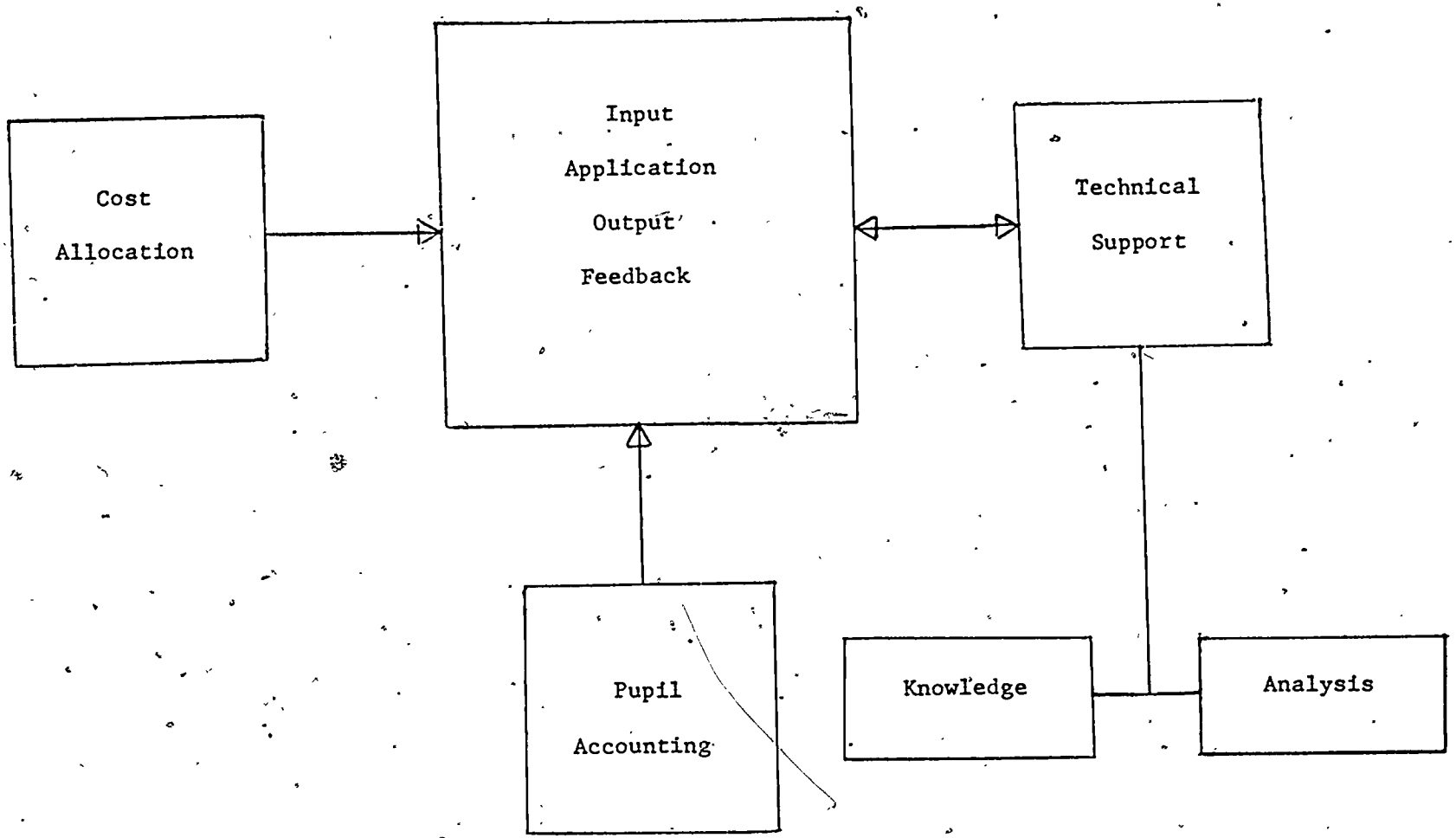
analysis or related reporting purposes very difficult to accomplish.

In medium and large size LEA's the development of basic district-wide pupil accounting procedures and supplemental but linked procedures for special education will usually be a profitable undertaking. These systems should include provisions for retention of family data associated with students, general demographic information pertinent to them, educational program information and information necessary to engage in efficient follow-up study of their progress. Student anonymity must also be protected.

A final necessary ingredient for the cost-efficiency analyst to engage in his work is the availability of technical support from external agencies. This technical support will provide him with knowledge necessary to the conduct of his work and with support in the actual conduct of analysis of data. Assistance in report writing may also be a necessity. Technical support may be provided by a single agency (The Institute for Educational Research at Downers Grove, Illinois, is illustrative) or by a variety of agencies such as universities, state departments of education or independent, nonpublic bodies.

Figure 1 simply summarizes the essential work elements involved in application of this manner of thinking. The model that is presented depicts primary concerns of the analyst with input, application, output and feedback. It represents his dependence upon related operations by arrows pointing out the flow of information to him from cost allocation, pupil accounting and technical support activities. It also indicates that the information generated as a result of the activities should flow to external agencies. In particular, knowledge should be transmitted out to the technical support agencies as part of what should be formal collaborative relationships among them. The analyst is unlikely to have

Figure 1: Cost-Efficiency Study System (Task Analysis Elements)



primary administrative responsibility for the accumulation of cost allocation information, could not have administrative control over external technical support, but might retain authority over pupil accounting operations. In the sections that follow the primary and secondary elements of this system are given additional elaboration.

Input-Application-Output-Feedback

The core element for system analysis must, as noted earlier, provide for analysis of input and output of an operating educational system and for the recycling of information that is acquired. Figure 2 provides a more detailed visual record of the four components denoted in the focal unit of Figure 1. It records, in parallel lines for rectangular blocks, the most important features associated with inputs, resource application and outputs. These three component features are interlinked through the feedback activities of measurement, analysis and reporting.

Home and community, the latter through each of its immediate local, regional and state characteristics, constitute the external environment. From this environment are contributed knowledge, societal values and goals. The population of the community served by the educational system possesses characteristics of size, density, social organization of families, mobility, etcetera; these characteristics can be described as demographic and social-economic.

The external-to-school environment also possesses important characteristics of economic output and income. Some school buildings and entire educational agencies have very low economic outputs and incomes; for others, especially those commonly referred to as "affluent", economic output and/or family income can be very high. These characteristics are usually associated with very different student aptitudes for academic

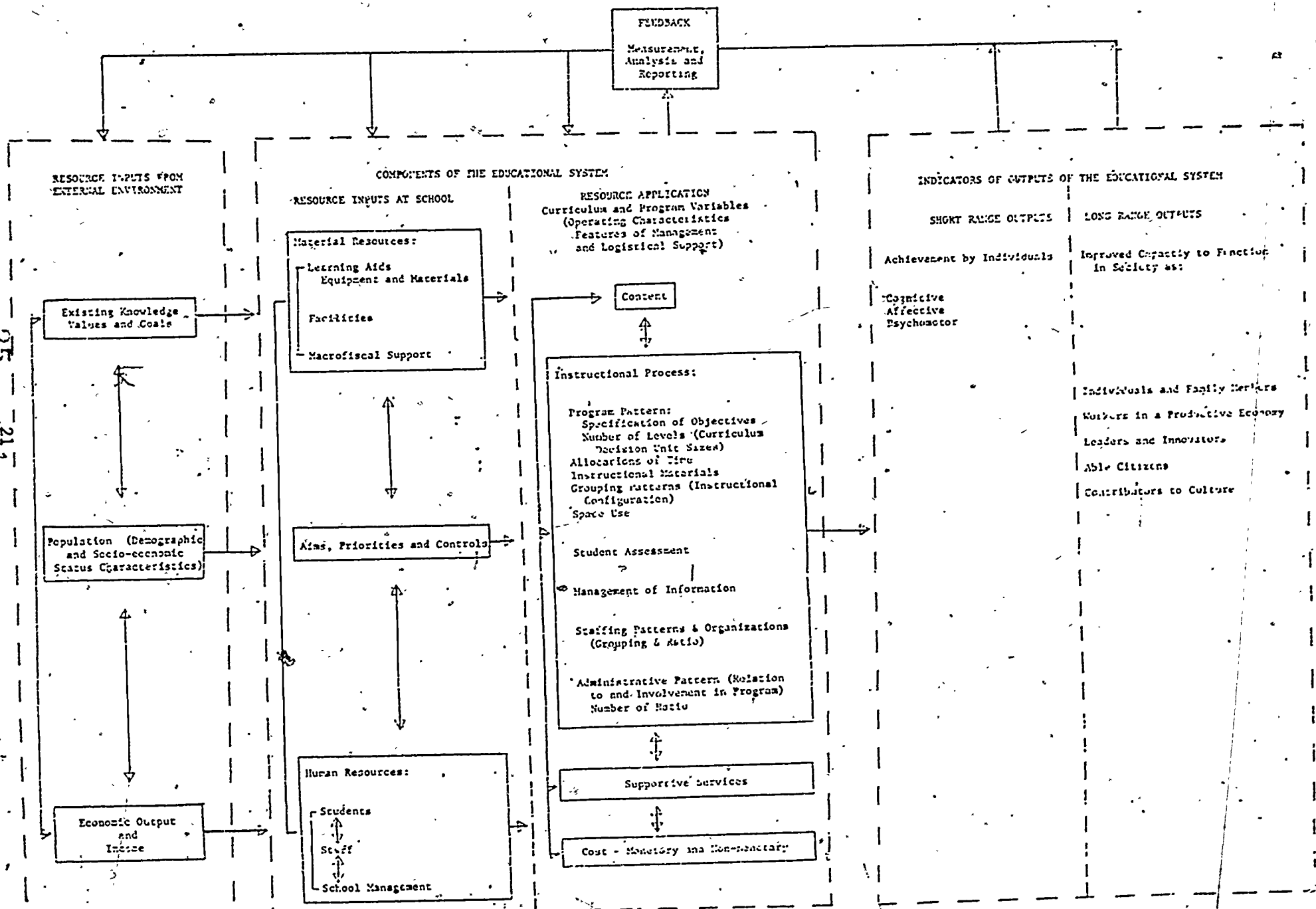
performance. Their importance can be discerned by reference to the large numbers of educational programs generated for the economically needy within the past decade. The importance of the external environment is perhaps most often discussed in relationship to economic features with regard to influences on both total education system performance and the performance of students within the system.

In its largest component feature, that for the educational system as a whole, Figure 2 contains what may appear to be an inconsistency. The term "resource inputs at school" is used. This distinction is a common one within educational literature. The external environment provides resources necessary to acquire such material resources as learning aids and educational facilities. It also provides resources necessary for the employment of staff and school management. It sets aims, priorities and controls through the functioning of Boards of Education. Once aims, priorities and controls have been applied and material resources have been assembled, there exists a school system. It is this body, "our school(s)", which in turn initiates programs for students. Thus it is possible to think of such an assemblage as itself a resource input to instructional processes; the student is in turn the recipient of these applications.

Efforts to improve the performance ability of teachers through inservice programs is illustrative of the application of external resources to assemble an internal resource of a higher quality with the expectation teachers will, in turn, apply their improved skills to the improvement of instruction. The apparent inconsistency cannot be wholly eliminated by reflection on this example but no more useful classification of system components and functions seems yet to have bee devised.

The application of resources by an educational agency is most often thought of in terms of the instructional process. Schools provide programs for children which involve instructional units of time, instructional materials, grouping patterns and space use. Students are assembled;

FIGURE 2: INPUT, APPLICATION, OUTPUT AND FEEDBACK COMPONENTS OF THE EDUCATIONAL SYSTEM



information about their performances are used to modify instructional programs for them by individualization of instruction; staffing patterns and organizations which are intended to provide good instruction are brought together; administrative patterns are designed to provide necessary support services. Additional supportive services are provided in such areas as special education, guidance and counseling. Monetary and nonmonetary costs are involved. Resource application by the educational system is, in common terminology, "what the school is doing."

A rapidly growing body of literature analytically describes the products of resource application. Cost-efficiency analysis has greatest concern for what indicators of outputs of the educational system can contribute to understanding of what education is accomplishing. Figure 2 depicts these indicators as being classifiable into short range and long range outputs. In the simplest sense, short range outputs are those produced during the interval the course or program is offered to its students; long range outputs are those which remain or accrue over additional days, weeks or years. The most broadly descriptive terms used for the classification of human preformances are the terms cognitive, affective and psychomotor. While three other terms, understandings, attitudes, and skills, have less precise meanings they describe the same general performance areas.

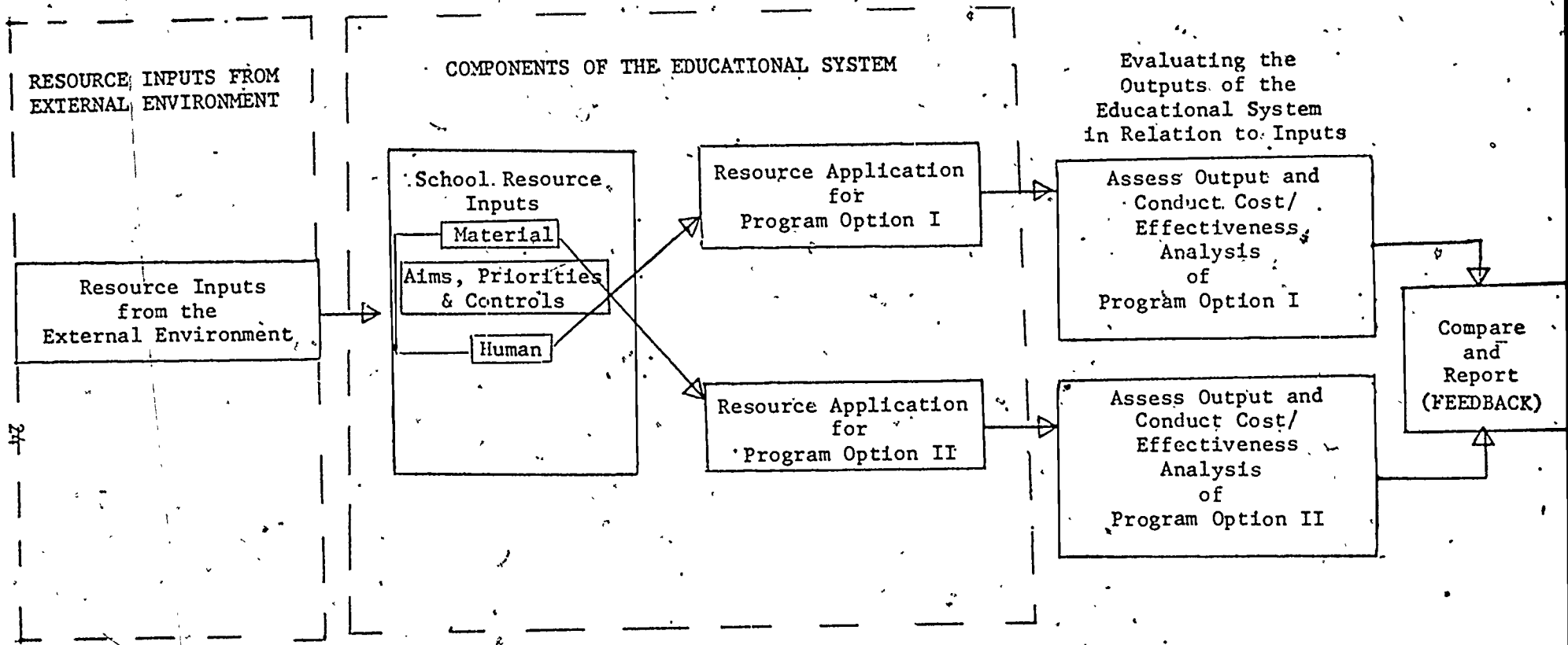
The values society holds for its members contribute innumerable ideas about what the long range outputs of the school system should be. The great diversity they possess has necessitated use of broad goal statements for school output such as "preparation for life", "a productive member of society", and "a productive individual". No classifications with the clarity of the three available for short range outputs had been prepared for long range outputs. Of course,

the taxonomies for short range outcomes are applicable to long range outcomes but because long range outcomes and goals are much more likely to be stated in general terms indicative of performances at the higher levels of the taxonomies, refinement needed for the latter to be classified does not exist. As a result, Figure 2 uses a single stem, "Improved capacity to function in society as:" to state five general outcome goals. It is necessary that more attention be given to improvement of long range goal specifications. Without improvement the assessment of long range outcomes will usually be poorly performed.

The fourth component of Figure 2, that for feedback, is briefly described through the use of the three words associated with it (measurement, analysis and reporting). The figure is intended to show that feedback information is acquired at the time of resource application and even before. Feedback on outcomes of educational performance and information about process is used to make modifications in resource input allocation from the external environment, from the resource pool accumulated at the school, and to make changes in the application of resources.

Because Figure 2 does not by itself provide sufficient elaboration on activities associated with the preparation of information through to use of feedback, Figure 3 has been prepared to meet that need. The key feature of this figure is that it responds to the fact decisions tend to be made by selection from among alternative courses of action. If two programs (or more) have actually been conducted, the evaluation of their outcomes begins with identification of the external resources made available for their conduct. Information about external resources, school resource inputs and the actual conduct or processes of the programs

FIGURE 3: COST-EFFICIENCY ANALYSIS: System Considerations for Evaluating Outcomes of Resource Applications and Generating Feedback

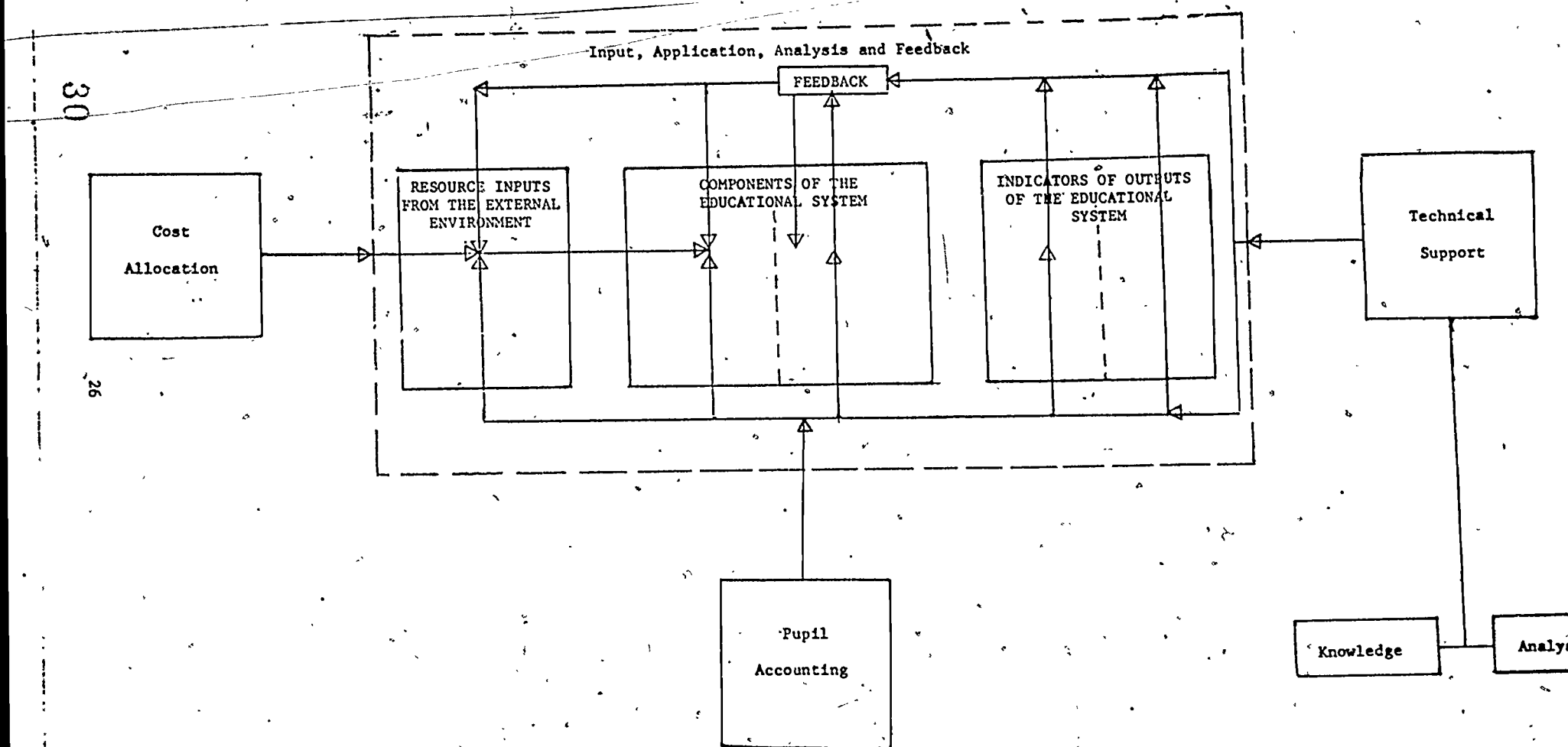


are accumulated for subsequent analysis and reporting. Outcomes of each program option tend to be analyzed separately. In some instances results of analysis for a particular program are of interest by themselves but in most cases information about alternatives is compared by statistical or judgemental processes. The information that is generated is subsequently assembled in a formal report and distributed back to the persons who will use it to make decisions.

For the evaluative and feedback activities indicated in Figures 2 and 3 to be conducted it is essential that the cost allocation, pupil accounting and technical support systems function. Cost allocation activities provide financial information linked to and descriptive of inputs. Pupil accounting activities contribute information about resource inputs and resource applications. Pupil accounting also contributes capabilities for linking input and process information with output information. Information generated in pupil accounting and in cost allocation will frequently go directly into the feedback mechanism without being linked to output information. This type of information transfer is essential if processes are to be studied and modified before outputs are subject to study.

Technical support is, as has been noted earlier, essential for conduct of each of the other classes of activities. It provides information for the classification or reporting of inputs, design and implementation of applications, and for the organization of comparative analyses. Technical support information will appear in feedback reporting; without it the conduct of analysis will sometimes be impossible. The arrows in Figure 4 are meant to depict how information-producing activities are linked within the total model generated by this project.

Figure 4: Interrelationships Among Task Analysis Elements and Those for Input, Application, Analysis and Feedback



Cost Allocation System

Three procedures (models for cost allocation) have been given greatest consideration in this development effort. The first, and the only one in use, is that defined by the Uniform Financial Accounting Handbook for Wisconsin School Districts, 1974 edition. This document provides account classifications for receipts and dispersements, definitions for the classifications of expenditures and for their analysis in Wisconsin school districts.[13]

A second procedural guide that has been considered is a set of revisions for the first reference document currently in preparation by a committee of members from within and without the Wisconsin Department of Public Instruction. Revisions being considered for the existing state code would enable much more direct allocation of costs to programs. Deficiencies in existing procedures which have greatest practical significance will, in a large part, be corrected when the new procedures are adopted.

A third reference that has been studied is a report prepared by the accounting firm of Ernst & Ernst. Ernst & Ernst was retained by the Governor's Office of Human Resources, State of Illinois, and also partially funded by the United States Department of Health, Education & Welfare, Bureau of Education for the Handicapped, to undertake study of the cost allocation problem as it exists for special and regular education in school districts representative of Illinois and the nation. The accounting understandings they brought to their task were strong and led to the development of procedures intended for practical application in cost-effectiveness work.

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[13] Wisconsin Department of Public Instruction. "Uniform Financial Accounting Handbook for Wisconsin School Districts." 1974 Edition.

The Ernst & Ernst model for determination of costs of special education results in the production of reports on the amount of education delivered through the use of time and money resources. It does not report on the effectiveness of the services that are delivered. Therefore, as is the case with the other two procedures for cost allocation, it can serve as only a component of an overall cost-efficiency model.

The Ernst & Ernst model is based upon the use of a defined "student educational unit" (SEU). The SEU is defined as a period of ten minutes during which time a student is served by an educational agency. Possible use of this unit on at least an occassional basis for the determination of cost-efficiency of LEA programs is appealing. Clear examples of what might be used were given in the Ernst & Ernst report. However, it serves best at this time to be referenced as a standard for long term cost accounting development rather than as an immediately useful model.[14]

In summary, we propose that a cost allocation system of the second type, that currently in development for application by the DPI, is a preferable model to adopt for the next several years or more; in the long range such a model should be supplemented with selected features of the Ernst & Ernst model.

Pupil Accounting System

The National Center for Educational Statistics of the U.S. Department of Health, Education and Welfare/Education Division (DHEW) in 1974 revised its student/pupil accounting guide. This document provides standard termonology and guidelines for managing student data in

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[14]Ernst & Ernst, "Report a Model for the Determination of the Costs of Special Education as Compared With That for General Education" February, 1974.

elementary and secondary schools and other educational agencies.[15] However, while it can serve as a model for the adoption of termonology and general management of information it does not provide a model of the actual form design that would be appropriate for a local education agency.

Fortunately, the nations largest cities and various educational support agencies for smaller school districts have developed functional pupil data systems. The Philadelphia schools and others considered the systems to be indispensible. For example, the Director, Division of Administrative and Survey Research Services, the School District of Philadelphia, included the following statement in a presentation he made to the Americal Educational Research Association in April, 1975:

> "As the size of school district increases, so do the number and complexities of the problems encountered and the need to have a functional automated pupil data base becomes a requirement of sound educational management. Such a data base system can no longer be considered a luxury.[16]

The more ambitious an LEA is with regard to cost-efficiency studies the more valuable an efficient student accounting system becomes. It will be of great value to any agency enrolling ten thousand or more students and may be quite valuable to agencies half its size. The Philadelphia pupil accounting system employs a pupil identification number to coordinate the storage of information about birthdate, sex, ethnic group, housing location, and other elemental types of information. A more comprehensive system for accumulation of basic pupil file information is used by most other school districts. The Minneapolis schools, after careful study of systems used by the Seattle, Milwaukee

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[15] Wisconsin Department of Public Instruction. "Uniform Financial Accounting Handbook for Wisconsin School Districts." 1974 Edition.

[16] Penry, Edward B. "An Indispensensable Tool for Research and Evaluation: A Functional Pupil Data System." April 1975, p. 2

and other school systems, have designed the procedures that were adopted as a model for this project.* In combination, the Minneapolis system and the U.S. DHEW Student Accounting Manual have served as the pupil accounting system models for this project.

Technical Support System

Inclusion of a technical support element in the model that has been presented thus far is intended to provide a direct link of concerns for the performance of knowledge and service-producing agencies in their intended support roles. Dissemination of knowledge produced elsewhere to LEA's in a useable form is also critical if cost-efficiency work is to be done at the LEA level. For example, the number of individuals who possess a particular handicapping condition within a given LEA will usually not be sufficient to do comprehensive evaluative research with them. Indeed, the number available in even an entire state may be insufficient. Therefore, there must be ways by which state departments or other agencies can accumulate and disseminate knowledge helpful to the LEA. Serious cost-efficiency analysis may not be possible for some handicapping conditions without this type of coordinative involvement by an external agency; the LEA must constantly be aware of its limitations in this regard.

When research performed at other state and national locations has implications for an LEA's cost-efficiency development work it is important this information be efficiently disseminated to it. Thus the LEA is dependent upon external agencies both for the production of knowledge and for the distribution of it back to sources of data

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*Because a modification of the Minneapolis system has already been preformed and that modification is discussed later in this report no further discription of the Minneapolis system is recorded herein.

generation. An LEA engaged in cost-efficiency activities must continuously retain strong ties with external sources of information.

Most data collection and analysis services can be provided to an LEA by a major university within its state. In some instances additional special service agencies (The Institute for Educational Research, Downers Grove, Illinois is illustrative) may provide these services. Instrument development, conceptualization of problems, organization of data for analysis, analysis itself and reporting are illustrative of this type of technical support need. Support must give capability for conduct of the various types of multivarate analysis now available and, therefore, must be able to provide access to computing equipment with large information storage capacity.

The model that has been adopted by this project provides no additional figural summarization of elements of technical support but emphasizes that without this type of service cost-efficiency analysis is unlikely to be effectively carried out by an LEA.

Internal Organization

The organization of Figure 1 suggests several alternatives for how the organization of cost-efficiency studies may exist within an educational agency. Cost allocation activities are heavily dependent upon the ability of the business services unit to provide cost information; therefore, this unit of the LEA must serve a support function.

The delivery of external support services must be provided by the state education agency (SEA), a major university and/or perhaps a special external agency. The best combination of external support services will tend to differ for LEA's within different geographic areas.

Coordination of provision for these services in the most efficient manner will often be difficult to accomplish.

Student accounting services may either be organized separately from the cost-effectiveness analysis operation or within the same unit. An organizational unit which has as its overall responsibility the accumulation of all information for professional and public needs may be most suitable for large educational agencies. Smaller agencies may find it best to develop an arrangement more unique to themselves which combines existing personnel and organizational strengths. This organization may or may not result in cost-efficiency work for special education being conducted by the special education department.

OUTCOMES OF PILOT TESTS OF MODEL AND COMPONENTS

The proposal for this project called for extensive involvement of the special education staff of the district in efforts to define programs and outcomes, the data from which could permit cost-effectiveness studies to be conducted. Extensive staff involvement occurred with the involvement focused upon the elicitation of staff members' ideas most pertinent to model development and application. Staff involvement focused on work with the problem of program definition and on the problem of indicator selection or development; it concluded with a survey of time commitments of staff members to classified task activities.

As model development proceeded there was automatic involvement of external support elements, most importantly the WDPI and the University of Wisconsin. An unexpected event was the initiation of development work in student accounting; the latter activity occurred as it became evident that existing information assembly procedures were wholly inadequate to the needs of a cost-efficeincy analysis system. In the report sections that follow pilot activities are described and their implications are noted.

Simulation of Resource Allocation

During and about the year 1968, Yehia Badran, then employed by Educational Testing Service, engaged in study of the resource allocation problem faced by a large city with high ESEA Title I expenditures. He developed mathematical models suited to the problem and designed linear analytic procedures for allocations of dollars to programs when judgements of probable outcomes and their values could be specified by authorities or other interested persons. Badran's work, which was

largely theoretical, was adapted for computer application by Robert Patrick and Harry Harman of Educational Testing Service; their programming was used internally with groups of educators engaged in workshop study of the decision-making process.

Dr. John Cook of the DPI, upon hearing of the work of Badran, Patrick and Harman, concluded the model and procedures might have particular value for special education. He subsequently acquired a copy of the program which he then modified for use at the computer facility of the University of Wisconsin - Madison. A summary description of what he learned through its application was published as an article in "Bureau" Memorandum.[17] Cook's experience with the procedures was not exhaustive but it enabled him to conclude they might be helpful to the decision-making process in situations where hard experimental information was not avialable but decisions had to be made by use of best combinations of judgement and information.

The decision model described by Cook provides a means whereby simulation of cost-efficiency work in special education can be conducted. It is, in a sense, a technique for analyzing the function of an educational system. For it to be used, cost information must be available as actual dollars or estimates; pupil characteristics must be accounted for; knowledge about the likely inpacts of programs must be referenced; input-application-output system characteristics must be considered. Use of the program culminates in the printing of recommendations for the provision or nonprovision of programs. These recommendations, which will usually be seen to be based on fallible input, will tend to produce intense reflection followed by redesign of program and reinterpretation of values or programs. It provides a means for engaging in cost-efficiency

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[17] Cook, John J., op cite.

analysis at the highest level of available knowledge at a given time. This, in turn, enables identification of obstacles to further development of cost-efficiency procedures.

Five steps can be defined for preparation of information necessary for linear program analysis of program information by the decision model. The first table reports basic data descriptive of (1) programs among which resources might be allocated, (2) the maximum enrollment potentials of those programs, (3) the cost of providing a program, and (4) computation of the related cost per pupil. For this activity to be successfully carried out it is necessary that the definitions of programs competing for resources contain sufficient clarity to permit precise allocation of resources to them. The definitions must make clear whether a teacher is or is not working on a program at any point in time. It is also necessary that other resources called for in conduct of the program, such as building space and materials, be unequivocally expended for the program. Without this information program costs cannot be determined, and, as will subsequently be noted, outcomes cannot be attributed to the program. An example for this and the other four tables was included in the article by Cook which is contained in Appendix B.

Between completion of this first table and later tables it is necessary to consider indicators of program success for each program. This is the most difficult task involved in the simulated decision-making experience. What outcomes are being sought? What measurement is appropriate? These questions and many more linked to them must be discussed by persons using the procedure. The issue of norm-referenced versus criterion-referenced assessment may arise. The classification of outcomes into cognitive, affective, and psychomotor will almost surely enter into consideration. Finally, a real or hypothetical performance scale must be agreed upon as an indicator of performance.

When indicators have been selected and their meaning agreed upon by persons involved in the simulation experience it becomes possible to proceed to additional input preparation. A second table is prepared to summarize the current status of programs if they already exist, or for their initial status at the beginning of the program if a new program is contemplated. In this activity the proportions of students at different performance levels on each indicator and program are recorded. This constitutes inventorying of initial student status. The proportions must include all students who might later be included in a functioning program.

A third table is prepared by consensus of the decision-making group or by each individual member to summarize the values they ascribe to each of the programs. This is prioritization across programs and is engaged in by assignment of a weighted concern to each program. Concerns are expressed as decimal fractions and must sum to 1.00.* Preparation of these decimal fractions consistitutes the assembly of a relative rating of the importance of the different programs.

The fourth table that is prepared calls for the judges to determine how important progress of a student from one scale level to another may be. This is called prioritization within programs. The prioritizors consider the meaning of measurement at each scale level, its implication for the well-being of the student, the likelihood the student would progress to the next level without an intervening program, and other issues. At the conclusion of their reflections they prioritize each scale level for each program by itself. Decimal fractions are again assigned with the total of the decimal fractions equaling 1.00 for

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*A difficult-to-understand feature of the statistical programming is that one concern must usually be specified as .50. This restricts the flexibility of judges in expression of their values but does not seem to be a debilitating restriction for the program and procedure.

each program.

Completion of the fifth table will perhaps draw most decision-makers to the limits of their knowledge and their capacity to make judgements about program outcomes. It involves two phases. In one phase the judge produces an educated estimate of the probability students would move from one scale level to another without intervention. For programs with which they are familiar they may reflect on each individual student (if the numbers are small) and ask themselves whether the student would progress without the existence of the program. They will also ask whether the student would, over a defined interval of time, progress not at all or across one or even more levels.

In the second phase of this work the judge will make the same decisions for the students with the expectation that the program would occur; that is, intervention as defined by the program would provide experiences for the student. The procedures are identical to those for completion of the estimates without intervention.

Completion of the fifth table constitutes completion of all information necessary for programming except one item. It is necessary, for the program to run successfully, that a statement of the amount of money available for expenditure in programs also be provided. This information is usually readily available as a real or proposed budget allocation.

The data that have been prepared is keypunched for entry into the statistical run. The cost of a run involving four programs and four levels per program is, at this time, about five dollars. The output includes a statement of the logical outcomes of analysis, programs that should be implemented and the levels at which they should be implemented. A proposed enrollment for each program is summarized in the input information. Finally, a cost for the total set of programs and for each

individual program is also recorded. This output constitutes the feedback information to be used by whomever is later engaged in the decision-making process.

Interactions with the special education staff of the Wausau District Public Schools were primarily concerned with decision-making problems in situations where comprehensive input, application, output and analysis studies were not possible. It was felt that the most promising area to try out a simulation would be the Hearing Impaired program. The nature of the problem of the student having hearing impairment is much better defined than most with the consequence program definition for hearing impaired students might also be more easily specified for other programs. Therefore, staff members of the hearing impaired programs in the WDPS met in after-school sessions to prepare inputs and later to revive and resubmit additional ones. Program definition and indicator selection were the most difficult problems faced by this group.

Four programs were defined: (1) language, (2) reading, (3) basic living skills, and (4) early intervention. For each a hypothetical scale having four levels was formulated. There was no full satisfaction that either program definitions or scales were optimally defined for the simulation experience but it was demonstrated that a combination with enough credibility to have potential use for feedback could be produced.

Because different staff members in the department, the director of special education and the director of research of the district placed different values on programs for different levels of student performance not one but six sets of input data were initially transmitted to Dr. Cook of the DPI for analysis. The inputs for these analyses and their outputs, as well as inputs and outputs for resubmissions, are included in Appendix B; the first series are a "test A" series and the second a "test B" series.

The first analysis series produced no recommendations for inclusion of the basic living skills program as a unit for implementation. Depending upon the amounts of money available and judgements of the authority who prepared input information other programs might or might not have been implemented at all levels. Unit entries in the "proposed implementations" columns of the output sheets indicate language implementation was usually recommended at the three highest levels of preformance. In no case was intervention proposed at all levels for any program. These outcomes, when they became available, stimulated a great amount of discussion. Several conclusions were drawn:

1. Some program costs were too high.
2. Not enough money was "made available".
3. Perhaps programs should be given different values among themselves.
4. Prognoses given for change by students were too low; inferentially, scaling was not adequate.

Subsequent decisions resulted in re-estimations of costs for programs; the new costs were lower than those originally proposed. New stipulations of values for programs were prepared by some members. Finally, different amounts of available program monies were also specified, new data cards were punched and mailed.

The resultant B-series of runs did not lead to proposed implementations for basic skills. This rather surprising outcome apparently occurred because probable outcomes were not estimated to give sufficient individual chances for improvement. However, the B-series of runs produced recommendations for implementation of each of the other three programs at two or three levels. Their implementation was recommended in amounts of about $145,000 irrespective of the amounts of funds specified to be available, which ranged from $150,000 to $250,000. The program proved itself to be able to allocate resources and to provide a stimulating

organizational structure for the simulation activity.

Use of Technical Support Systems

This project was not conducted with the intention of producing a formal test of the adequacy of external support systems. However, it did, as a necessary part of its unfolding, involve external support elements and found them surprisingly adequate to project needs. Inquiries for information about cost-efficiency models, possible program indicators and analysis options were directed to Terry G. Geske who was assigned to a coordinative role by the Wisconsin Research and Development Center for Cognitive Learning. Requests for knowledge about special education programs and for assistance in data analysis were directed to the Wisconsin Department of Public Instruction where they were promptly responded to; all data analysis for simulation after keypunch was efficiently coordinated by that agency.

Many sources of information about student accounting systems were available. The most useful of these was the Minneapolis Public Schools, members of which responded enthusiastically to inquiries. C. Thomas Randall, of that agency, came on-site and actively assisted in development of a student registration form. The Institute for Educational Research, Downers Grove, Illinois was a very strong supportive group. This service agency for local education agencies in the Chicago area possesses unusual capabilities for the initiation of cost-effectiveness work in special education. Its members responded during telephone conversations and a site visit. They gave very valuable suggestions. It seems clear that external technical support is conveniently available for development of cost-efficiency work in special education.

Most if not all needed technical support can be aquired either within Wisconsin or slightly outside its boundaries. If cost-efficiency work is to be done on a large scale within the state formal organization to provide technical support may be necessary within the university system and the DPI. However, in the short range, continued maintenance of the level of support available to this project would be fully adequate to project needs.

Initial Study of Resource Allocation

At the conclusion of the 1974-75 school year each of the 52 staff members in special education received a questionnaire. Its purpose was two-fold: (1) to bring together each staff member's self-report estimate of time spent on each of four general task areas and the percents of time spent on work activities within each task area, and (2) to accumulate individual staff members end-of-year judgements of programs that might at a later time be initiated as cost-efficiency studies together with descriptions of indicators that might be appropriate for use with cost-efficiency studies. In late June, when this report was prepared, 36 of the 52 staff members in the department had returned their questionnaire (69%). Their responses are summarized in tables 1 and 2; the questionnaire constitutes Appendix C.

Discussions with staff members during the year had led to the definition of four general types of work carried out in special education as part of implementation of Chapter 89: (1) screening, (2) prescription, (3) servicing, and (4) follow-up. These types of work were defined in terms of operations associated with Chapter 89. The operations seemed to be discrete in the minds of the staff members.

The staff was first asked to estimate the time spent in each of the four work areas during the 1974-75 school year. Percents allocated by them were to sum to 100 although rounding errors in summarization could produce a higher or lower value. They were then asked to estimate the amount of time they would spend on the same category in 1975-76 after which they were asked to give an "ideal" time allotment for the same general work types. Their responses to this set of items are summarized as average percents and ranges of percents in Table 1. This table indicates that, for respondents as a whole, 15, 19, 57, and 10 percents of time were devoted to the four work types during 1974-75. They estimated slightly less time (3%) would be devoted to screening and prescription in the next year, with more time (4%) devoted to follow-up; it was estimated that the proportions of time to be spent in 1975-76 were close to "ideal" times.

Table 1

Thirty-Six Staff Self-Report Estimates of Time Spent on Four General Types of Work (Percents and Ranges of Percents)

Time Allotment	General Type of Work			
	Screening	Perscription	Servicing	Follow-Up
Approximate in 1974-75	15% 0-50	19% 2-35	57% 35-81	10% 2-30
Estimated for 1975-76	12% 1-40	15% 2-30	58% 30-88	14% 4-30
Judgement of "Ideal"	12% 0-30	16% 3-40	59% 20-89	13% 4-50

A supplemental analysis of times devoted by staff members indicated psychologists and social workers spent more time, proportionately, on screening than did other groups of special education workers; those working in the mental retardation field spent the lowest proportion of time in screening. Members in speech, social work, mental retardation and hearing impaired areas spent proportionally more time on prescriptive activities while those working with mental retardation and learning disability needs spent highest proportions of time on actual servicing of needs. Psychologists and social workers spent least proportional time on the provision of services. Psychologists spent proportionally more time on follow-up as did those working in the area of hearing impairment.

Do the percents that were reported differ from what they might have been had all staff members responded to the questionnaire? An answer to this question exists. A supplemental analysis of the responses of persons working in the same field as non-respondents was conducted. This analysis suggests Table 1 over-estimates total amounts of time devoted to screening and under-estimates amounts of time devoted to prescription and servicing. However, the differences in percents between the total group and respondents would be unlikely to exceed 3 percent for any of the four general work types. Estimates of the amount of time that will in the future be spent for the provision of service by nonrespondents suggests the overall figure reported in Table 1 may itself constitute an under-estimation of about 3 percent.

It was previously noted that task analysis of worker time is a common means of entry for cost-efficiency studies. For task analysis to occur it is necessary that discrete work activities be defined by which to classify types of work that are carried out. The types of work and

activities must have meaning for the organization of information collection and for the initiation of actual programs subsequent to its assembly. Seven activities, each of which might have some relevance to cost-efficiency work, were identified in the course of this project. These seven activities provide role descriptions for entries in Table 2. They have concern for the professional activities of (1) planning, (2) scheduling of work, (3) conduct of work, (4) travel, (5) inservice experiences, (6) slack time, and (7) liaison with external groups. Only the "conduct" activity has in its meaning provision for contact with students; all other activities are, in a sense, for purposes of support to student contact. Each of the seven activities can be applied to each of the four general work types. However, for the staff member who devotes more than a minimum number of hours each week to professional activity it is important to recognize the data that were collected may not be descriptive of the total professional effort of the district staff.

Entries in Table 2 are "percents of percents". That is, an entry of 9% for planning, under screening as a work type, indicates 9% of the time allocation entered in Table 1 (itself 15%) was devoted to planning for screening, -- just over 1% of the total work time.

Entries in Table 2 indicate staff members estimated they spent from 61 to 68 percent of their work time in the "conduct" category; by work group, they spent from 7 to 12 percent of their time at planning, et cetera. Estimated ideal times were very similar to the times actually spent with differences never exceeding 3 percent for the combined groups.

Interpretation of the contents of Tables 1 and 2 must be undertaken with great care. While the overall validity of estimates should be quite good, the validity of estimates of total time commitments for activities having low frequencies of occurrence for a given work type may be very

Table 2

Thirty-Six Staff Self-Report Estimates of Time Spent on Seven Activities for Each General Type of Work (Percents and Ranges of Percents)

Activity	Screening		Prescription		Servicing		Follow-Up	
	1974-75 (Percents of 15%)	"Ideal"	1974-75 (Percents of 19%)	"Ideal"	1974-75 (Percents of 57%)	"Ideal"	1974-75 (Percents of 10%)	"Ideal"
Planning for	9% 0-40	8% 0-30	10% 0-44	10% 0-25	12% 5-33	12% 1-50	7% 0-30	7% 0-30
Scheduling for	8% 0-20	7% 2-20	9% 1-44	8% 0-25	7% 2-40	8% 0-40	7% 1-25	6% 0-25
Conduct of	61% 25-80	63% 25-85	66% 0-96	64% 0-100	65% 40-90	66% 36-91	68% 5-98	70% 20-98
Traveling for	5% 0-14	4% 0-10	3% 0-10	3% 0-15	5% 0-20	2% 0-15	6% 0-25	3% 0-20
Having inservice about	7% 1-25	8% 0-25	6% 0-15	7% 0-13	4% 0-12	5% 0-15	3% 0-10	4% 0-12
Slack Time	3% 0-10	3% 0-10	2% 0-10	2% 0-5	2% 0-10	1% 0-5	4% 0-70	3% 0-50
External Liaison	7% 0-30	7% 1-20	4% 0-20	7% 0-25	5% 0-21	6% 1-30	6% 0-20	7% 1-20

unreliable, However, the data should have value for consideration whenever subsequent discussions of staff time allotments occur. Also, staff members may find the categories useful when classifying their activities in weekly planning-reporting sessions.

Design of a Student Accounting Registration Procedure

About midway through project development it became evident to the authors that cost-efficiency analysis, if it were to be done in the WDPS, could not be efficiently carried out without attention being given to a very serious pupil accounting problems. More than a dozen forms were in use for the recording of pupil information pertinent to special education. It was not possible to efficiently relate to eact other the different types of information that were collected. More seriously, the existing procedures were not at all compatible with information needs over the long term. While status information about students at a specific point in time could be assembled, however inconveniently, there was no possibility for engaging in longitudinal data collection without the commitment of excessive hours of personnel time. Furthermore, there were gaps in the types of information that would be needed and some types of information, while being collected, were not being organized in the most useful manner. Therefore, close attention was directed to this overall problem with the result that a new, comprehensive student registration procedure was developed.

The procedure that was adopted could not have been developed without external assistance. There has been, as was noted earlier, a great amount of experience accumulated by larger educational agencies which developed student accounting systems. Therefore, it became a goal of the project

to acquire from others the best of their experience and to use that experience to design a suitable local system. The search for this experience led to review of procedures used by the Phildelphia, Minneapolis, Milwaukee and St. Louis public schools. Mr. Gary Holloway, of the DPI, provided necessary information about the student accounting procedures maintained within his agency.

All forms in use for reporting purposes by the WDPS and current data collection procedures were reviewed as part of this activity. At its culmination a new form was drafted and shared with members of the Special Education Department. After review by them it was submitted to general administration personnel in the district and a conclusion was drawn that it was in a form suitable for general adoption.

The form that was adopted is a modification of one currently in use for student registration in the Minneapolis Public Schools. It calls for use of a student identification number both to make easier the accessing of information and to provide for improved anonymity where anonymity is important. Students names, addresses and family status are recorded on it with entries of this type being capable of providing some of the demographic information for describing system inputs. Special coding for special education programs in the district and the State of Wisconsin were prepared. Additional modifications of the Minneapolis documentation enable coding for special education at locations other than the traditional classroom, for recording of the tuition status of students in special education who are not residents of the district and for notation of the full range of transportation codings for the regular student body and for the handicapped. This form, the contents of which appear as Appendix D, will be printed on a form having a harder stock paper background separated by carbon from a lighter front sheet. The first sheet will, upon registration

of a student in a building, be transmitted to a central location for coding and transmission to keypunch after which a fraction of the data will be stored. The harder backup sheet will be retained at the building level for use in its record system. Cost of these forms, when printed in volume necessary for the district has been estimated by vendors at about 2.5 cents each.

It is anticipated at the time of this writing that this procedure will be approved for adoption by the Board of Education in the next school year. If this is the case a central file will be established during the fall and winter of the 1975-76 school year after which update and reporting systems will also be applied. Adoption of this system will not itself reduce costs of activities of special education information production but should enable much more to be accomplished with the current expenditure level.

Summary and Recommendations

A model for cost-efficiency analysis of special education has been produced during conduct of this development project. It contains interrelated practical and theoretical elements. The following practical problems came to be viewed as the more serious obstacles to future cost-efficiency work in special education:

1. Lack of reliable, valid indicators by which to assess outcomes.
2. Limitations in the number of programs that can be designed with sufficient specificity to permit their implementation for close cost-efficiency analysis.
3. Lack of existing cost allocation practices which can efficiently produce cost information about programs.
4. Lack of efficient pupil accounting systems.
5. Lack of personnel experience with cost-efficiency procedures.

However, in the steps taken to go beyond theory and into practice, progress was made toward resolution of several problems:

1. A necessary basic student accounting system was designed for the district.
2. A simulation procedure for resource allocation was pilot tested and found to have potential value for inservice conduct of efficiency analysis.
3. Task analysis classifications were developed for special education.
4. The task analysis classification enables some cost-efficiency study to be done without adoption of cumbersome microanalysis of staff time.

Some conduct of cost-efficiency development work can continue in the district without external assistance. However, external knowledge and other resource support will be needed if progress is to be rapid. The most important resource needs that continue to exist are the following:

1. Resources to make efficient the recording of student program information.

2. Resources for validity studies of screening and prescriptive practices.

3. Support for external data analysis of input and output information.

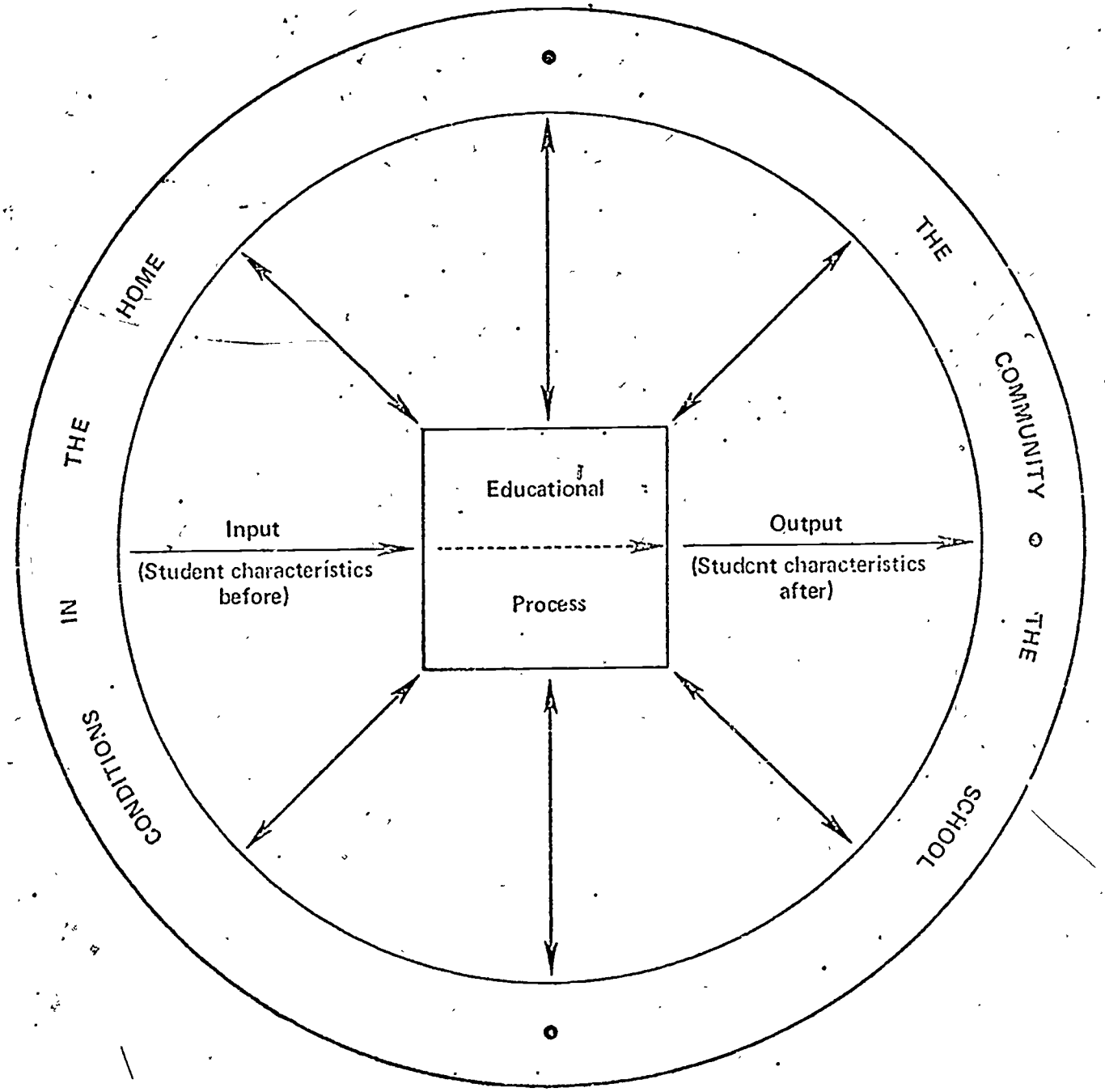
Discontinuance of the ESEA Title III funding procedure in effect at the time this project was conducted makes uncertain the best course to follow for assembly of additional development support. However, because needs and potential outcomes have been quite clearly identified it seems certain progress will not now be terminated even though additional external support could be productively applied.

APPENDIX A

THE STUDENT-CHANGE MODEL OF AN EDUCATIONAL SYSTEM

The Dyer Student-Change Model of an

Educational System



APPENDIX B

DOCUMENTATION, INPUTS AND OUTPUTS FOR SIMULATED RESOURCE ALLOCATIONS

Wisconsin Department of Public Instruction, "Bureau Memorandum", Volume 15, Number 2, Winter 1974.

A Decision Model— Practical Applications

By John J. Cook, Ph.D.
Coordinator, Research
Division for Handicapped Children, DPI

Managers and administrators in special education at both the state and local level are called upon to make various kinds of decisions. The most typical one concerns the allocation of limited resources to programs developed to attain certain educational goals for the community. In its simplest sense the decision process involves two parameters, the utility or value of an outcome or goal, and the probability of attaining this outcome. These combined factors then determine the course of action or, in a practical sense, the amount of money which should be allocated to the various programs.

This article outlines a procedure which allows the administrator, in conjunction with his advisory committee or other decision-making body, to make the necessary subdecisions on the basis of which the optimum allocation of resources can be specified. The decision bits are fed into a computer program which has been modified by the author for use on the Univac 1108 at the U.W. Computing Center, but based on the original work of Drs. Harry Harmon and Robert Patrick of the Educational Testing Service. The program in turn specifies the optimum allocation of the money. In this article no attempt is made to explicate in detail the underlying theory and mathematical formulations. Rather, should the reader be interested in more information about the model it is suggested he contact the author. Should sufficient interest be generated then a one or two day workshop could be considered.

An Example

In the following example an attempt is made to be as realistic as possible. However, data from problems already run are being used as a matter of convenience, so some distortion of reality might be evident.

Let us assume that the individual in charge of EMR programs in the state has been receiving $14,250,658 per year to fund programs for the EMR. Let us assume further that the administrator is given an additional $1,000,000 to beef up state-wide programs for the EMR. Exactly what form this "beefing up" process will take is unknown at this time. It could be curriculum additions, different types of adjunctive services, in-service training and so forth. The problem for the administrator is how best to distribute this money among his various programs. The term "program" lends itself to many definitions but for our purposes the EMR programs will adhere to the chronological definitions of Early Education, Primary, Intermediate, Junior and Senior High School.

Basic Data

The basic data associated with each of the programs at this time are as follows:

Program	Maximum Enrollment Potential	Program Cost	Cost Per Pupil
Early Education	1048	$ 3,735,500	$3,564
Primary	1800	$ 4,193,987	$2,330
Intermediate	1310	$ 2,359,224	$1,801
Junior High	2291	$ 1,065,350	$ 465
Senior High	7977	$ 2,896,597	$ 363
TOTALS	14,426	$14,250,658	$ 988

Once again the reader is warned that the data are fictitious so some discrepancies with reality can be noted; things such as the high funding of preschool education which is just starting to move or the disproportionate number of pupils in Senior High School.

Current Status of Programs

To make judgments, choices or preferences among several levels of performance in the different programs, an assessment of current status must be made. In the Primary and Intermediate programs performance could be indexed by an achievement test such as the Peabody Individual Achievement Test (PIAT). If the goals are other than academic achievement, alternate indices have to be devised. Such would be the case in the Early Education, Junior High and Senior High programs. The scale for each of these programs could be an overall index or composite of several indicators. Of course, indicators would vary depending on the program. For instance, in Early Education the indicators might be adequacy of physical plant rate Low (L), Medium (M) or High (H), adequacy of medical attention, rated L, M, or H, and qualifications of educational personnel, rated L, M, or H. The overall scale might then be 1 if no Hs, 2 if 1 H, 3 if at

least 2 Hs. Junior and Senior High School on the other hand would have different indicators which for our purposes could be academic achievement, behaviors related to work study and general deportment. Thus the complete scale could be handled as with Early Education. The matrix generated from this information would be as follows with the proportions based on numbers in each program at each level on the scale.

	Scale				
	Low			High	
Program	1	2	3	4	Total
Early Education	.40	.35	.25		1.00
Primary	.23	.26	.27	.24	1.00
Intermediate	.18	.28	.28	.26	1.00
Junior High	.50	.20	.30		1.00
Senior High	.60	.20	.20		1.00

All the weights must add up to 1.00. It is to be noted that the Primary and Intermediate programs also have four levels on the scale. Since academic achievement is the major concern the scale levels for these programs could correspond to: at or above age equivalent on Total Test score of PIAT (4), up to one year below (3), one to two years below (2) and more than two years below (1).

Priorities Across Programs

At this point, the administrator would call together his advisory committee to ascertain the relative value of each of the programs, i.e., what are the priorities? The programs are then rank ordered and weights are assigned in terms of the committee's concern for the attainment of the programs' objectives. Once again all weights must add to 1.00 and in addition, as required by the model, the top priority program is given a weight equal to the combined weights of all the less valued programs. This situation could be as follows:

Program	Weighted Concern
Primary	.50
Early Education	.25
Junior High	.10
Senior High	.10
Intermediate	.05
TOTALS	1.00

In a group setting such as a committee there are several ways to obtain the weights. They can be independently assigned and an average obtained. Discussion followed by consensus could also be used. A more time consuming and perhaps more valid approach is the Delphi technique for establishing consensus. Once the decision making model has been made known to the committee, the series of questionnaires used to successfully approximate true consensus could be used prior to the actual meeting (For more information on Delphi technique, see Nation's Schools, July, 1973, p. 29-32).

Priorities Within Programs

The next job for the committee is to indicate their preference or concern for moving pupils out of each level (below the top one), as against moving them out of the other levels. As before, all weights must add to 1.00 and the top scale level for each program is given a weight equal to the weights at the lower scale levels. This latter constraint is most adequately resolved in many situations by giving the top scale level a weight of .50, thereby making available the widest possible range of weights for the lower levels.

The within program priority weights would look like this:

	Scale Levels				
Program	1	2	3	4	Total
Early Education	.35	.15	.50		1.00
Primary	.25	.15	.10	.50	1.00
Intermediate	.25	.15	.10	.50	1.00
Junior High	.35	.15	.50		1.00
Senior High	.25	.25	.50		1.00

Practically speaking what the committee is required to do can be illustrated by the Early Education Program. Their weights are saying in effect that it is more than twice as important to them to move the pupils in programs rated L or M in terms of physical plant, medical attention or personnel qualifications to the next level (2) where one indicator at least is rated H, than to move the pupils from programs with one H rating to those with two or more H ratings.

Estimates of Probable Outcome

The final chore for the committee before the computer takes over is to estimate the probable outcomes after one

year or for some other specified time span. These probable outcomes are estimated without the intervention and with the intervention. The matrices resulting would appear like this:

Probable Outcomes

Early Education

Without Intervention

From/To	1	2	3
1	.80	.15	.05
2	.05	.75	.20
3	.00	.05	.95

With Intervention

From/To	1	2	3
1	.40	.40	.20
2	.00	.50	.50
3	.00	.00	1.00

Primary

From/To	1	2	3	4
1	.90	.07	.02	.01
2	.05	.80	.10	.05
3	.01	.04	.80	.15
4	.00	.05	.10	.85

From/To	1	2	3	4
1	.50	.30	.15	.05
2	.05	.60	.30	.05
3	.02	.06	.52	.40
4	.00	.03	.17	.80

Intermediate

From/To	1	2	3	4
1	.90	.08	.02	.00
2	.02	.93	.05	.00
3	.01	.04	.93	.02
4	.00	.01	.04	.95

From/To	1	2	3	4
1	.50	.25	.15	.10
2	.00	.65	.25	.10
3	.00	.00	.70	.30
4	.00	.00	.00	1.00

Junior High

From/To	1	2	3
1	.80	.20	.00
2	.05	.03	.97
3	.00	.03	.97

From/To	1	2	3
1	.60	.30	.10
2	.00	.60	.40
3	.00	.00	1.00

Senior High

From/To	1	2	3
1	1.00	.00	.00
2	.05	.90	.05
3	.00	.03	.97

From/To	1	2	3
1	.75	.20	.05
2	.00	.65	.35
3	.00	.00	1.00

An interpretation of these matrices seems warranted. In the Primary program, for instance, without the intervention 90% of the pupils are expected to remain at level 1 (more than two years below their age equivalent on the PIAT), with the program only 50% are expected to remain so; 80% are expected to remain at level 2 (one to two years below age equivalent) without intervention and 60% with intervention; 80% are expected to remain at level 3 (up to one year below age equivalent) without and 52% with intervention; 85% are expected to remain at level 4 (achieving at or above age equivalent) without and 80% with intervention. Similar interpretations can be applied to the rest of the matrices, 7% are expected to go from level 1 to level 2 without and 30% with intervention, 3% from 1 to 3 without and 15% with, 1% go to 4 without and 5% with the intervention, and so forth.

Computer Output

All the data specified in the above sections are entered into the computer in the specified format. Output would then consist of the following:

Available Funds: $1,000,000

Program	Concern Across	Max. Enrollment	Proposed Enrollment	Cost
Primary	.50	1800	900	$209,970
Early Education	.25	1048	1048	$373,550
Senior High	.10	7977	3191	$115,864
Junior High	.10	2291	2291	$106,535
Intermediate	.05	1310	969	$174,583
				$980,502

In addition to the above, the computer also provides the levels within the program toward which the input indicates the intervention should be directed:

	Proposed Implementations			
Program	1	2	3	4
Primary	1	0	1	0
Early Education	1	1	1	
Senior High	0	1	1	
Junior High	1	1	1	
Intermediate	1	1	1	0

Thus, all levels of the Early Education and Junior High programs are of equal priority whereas levels 1 and 3 of Primary, 2 and 3 of Senior High and levels 1, 2 and 3 of the Intermediate program are of top priority.

Final Comments

In order to use this approach to resource allocation, it is apparent that the people involved must be thoroughly acquainted with their school system and with the nature of the intervention if the estimates called for are to have any basis in reality. Also, large scale field testing of the procedure has not been undertaken so arguments for its use are a little difficult to develop.

The procedure is meant to be quite general in its application being limited only by the ingenuity of the user. While the example used illustrated its use on a statewide basis, it is equally amenable to use by the small L.E.A. For instance, Title I funds can be used in a variety of situations which could be defined as programs as the term is used in the example. Using the decision model would force a clarification in thinking about the project as well as determining the optimum allocation of the funds.

It would seem that with the advent of block grants, a procedure such as the decision model might well become indispensible in administrative decision making. In any event, should the response to the article be adequate, it can be tried in some practical situations put forth by the participants.

```
$XQT
MAP 017F-09/03-17:07


ADDRESS-LIMITS    001000-015150    040000-053031
STARTING ADDRESS  015003

WORDS DECIMAL      6249 IBANK       5658 DBANK


          SEGMENT MAIN          001000-015150    040000-053031

NFTCHS/FORIO          1    001000-001273        2    040000-040036
NOTINS/FORIO          1    001274 001610        2    040037 040043
NININS/FORIO          1    001611-002026        2    040044-040064
NTABS/FORIO                                     2    040065 040131
UWERRS/NAGFORFUN01    1    002027 002635        2    040132-040570
NFFTIS/FORIO          1    002636 003714        2    040571 041022
NFFTOS/FORIO          1    003715-004303        2    041023-041064
ERUS
NOBUFS/FORIO          1    004304 004361        2    041065-041065
NIBUFS/FORIO          1    004362 004441        2    041066 041066
FORIOS2/FORIO         1    004442 007134        2    041067-043570
NEXPIS/NAGFORFUN10    1    007135 007204        0    043571 043581
FORIOS1/FORIO         1    007205-012407        2    043572-044657
SUB3                  1    012410 012555        0    044660 044706
SUB2                  1    012556 012776        0    044707 044745
SUB1                  1    012777 015002        0    044746 045537
MAIN                  1    015003-015150        0    045540-053031

SYS*RLIBS, LEVEL 25
END-OF-COLLECTION  TIME 1.210 SECONDS
```

```
@FOR,IS SUB3
FORTRAN-MACC 1.1S-09/03/72-17:07:00 (,0)        SUB3
00101      1.          INTEGER FUNCTION SROWSR(A,NR,NC,IC)
00103      2.          REAL A(NR,1),B,C
00104      3.          K=1
00105      4.       10 B=A(K,IC)
00106      5.          J=0
00107      6.          DO 15 I=K,NR
00112      7.          IF(A(I,IC).LE.B) GO TO 15
00114      8.          B=A(I,IC)
00115      9.          J=I
00116     10.       15 CONTINUE
00120     11.          IF(B.GT.0) NUM=K
00122     12.          IF(J.EQ.0) GO TO 22
00124     13.          DO 18 I=1,NC
00127     14.          C=A(K,I)
00130     15.          A(K,I)=A(J,I)
00131     16.          A(J,I)=C
00132     17.       18 CONTINUE
00134     18.       22 K=K+1
00135     19.          IF(K.LE.NR) GO TO 10
00137     20.          SROWSR=NUM
00140     21.          RETURN
00141     22.          END

      END OF COMPILATION:        NO  DIAGNOSTICS.
```

```
@FOR,IS SUB2
FORTRAN-HACC 1.1S-09/03/72-17:06:58 (.0)        SUB2
00101    1.      SUBROUTINE MIN(N,A,C,BUDGT,IVEC,COST,AMIN)
00103    2.      REAL A(1),C(1)
00104    3.      AMIN=1.
00105    4.      LB=1
00106    5.      LE=2**N
00107    6.      DO 1 I=LB,LE
00112    7.      TOT=0.
00113    8.      DO 2 J=1,N
00116    9.      L=2**(J-1)
00117   10.      IF(AND(I,L) .NE. L) GO TO 2
00121   11.      TOT=TOT+A(J)
00122   12.    2 CONTINUE
00124   13.      IF(TOT .GT. AMIN ) GO TO 1
00126   14.      BUD=0.
00127   15.      DO 3 MI=1,N
00132   16.      L=2**(MI-1)
00133   17.      IF(AND(I,L) .EQ. L) BUD=BUD+C(MI)
00135   18.    3 CONTINUE
00137   19.      JTOT=TOT*1000000.
00140   20.      JAMIN=AMIN*1000000.
00141   21.      IF((BUD .GT. BUDGT) .OR. (JTOT .EQ. JAMIN .AND. BUD .GT. COST)) GO T
00141   22.     1O 1
00143   23.      AMIN=TOT
00144   24.      IVEC=I
00145   25.      COST=BUD
00146   26.    1 CONTINUE
00150   27.      RETURN
00151   28.      END

      END OF COMPILATION:        NO  DIAGNOSTICS.
```

64

```
00511    113.          NN=N(I1)
00512    114.          DO 351 J1=1,NN
00515    115.          NVC=NVC+1
00516    116.          IVC=0
00517    117.          KK=2**(NVC-1)
00520    118.          IF(AND(IVEC,KK) .NE. KK) GO TO 351
00522    119.          IVC=1
00523    120.          PPP=PPP*P(I1,J1)
00524    121.    351   IV(I1,J1)=IVC
00526    122.          KOST(I1)=PPP*NP(I1)*Z(I1)
00527    123.    352   IP(I1)=PPP*NP(I1)+.5
00531    124.          WRITE(6,6007) TITLE,B
00540    125.    6007  FORMAT(1H1,7X,20A4//1X,'AVAILABLE FUNDS = ',F11.2//)
00541    126.          WRITE(6,6008)
00543    127.    6008  FORMAT(9X,'PROGRAM',12X,'PROPOSED IMPLEMENTATIONS  CONCERN  MAXI
00543    128.         1MUM     PROPOSED      COST'/55X,'ACROSS  ENROLLMENT  ENROLLMENT')
00544    129.          WRITE(6,6010) (J1,J1=1,NN1)
00552    130.    6010  FORMAT(1H+,30X,4(I1,5X))
00553    131.          WRITE(6,6004)
00555    132.          CST=0.
00556    133.          CALL SRDWSR(NORD,10,2,2)
00557    134.          DO 1008 LL=1,K
00562    135.          L=NORD(LL,1)
00563    136.          IF(L .LT. 1 .OR. L .GT. K) GO TO 1013
00565    137.          NN=N(L)
00566    138.          CST=CST+KOST(L)
00567    139.          NNPP=NP(L)
00570    140.          WRITE(6,6009) (PGM(J,L),J=1,6),C1(L),NNPP,IP(L),KOST(L)
00602    141.    6009  FORMAT(1X,6A4,32X,F3.2,7X,I4,8X,I4,F14.2)
00603    142.    1008  WRITE(6,6010) (IV(L,J),J=1,NN)
00612    143.          WRITE(6,6012) CST
00615    144.    6012  FORMAT(89X,8(1H-)/84X,F13.2/1H1)
00616    145.          RETURN
00617    146.    1013  WRITE(6,6013) NORD
00625    147.    6013  FORMAT(1H1,1X,20I4)
00626    148.          RETURN
00627    149.          END

      END OF COMPILATION:  NO DIAGNOSTICS.
```

```
00303    56.          NN=N(M)
00304    57.          C2(M,NN)=.5
00305    58.          NNP=NP(M)
00306    59.          TC=NP(M)*Z(M)
00307    60.    9000  FORMAT(I6)
00310    61.          ENCODE(FMT( 7),9000)NN
00313    62.          ITEMP=7+(5-NN)
00314    63.          ENCODE(FMT(10),9000)ITEMP
00317    64.          WRITE(6,FMT) (PGM(I1,M),I1=1,6),NNP,Z(M),TC,(P(M,I2),I2=1,NN),C1(M
00317    65.         1),(C2(M,I3),I3=1,NN)
00341    66.    1004  C2(M,NN)=-.5
00343    67.          WRITE(6,6005)
00345    68.    6005  FORMAT(//33X,'PROBABLE OUTCOMES',/,19X,'WITHOUT PROGRAM',16X,'WITH
00345    69.         1PROGRAM'/)
00346    70.          ENCODE(FM2(4 ),9000)MNI
00351    71.          ITEMP=6+(4-MNI)*5
00352    72.          ENCODE(FM2( 7),9000)ITEMP
00355    73.          FM2(11)=FM2(4)
00356    74.          ITEMP=6+MNI*5
00357    75.          ENCODE(FM2(15),9000)ITEMP
00362    76.          FM2(20)=FM2(15)
00363    77.          ITEMP=(5-MNI)*5+1
00364    78.          ENCODE(FM2(18),9000)ITEMP
00367    79.          ITEMP=6+MNI*5
00370    80.          ENCODE(FM2(26),9000)ITEMP
00373    81.          WRITE(6,FM2) (J1,J1=1,MNI),(J2,J2=1,MNI)
00405    82.          DO 1006 MB=1,K
00410    83.          NN=N(MB)
00411    84.          WRITE(6,6006) (PGM(J1,MB),J1=1,6)
00417    85.    6006  FORMAT(/1X,6A4/)
00420    86.          DO 1006 M=1,NN
00423    87.          ENCODE(FM3(5),9000)NN
00426    88.          ITEMP=6+(4-NN)*5
00427    89.          ENCODE(FM3(8),9000)ITEMP
00432    90.    1006  WRITE(6,FM3) M,(TO(M,J1,MB),J1=1,NN),M,(T1(M,J2,MB),J2=1,NN)
00450    91.    8765  CONTINUE
00451    92.          NB=0
00452    93.          DO 200 I=1,K
00455    94.          NN=N(I)
00456    95.          CPK=C1(I)
00457    96.          DO 200 J=1,NN
00462    97.          NB=NB+1
00463    98.          PKT=P(I,J)
00464    99.          TT1=0.
00465   100.          DO 201 L=1,NN
00470   101.    201   TT1=TT1+CPK*PKT*(T1(J,L,I)-TO(J,L,I))*C2(I,L)
00472   102.          R2=P(I,J)*Z(I)*NP(I)/B
00473   103.          FPD(I,J)=TT1
00474   104.          AA(NB)=TT1
00475   105.          CC(NB)=R2
00476   106.          ZB(I,J)=R2
00477   107.          ZBMB(I,J)=R2-TT1
00500   108.    200   ALPH(I,J)=-TT1/R2
00503   109.          CALL MIN(NB,AA,CC,1.,IVEC,COST,AMIN)
00504   110.          NVC=0
00505   111.          DO 352 II=1,K
00510   112.          PPP=0.
```

```
GFOR,IS SUBI
FORTRAN-HACC 1.15-09/03/72 17:06:51 (,0)        SUBI
00101    1.          COMPILER (DATA = SHORT)
00102    2.          SUBROUTINE CEE(B,X,N,Z,NP,CP,P,C1,C2,TO,TI,ZB,FPO,ZBMFB,ALPH,MNI,D
00102    3.         1A,NO,PGM,TITLE)
00104    4.          DIMENSION NORD(10,2),FMT(16),FM2(29),FM3(13)
00105    5.          INTEGER IP(5),IV(6,4),NORD /1,2,3,4,5,6,7,8,9,10/
00107    6.          REAL AA(17),CC(17),KOST(10),ORD(10)/10*-1./,TITLE(20)
00111    7.          REAL FMT/'(1X, 6A4, I8, F11.2, F14.2, F7.2,
00111    8.         1'  X,F4.2,1X,4(3X,F4.2))'/,
00111    9.         1   FM2/'(17X, 5HJTO ', (I1,4X), X, 5HJTO ',
00111   10.         1       (I1,4X),/,12X, (1H-), X, (
00111   11.         1H-),/,13X, 5HFROM), X,5HFROM)'/,
00111   12.         1   FM3/'(14X,I1, 3H J,1X, F5.2, X, I1,
00111   13.         1 3H J,1X,4F5.2)'/,PGM(6,K)
00115   14.          REAL Z(K),NP(K),CP(K),C1(K),P(K,I),C2(K,I),TO(MNI,MNI,K),TI(MNI,MN
00115   15.         1I,K),DA(I)
00115   16.         1,ZB(K,I),FPO(K,I),ZBMFB(K,I),ALPH(K,I)
00116   17.          INTEGER N(K)
00117   18.          EQUIVALENCE (ORD,NORD(1,2))
00120   19.          DO 5010 I1=1,10
00123   20.          NORD(I1,1)=I1
00124   21.     5010 ORD(I1)=-1.
00126   22.          READ(5,2) Z
00134   23.        2 FORMAT(8F10.0)
00135   24.          READ(5,2) NP
00143   25.          DO 100 I1=1,K
00146   26.          Z(I1)=Z(I1)/NP(I1)
00147   27.          NN=N(I1)
00150   28.      100 READ(5,2) (P(I1,I2),I2=1,NN)
00157   29.          READ(5,2) C1
00165   30.          DO 101 I1=1,K
00170   31.          ORD(I1)=C1(I1)
00171   32.          NN=N(I1)-1
00172   33.          C2(I1,NN+1)=-.5
00173   34.      101 READ(5,2) (C2(I1,I2),I2=1,NN)
00202   35.          DO 102 I=1,K
00205   36.          NN=N(I)
00206   37.          DO 102 J1=1,NN
00211   38.      102 READ(5,2) (TO(J1,J2,I),J2=1,NN)
00221   39.          DO 103 I=1,K
00224   40.          NN=N(I)
00225   41.          DO 103 J1=1,NN
00230   42.      103 READ(5,2) (TI(J1,J2,I),J2=1,NN)
00240   43.          READ(5,455) PGM
00246   44.      455 FORMAT(6A4)
00247   45.          WRITE(6,6001) TITLE,B
00256   46.     6001 FORMAT(1H1,25X,20A4//1X,'AVALIABLE FUNDS = ',F11.2//9X,'PROGRAM',1
00256   47.         10X,'MAXIMUM  COST/PUPIL  TOTAL COST  CURRENT STATUS (LOW TO HIGH
00256   48.         1)   CONCERN        CONCERN WITHIN')
00257   49.          WRITE(6,6002) (J1,J1=1,MNI)
00265   50.     6002 FORMAT(25X,'ENROLLMENT',28X,4(I1,6X))
00266   51.          WRITE(6,6003) (J1,J1=1,MNI)
00274   52.     6003  FORMAT(1H+,91X,'ACROSS',5X,4(I1,6X))
00275   53.          WRITE(6,6004)
00277   54.     6004 FORMAT(/)
00300   55.          DO 1004 M=1,K
```

```
GFOR,IS MAIN
FORTRAN-MACC 1.15-09/03/72-17:06:50 (,0)        MAIN
00101     1.          REAL Z(10),NP(10),CP(10),P(100),C1(10),C2(100),TO(1000),T1(1000),
00101     2.         1 ZB(100),FPO(100),ZBMFB(100),ALPH(100),PGM(6,10),TITLE(20)
00102     3.          INTEGER N(10)/10*0/
00104     4.      201 DO 202 II=1,10
00107     5.      202 N(II)=0
00111     6.          READ(5,501,END=900) TITLE
00117     7.      501 FORMAT(20A4)
00120     8.          READ(5,1) K,B
00124     9.        1 FORMAT(I4,6X,F10.0)
00125    10.          READ(5,2) (N(I),I=1,K)
00133    11.        2 FORMAT(10I4)
00134    12.          MNI=MAXO(N(1),N(2),N(3),N(4),N(5),N(6),N(7),N(8),N(9),N(10))
00135    13.          CALL CEF(B,K,N,Z,NP,CP,P,C1,C2,TO,T1,ZB,FPO,ZBMFB,ALPH,MNI,0,1,PG
00135    14.         1M,TITLE)
00136    15.          GO TO 201
00137    16.      900 CALL EXIT
00140    17.          END

     END-OF-COMPILATION:  NO DIAGNOSTICS.
```

***** SUSAU DISTRICT PUBLIC SCHOOLS TEST A1 *****

AVALIABLE FUNDS = 1000000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.50	.10	.15	.25	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.20	.25	.15	.10	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.10	.20	.10	.20	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.20	.10	.30	.20	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.20	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.07
4	.00	.00	.00	.10

WITH PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
LANGUAGE	2	1	1	1	.50	42	31	96200.00
READING	1	0	0	0	.20	36	2	3400.00
BASIC LIVING SKILLS	0	0	0	0	.20	42	0	.00
EARLY INTERVENTION	0	0	0	0	.10	9	0	.00

***** WAUSAU DISTRICT PUBLIC SCHOOLS TEST A2 *****

AVALIABLE FUNDS = 150000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.50	.10	.15	.25	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.20	.25	.15	.10	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.10	.20	.10	.20	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.20	.10	.30	.20	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM	TO 1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.18
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.60
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM	TO 1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
LANGUAGE	0	1	1	0	.50	42	30	93600.00
READING	1	0	1	0	.20	36	29	48000.00
BASIC LIVING SKILLS	0	0	0	0	.20	42	0	.00
EARLY INTERVENTION	0	0	1	0	.10	9	2	6600.00
								148199.99

***** NASSAU DISTRICT PUBLIC SCHOOLS TESTA 3 *****

AVALIABLE FUNDS = 150000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.50	.12	.13	.15	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.10	.25	.12	.13	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.30	.20	.15	.15	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.10	.10	.25	.15	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
LANGUAGE	0	1	1	1	.50	42	31	96200.00
EARLY INTERVENTION	1	0	1	0	.30	9	7	23400.00
READING	0	1	1	0	.10	36	9	15600.00
BASIC LIVING SKILLS	0	0	0	0	.10	42	0	.00

***** NASSAU DISTRICT PUBLIC SCHOOLS TEST A 4 *****

AVALIABLE FUNDS = 150000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.50	.18	.30	.02	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.20	.19	.30	.01	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.20	.30	.18	.02	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.10	.10	.30	.10	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM\TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM\TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
LANGUAGE	0	1	1	1	.50	42	31	96200.00
READING	0	1	1	0	.20	36	9	15600.00
EARLY INTERVENTION	1	1	1	0	.20	9	9	30000.00
BASIC LIVING SKILLS	0	0	0	0	.10	42	0	.00
								141799.00

AVALIABLE FUNDS = 150000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.50	.15	.15	.20	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.15	.15	.15	.20	.50
EARLY INTEPVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.20	.45	.03	.02	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.15	.15	.15	.20	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
LANGUAGE	0	1	1	1	.50	42	31	96200.00
EARLY INTERVENTION	1	1	1	0	.20	9	9	30000.00
READING	0	1	1	0	.15	36	9	15600.00
BASIC LIVING SKILLS	0	0	0	0	.15	42	0	.00
								141799.99

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***** AUSAU DISTRICT PUBLIC SCHOOLS TEST A 6 *****

AVALIABLE FUNDS = 150000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.16	.16	.50	.17	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.17	.16	.50	.17	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.17	.16	.50	.01	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.50	.25	.25	.25	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM	TO 1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM	TO 1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
BASIC LIVING SKILLS	0	0	0	0	.50	42	0	.00
READING	0	1	1	0	.17	36	9	15600.00
EARLY INTERVENTION	1	1	1	0	.17	9	9	30000.00
LANGUAGE	0	1	1	1	.16	42	31	96200.00
								141799.09

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B.17

***** NASSAU DISTRICT PUBLIC SCHOOLS TEST B1 *****

AVALIABLE FUNDS = 250000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.16	.16	.50	.17	.50
READING	36	1666.67	60000.00	.60	.06	.20	.14	.17	.16	.50	.17	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.17	.16	.50	.01	.50
BASIC LIVING SKILLS	42	3571.43	150000.00	.14	.45	.31	.10	.50	.25	.25	.25	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.03	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
BASIC LIVING SKILLS	0	0	0	0	.50	42	0	.00
READING	0	1	1	0	.17	36	9	15600.00
EARLY INTERVENTION	1	1	1	0	.17	9	9	30000.00
LANGUAGE	0	1	1	1	.16	42	31	94200.00
								139799.99

***** WAUSAU DISTRICT PUBLIC SCHOOLS TEST B2 *****

AVALIABLE FUNDS = 150000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.16	.16	.50	.17	.50
READING	36	2000.00	72000.00	.60	.06	.20	.14	.17	.16	.50	.17	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.17	.16	.50	.01	.50
BASIC LIVING SKILLS	42	1500.00	63000.00	.14	.45	.31	.10	.50	.25	.25	.25	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
BASIC LIVING SKILLS	0	0	0	0	.50	42	0	.00
READING	0	1	1	0	.17	36	9	18720.00
EARLY INTERVENTION	1	1	1	0	.17	9	9	30000.00
LANGUAGE	0	1	1	1	.16	42	31	96200.00
								144920.00

92

***** KAUSAU DISTRICT PUBLIC SCHOOLS TEST B3 *****

AVALIABLE FUNDS = 200000.00

PROGRAM	MAXIMUM ENROLLMENT	COST/PUPIL	TOTAL COST	CURRENT STATUS (LOW TO HIGH) 1	2	3	4	CONCERN ACROSS	CONCERN WITHIN 1	2	3	4
LANGUAGE	42	3095.24	130000.00	.26	.48	.24	.02	.16	.16	.50	.17	.50
READING	36	2000.00	72000.00	.60	.06	.20	.14	.17	.16	.50	.17	.50
EARLY INTERVENTION	9	3333.33	30000.00	.56	.22	.22	.00	.17	.16	.50	.01	.50
BASIC LIVING SKILLS	42	1500.00	63000.00	.14	.45	.31	.10	.50	.25	.25	.25	.50

PROBABLE OUTCOMES

WITHOUT PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.17	.05	.00	.00
2	.02	.10	.19	.00
3	.00	.02	.14	.14
4	.00	.00	.05	.12
READING				
1	.23	.14	.00	.00
2	.03	.11	.11	.00
3	.00	.03	.07	.14
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.22	.34	.00	.00
2	.00	.11	.00	.00
3	.00	.00	.22	.11
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.07	.07	.00	.00
2	.00	.31	.07	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

WITH PROGRAM

FROM \ TO	1	2	3	4
LANGUAGE				
1	.07	.09	.05	.00
2	.00	.09	.17	.05
3	.00	.00	.02	.29
4	.00	.00	.00	.17
READING				
1	.11	.20	.06	.00
2	.00	.07	.11	.06
3	.00	.00	.00	.25
4	.00	.00	.00	.14
EARLY INTERVENTION				
1	.00	.33	.22	.00
2	.00	.00	.11	.00
3	.00	.00	.00	.34
4	.00	.00	.00	.00
BASIC LIVING SKILLS				
1	.00	.12	.02	.00
2	.00	.07	.31	.00
3	.00	.00	.36	.02
4	.00	.00	.00	.10

PROGRAM	PROPOSED IMPLEMENTATIONS 1	2	3	4	CONCERN ACROSS	MAXIMUM ENROLLMENT	PROPOSED ENROLLMENT	COST
BASIC LIVING SKILLS	0	0	0	0	.50	42	0	.00
READING	0	1	1	0	.17	36	9	18720.00
EARLY INTERVENTION	1	1	1	0	.17	9	9	30000.00
LANGUAGE	0	1	1	1	.16	42	31	96200.00
								144920.00

APPENDIX C

STAFF QUESTIONNAIRE

SPECIAL EDUCATION COST-EFFECTIVENESS SURVEY

I. TIME ALLOCATION

In discussions with many of you we have tried to learn how we might classify use of personnel time in special education. Since much cost-effectiveness work is built up from task analysis this is an important area for us to consider.

Your reactions to our initial presentations suggest we can talk about four general types of work:

Screening - involved the identification of children who might need special education services. This work phase continues until a decision is made (yes or no) that a child has a special need requiring service, i.e. they are to receive Chapter 89 or other services.

Prescription - is the series of tasks by which the body of knowledge of your field of specialization is applied to plan remediation or treatment. Careful considerations lead to specification of a program to others if they are to carry it out.

Servicing - is the process of remediation. Students receive the treatment prescribed for them. This might occur in one-to-one or grouping arrangements.

Follow-up - occurs as treatment is concluded. It may involve post-testing, assessment conferences with others and parental visits. A summary report is prepared, the contents of which suggest whether additional services will be needed.

How do you estimate percents of your time have been distributed across these types of work this year? How do you estimate they will be distributed in an ideal, established program including Chapter 89 services for this district? In the spaces that follow please enter your estimates of percents for each of the past, next and ideal years.

I. 1

	General Type of Work				
	Screening	Prescription	Servicing	Follow-up	Total
My approximate 1974-75 time allotments	%	%	%	%	100%
My estimated 1975-76 time allotments	%	%	%	%	100%
An "ideal allotment of time	%	%	%	%	100%

Each of the four general types of special education work by itself has tasks or activities involved in its conduct. There seem to be seven such activities:

Planning - involves selecting a strategy by which to conduct screening, prescription, servicing or follow-up. Answers are formulated for such questions as: How shall we go about this? What guidelines should we follow? What considerations should we keep in mind? Much administrative time may fall into this category.

Scheduling - involves arrangements to get work done, time setting, notifying people, setting up agendas.

Traveling - is getting places where work is to be done.

Conducting - is the action phase of screening, et cetera. M-teams meet, children are worked with, parents are counseled.

Having In-service - can occur for each general work area although it tends not to be scheduled in exactly that way. In-service tends to involve more that one work phase which means it may have to be broken out for estimation purposes.

Slack time - is time not used productively. This is a normal feature of employment which arises because schedules are broken, or expected and planned-for work has not arrived.

External liaison - is a common feature in professional work. Meetings with staff of other agencies, speaking engagements or providing for visitors are examples of this activity.

I. 2

With these definitions in mind, how do you estimate your screening time (if you did screening) has been spent this past year? In an ideal operation for this district, how do you estimate screening time might be spent? Please enter percents to answer these questions in the columns that follow.

Activities Associated with SCREENING

Activity	Estimated Percents of Time involved during 1974-75	Estimated Ideal Percents of Time
Planning for	%	%
Scheduling for	%	%
Conduct of	%	%
Traveling for	%	%
Having inservice about	%	%
Slack Time	%	%
External Liaison	%	%
Total	100 %	100 %

I. 3

How do you estimate your prescriptive time (if you did this) was spent this past year? In an ideal operation for this district, how do you estimate prescription time might be spent? Please use the columns that follow to answer these questions.

Activities Associated with PRESCRIPTION

Activity	Estimated Percents of Time involved during 1974-75	Estimated Ideal Percents of Time
Planning for	%	%
Scheduling for	%	%
Conduct of	%	%
Traveling for	%	%
Having inservice about	%	%
Slack Time	%	%
External Liaison	%	%
Total	100 %	100 %

I. 4.

How do you estimate your service time was spent this past year?

Activities Associated with SERVICING

Activity	Estimated Percents of Time involved during 1974-75	Estimated Ideal Percents of Time
Planning for	%	%
Scheduling for	%	%
Conduct of	%	%
Traveling for	%	%
Having inservice about	%	%
Slack Time	%	%
External Liaison	%	%
Total	100 %	100 %

I. 5

How do you estimate your follow-up time (if you did this) was spent this past year? In an ideal operation for this district, how do you estimate follow-up time might be spent? Please use the columns that follow to answer these questions.

Activities Associated with FOLLOW-UP

Activity	Estimated Percents of Time involved during 1974-75	Estimated Ideal Percents of Time
Planning for	%	%
Scheduling for	%	%
Conduct of	%	%
Traveling for	%	%
Having inservice about	%	%
Slack Time	%	%
External Liaison	%	%
Total	100 %	100 %

I. 6

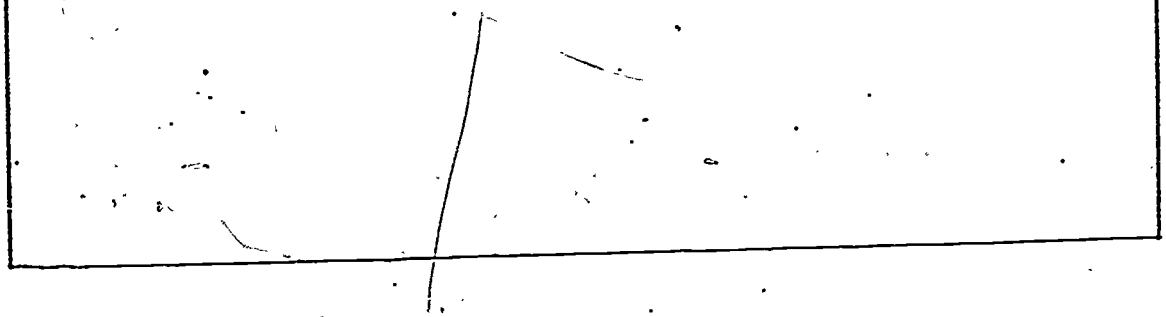
Do you believe the activity classifications we are trying to use do a good job? If not, what changes might you suggest?

II. INDICATORS

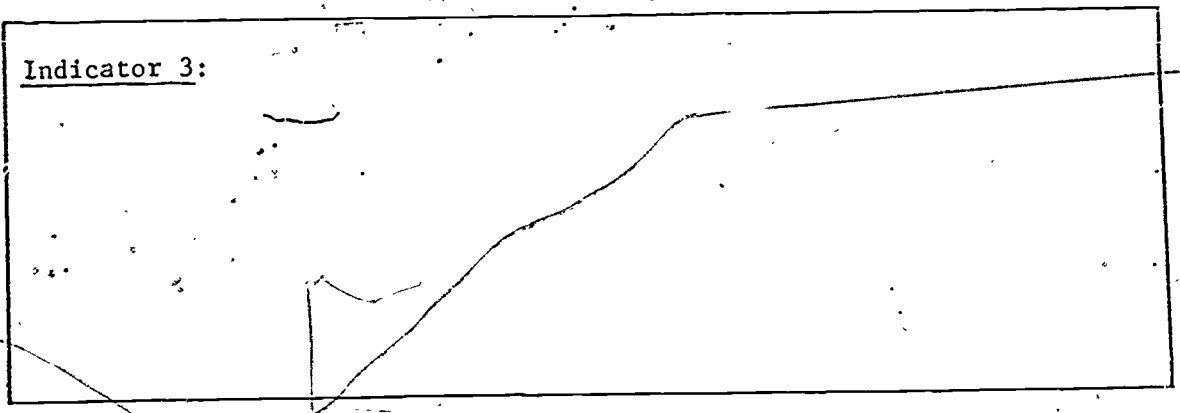
What (three at most) indicators do you believe may be reliable and valid enough to be used for outcome assessment in your field of specialization? (If it will help, see the attached description of what features a useful "indicator" should have).

Indicator 1:

Indicator 2:



Indicator 3:



III. PROGRAMS

What two distinctive special education programs that involve your field might you advocate for cost-effectiveness consideration? In responding, please provide enough information to permit a reader to understand what its goals might be and how it might function. (See the attached description of "program" to understand features a program should have if its cost-effectiveness is to be vigorously studied).

PROGRAM 1:

PROGRAM 2:

Please use the back of this page to further elaborate your ideas if more space is needed.

APPENDIX A.1

INDICATORS: EDITED DEFINITIONS AND SELECTION CRITERIA

"Indicator" is not a new term that needs to be added to the vocabulary of most educators. It has been used for a number of years in the fields of business, economics, and social research. What may be new to educators is the use of the term in association with assessment. Therefore, there is a need to clarify its definition and identify acceptable criteria for its definition and identify acceptable criteria for its selection and use. Oregon's project has made an effort to do both of these things.

For our purpose an "indicator" can be defined as:

A descriptor in quantifiable terms, of the status of a signficant condition or variable which provides evidence useful for an analysis of progress toward a goal or objective.

Three important elements appear in the definition:

(1) The expression is quantifiable - data does exist, or can be be collected, to show "how much" of the indicator exists.
(2) The condition or variable that is described has, by general agreement, a relationship to the goal with which it is associated.
(3) The measurement is associated with a point in time.

To illustrate, an indicator which contains these three elements is:

The *number of high school seniors* (1) who did *volunteer work in a community social agency* (2) *during the school year* (3).

To be of greatest use in assessment, indicators should be:

(1) Derived from reliable and valid data.
(2) Derived from data that will continue to be collected so that comparisons over time may be made.
(3) Derived from data for which the measurement techniques have stability over time.

It should be recognized that indicators do not describe the desirability or quality of the progress reported. Such judgments rest ultimately with the population as a whole.

A performance indicator describes a measurable or observable behavior or variable used to determine program affectiveness or efficiency. Data may concern: (a) student performance scores, or (b) a program variable such as instructional process or program variable such as instructional process or availability of learning experiences Examples are:

Student test results
Observable behavior
Number of students attaining performance requirements of a course
Number of learning situations outside of school that are available to students.

APPENDIX A.2

PROGRAMS: ELEMENTS OF A DEFINITION

USEFUL FOR COST-EFFECTIVENESS

We have talked with most of you about the meaning for the term "program" as it must be used to improve our ability to do cost-effectiveness work. By "program" in this sense of usefulness we must have in mind not a broad area program, such as EMR or SLO, but an operation within an area by itself or across two or more such broad areas.

Personnel time, which is our most valuable resource, must be easily separated our into intervals devoted to a usefully defined program versus time spent on other programs. Similarly, materials and other resources must be easily classifiable by use within a single program rather than in many.

What a program is should be so clear and definite that there is little or no ambiguity about it. Whether personnel time and other resources are being expended for a program or not should be easy to explain. In summary, it must be easy to know what services, time and money are supporting.

For example:

(1) A pre-school program for children with hearing impairments is distinctly different from a general program for all children with the handicap.

(2) An effort to provide for improvement of self image would probably not be distictive enough to permit clear-cut cost allocation. This would certainly be true if the effort was thought to be part of all that transpires in a broad area program.

APPENDIX D

STUDENT REGISTRATION FORM

WAUSAU DISTRICT PUBLIC SCHOOLS

STUDENT REGISTRATION FORM

SCHOOL # A 01 | STUDENT NUMBER 25024 | REGISTRATION DATE MO DAY YR

STAMP SCHOOL NAME HERE →

TO PARENT OR GUARDIAN:

SO THAT ASSIGNMENT OF STUDENTS MAY BE MADE CORRECTLY, PLEASE PRINT INFORMATION IN ALL UNSHADED AREAS.

SEE REVERSE SIDE FOR INSTRUCTIONS.

1 STUDENTS NAME — LAST NAME | FIRST NAME | MIDDLE NAME

4 STUDENTS BIRTHPLACE — CITY | STATE

STUDENTS BIRTHDAY — MO DAY YR

1 BC | 2 HOC | 3 PHC | 4 BAC | 5 PAS | 6 PRR | 7 OTHER

1 STUDENTS ADDRESS — HOUSE NO. | STREET NAME | DESIGN. | DIRECT | ZIP CODE | APT. NO

STREET CODE | HOME TELEPHONE | SEX M ☐ F ☐ | GRADE | HOME ROOM

2 FATHER'S NAME — LAST | FIRST | MIDDLE

ADDRESS OF FATHER IF DIFFERENT FROM STUDENT — HOUSE NUMBER | STREET NAME | DESIGNATION | DIRECTION | ZIP CODE

3 MOTHER'S NAME — LAST | FIRST | MIDDLE

ADDRESS OF MOTHER IF DIFFERENT FROM STUDENT — HOUSE NUMBER | STREET NAME | DESIGNATION | DIRECTION | ZIP CODE

4 STUDENT LIVES WITH:

1 BOTH PARENTS | 2 MOTHER | 3 FATHER | 4 GUARDIAN | 5 MOTHER & STEPFATHER | 6 FATHER & STEPMOTHER | 7 OTHER RELATIVE | 8 ALONE | 9 OTHER | 0 FOSTER PARENTS

NAME OF PERSON STUDENT LIVES WITH, IF OTHER THAN PARENT

HAS STUDENT EVER ATTENDED A WAUSAU PUBLIC SCHOOL? ☐ YES ☐ NO — SCHOOL ATTENDED — DATE LEFT

SCHOOL MOST RECENTLY ATTENDED BY STUDENT, IF OTHER THAN A WAUSAU PUBLIC SCHOOL

SCHOOL NAME | SCHOOL ADDRESS | CITY, STATE | DATE LAST ATTENDED MO DAY YR

TYPE OF SCHOOL ☐ PUBLIC ☐ NON-PUBLIC

KINDERGARTEN CHILD NEXT YEAR? ☐ YES ☐ NO

OTHER CHILDREN IN FAMILY

NAME	BIRTHDATE	SEX	SCHOOL	IF NOT IN SCHOOL, WHY NOT?

STUDENT'S ETHNIC CODE

1 NATIVE AMERICAN | 2 BLACK AMERICAN | 3 ASIAN AMERICAN | 4 SPANISH SURNAMED AMERICAN | 5 ALL OTHERS

HAS STUDENT EVER REGISTERED UNDER A DIFFERENT NAME? ☐ NO ☐ YES — NAME

X _____ SIGNATURE OF PERSON REGISTERING STUDENT

RELATIONSHIP TO STUDENT

4 SPECIAL LOCATION REASON

1 PRIN AGREEMENT | 2 SPECIAL ED | 3 NCTI REGISTRANT | 4 OTHER

SPECIAL EDUCATION PROGRAM CODE

1 EMR | 2 TMR | 3 D | 4 VH | 5 ED | 6 LD | 7 PH | 8 MH | 9 SH | 89 CH 89 ONLY | ____ OTHER

TRANSPORTATION CODE

1 0-5; 0-90; H | 2 2-5; 0-90 | 3 5 1-8; 0-90 | 4 8.1-12; 0-90 | 5 OVER 12; 0 90 | 6 0-5; OVER 90; H | 7 2-5; OVER 90 | 8 5.1-8; OVER 90 | 9 8.1-12; OVER 90 | 0 OVER 12; OVER 90

CHECK TYPE OF ENTRY

0 E - ORIGINAL | 1 R1 - SAME SCHOOL | 2 R2 - OTHER WDPS | 3 R3 - WD NONPUB | 4 R4 - WI PUBLIC | 5 R5 - WI NONPUB | 6 R6 - OTHER STA | 7 O - OTHER

4 TUITION STATUS

1 TUIT PD BY WI | 2 TUIT PD BY RES CNTY | 3 TUIT PD BY RES DIST | 4 TUIT PD BY FAMILY | 5 TUIT WAIVED | 6 OTHER

RESIDENT SCH. DIST.

ORIGINAL

5-27-75 VERSION

E-R DATE MO. DAY YR. | E-R CODE

ERIC

WAUSAU DISTRICT PUBLIC SCHOOLS

STUDENT REGISTRATION FORM

SCHOOL # A 01 | STUDENT NUMBER 25024 | REGISTRATION DATE MO DAY YR

STAMP SCHOOL NAME HERE →

TO PARENT OR GUARDIAN:

SO THAT ASSIGNMENT OF STUDENTS MAY BE MADE CORRECTLY, PLEASE PRINT INFORMATION IN ALL UNSHADED AREAS

SEE REVERSE SIDE FOR INSTRUCTIONS.

1 STUDENTS NAME — LAST NAME | FIRST NAME | MIDDLE NAME

4 STUDENTS BIRTHPLACE — CITY | STATE | STUDENTS BIRTHDAY MO DAY YR

1 BC 2 HOC 3 PHC 4 CAC 5 PAS 6 PRR 7 OTHER

1 STUDENTS ADDRESS — HOUSE NO. | STREET NAME | DESIGN | DIRECT | ZIP CODE | APT NO | STREET CODE | HOME TELEPHONE | SEX M F | GRADE | HOME ROOM

2 FATHER'S NAME — LAST | FIRST | MIDDLE

ADDRESS OF FATHER IF DIFFERENT FROM STUDENT — HOUSE NUMBER | STREET NAME | DESIGNATION | DIRECTION | ZIP CODE

3 MOTHER'S NAME — LAST | FIRST | MIDDLE

ADDRESS OF MOTHER IF DIFFERENT FROM STUDENT — HOUSE NUMBER | STREET NAME | DESIGNATION | DIRECTION | ZIP CODE

4 STUDENT LIVES WITH:

1 BOTH PARENTS 2 MOTHER 3 FATHER 4 GUARDIAN 5 MOTHER & STEPFATHER 6 FATHER & STEPMOTHER 7 OTHER RELATIVE 8 ALONE 9 OTHER 0 FOSTER PARENTS

NAME OF PERSON STUDENT LIVES WITH, IF OTHER THAN PARENT

HAS STUDENT EVER ATTENDED A WAUSAU PUBLIC SCHOOL?

☐ YES ☐ NO — SCHOOL ATTENDED — DATE LEFT

SCHOOL MOST RECENTLY ATTENDED BY STUDENT IF OTHER THAN A WAUSAU PUBLIC SCHOOL	SCHOOL NAME	SCHOOL ADDRESS	CITY, STATE	DATE LAST ATTENDED MO DAY YR	TYPE OF SCHOOL	KINDERGARTEN CHILD NEXT YEAR?
					☐ PUBLIC ☐ NON-PUBLIC	☐ YES ☐ NO

OTHER CHILDREN IN FAMILY NAME	BIRTHDATE	SEX	SCHOOL	IF NOT IN SCHOOL, WHY NOT?

STUDENT'S ETHNIC CODE

1 NATIVE AMERICAN 2 BLACK AMERICAN 3 ASIAN AMERICAN 4 SPANISH SURNAMED AMERICAN 5 ALL OTHERS

HAS STUDENT EVER REGISTERED UNDER A DIFFERENT NAME?

☐ NO ☐ YES — NAME

X _____ 83

SIGNATURE OF PERSON REGISTERING STUDENT

RELATIONSHIP TO STUDENT

4 SPECIAL LOCATION REASON

1 PRIN AGREEMENT 2 SPECIAL ED 3 NCTI REGISTRANT 4 OTHER

SPECIAL EDUCATION PROGRAM CODE

1 EMR 2 TMR 3 D 4 VH 5 ED 6 LD 7 PH 8 MH 9 SH 89 CH 89 ONLY ____ OTHER

TRANSPORTATION CODE

1 0-5, 0-90; H 2 2-5; 0-90 3 5.1-8, 0-90 4 8.1-12; 0 90 5 OVER 12; 0 90 6 0-5; OVER 90; H 7 2-5; OVER 90 8 5.1-8; OVER 90 9 8 1-12; OVER 90 0 OVER 12; OVER 90

CHECK TYPE OF ENTRY

0 E -ORIGINAL 1 R1 -SAME SCHOOL 2 R2 -OTHER WDPS 3 R3 -WD NONPUB 4 R4 -WI PUBLIC 5 R5 -WI NONPUB 6 R6 -OTHER STA 7 O -OTHER

4 TUITION STATUS

1 TUIT PD BY WI 2 TUIT PD BY RES CNTY 3 TUIT PD BY RES DIST 4 TUIT PD BY FAMILY 5 TUIT WAIVED 6 OTHER

RESIDENT SCH. DIST.

FILE COPY

S-27 75 VERSION

E-R DATE MO DAY YR. | E-R CODE

INSTRUCTIONS TO PERSONS COMPLETING STUDENT REGISTRATIONS

ALL DATA ITEMS IN THE CLEAR AREAS SHOULD BE COMPLETED FOR NEW STUDENTS. PARENT SIGNATURES ARE REQUESTED BUT NOT ABSOLUTELY NECESSARY IN ORDER TO START THE CHILD IN SCHOOL. WHOEVER REGISTERS THE STUDENT SHOULD SIGN THE FORM, EVEN IF IT IS THE STUDENT HIM HERSELF.

THE REGISTRAR MUST CHECK THE ADMIT BOX AT THE BOTTOM OF THE FORM AND COMPLETE THE INFORMATION IN THE SHADED AREAS. SEND THE ORIGINAL PART 1 TO STUDENT ACCOUNTING IMMEDIATELY.

RETURNING STUDENTS WHO HAVE ATTENDED A WAUSAU PUBLIC SCHOOL AT SOME PREVIOUS TIME MUST ALSO COMPLETE A REGISTRATION FORM. FOR THESE STUDENTS IT IS NOT NECESSARY TO COMPLETE THE SECTION ASKING FOR OTHER CHILDREN IN THE FAMILY. WHOEVER REGISTERS THE STUDENT SHOULD SIGN THE FORM, EVEN IF IT IS THE STUDENT HIM, HERSELF.

THE REGISTRAR SHOULD CHECK THE APPROPRIATE TYPE OF ENTRY AT THE BOTTOM OF THE FORM, AND COMPLETE THE ITEMS IN THE SHADED AREA OF THE FORM. SEND THE ORIGINAL PART 1 TO STUDENT ACCOUNTING.

IF A FORM A 2 IS NOT IN FILE FOR A TRANSFER A REGISTRATION FORM SHOULD BE PARTIALLY COMPLETED FOR A STUDENT RECEIVED IN BY TRANSFER FROM ANOTHER WAUSAU PUBLIC SCHOOL. COMPLETE THE FOLLOWING DATA ITEMS ONLY: SCHOOL NUMBER AND REGISTRATION DATE. ALL ITEMS ON LINES 1 AND 2, AND THE NAME OF THE PREVIOUS SCHOOL ATTENDED.

REGISTRARS SHOULD CHECK THE RECEIVED BOX AT THE BOTTOM OF THE FORM, AND SEND THE ORIGINAL PART 1 TO STUDENT ACCOUNTING IMMEDIATELY.

A REGISTRATION FORM SHOULD IF A FORM A-2 IS NOT AVAILABLE IN FILE, BE PARTIALLY COMPLETED FOR EVERY STUDENT RECEIVED BY SUMMER CHANGE OR ASSIGNED LIST ASSIGNED TO ANOTHER SCHOOL). SEE INSTRUCTIONS ABOVE FOR RECEIVED BY TRANSFER.

REGISTRARS SHOULD CHECK THE SUMMER CHANGE OR ASSIGNED LIST BOX AT THE BOTTOM OF THE FORM AND SEND THE ORIGINAL PART 1 TO STUDENT ACCOUNTING IMMEDIATELY.

REGISTRARS SHOULD CHECK ALL APPLICABLE SHADED AREAS.

THANK YOU
STUDENT ACCOUNTING