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ABSTRACT

Project USHER is designed to help community colleges implement a humanistic management system. This objective is to be achieved by giving each participating college the capability to redesign its own educational system through implementing a planning, programming, budgeting, and evaluation system (PPBE) within the context of participative management. Representatives of the broad educational community will be brought into a single team to redesign the educational system over a long-term period so that this system can be more responsive to the changing needs of the community. Steps in the overall redesign process include: (1) organizing a planning team, (2) developing systemwide objectives, (3) assessing needs and establishing priorities, (4) estimating revenues, (5) establishing a program structure, (6) analyzing programs on a systematic basis, (7) developing a program budget, (8) allocating resources, (9) preparing operational plans, (10) developing an information system, (11) implementing the operational plans, and (12) evaluating and revising programs. (Author/SW)

Uniting
Science and
Humanness for
Educational
Redesign

Project USHER

A PROPOSAL FOR IMPLEMENTING A HUMANISTIC MANAGEMENT SYSTEM IN COMMUNITY COLLEGES

BATTELLE
Center for Improved Education
505 King Avenue
Columbus, Ohio 43201

LEAGUE FOR INNOVATION
in the Community College
1100 Glendon Avenue
Los Angeles, California 90024

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table of contents

SUMMARY

need

Community Colleges, like all educational institutions, today are faced with increasing external pressures (such as those for educational accountability) and with new internal pressures (such as those for better faculty-administration relations). These pressures, together with a recognition that the community college must improve as it serves its community (by providing improved education for transfer, better preparation for careers, and stronger programs of adult education) argue for a reexamination of educational management in the community college. To these pressures must also be added the realization that an autocratic style of management of education is outmoded and that the laissez-faire approach also has failed.

solution

The solution is not simply to conduct more research on education, but rather to apply the results of research that already has been conducted. The solution lies in the skilled application of the techniques of participative management to the community college. Through participative management, representatives of the broad educational community are brought into a single team to redesign the educational system over a long-term period so that this system can be more responsive to the changing needs of the community. This redesign is to be guided by skilled specialists on the staff of Project USHER — including specialists from the Center for Improved Education of the Columbus Laboratories of Battelle and from the League for Innovation in the Community College — as well as selected consultants.

procedure

The procedure to be followed involves conducting a twelve-step redesign process. Representatives of each of the participating colleges, with the assistance of specialists in the Center for Improved Education and the League for Innovation, carry out this stepwise process themselves. Elements of the desired redesign can be implemented during the course of the project; it will not be necessary (or desirable) to wait until the end of the project to effect improvements found to be desirable. At the end of the project period, the participating colleges should have developed their own capabilities and be able to further implement the planning and management system without further assistance from USHER personnel.

benefits

Participation in Project USHER will yield more effective educational and supportive programs and more efficient allocation of resources. In addition, this participation will result in improved communication throughout the educational community and in improved relations between the various groups within the educational community. Finally, the project will aid colleges in demonstrating educational accountability. Of course, these benefits will require a commitment on the part of the participating colleges to provide opportunities for their representatives to participate in the workshop sessions and to carry out the basic steps in the redesign process.

group approach

Although Project USHER is designed to serve individual community colleges, it is now proposed that a number of colleges collectively join and share in the program. This group involvement will encourage a cross-fertilization of ideas, techniques, and problem solutions which will benefit all participating institutions — and make it possible for them to receive greater values than would be possible under a "solo" plan of participation.

time

Project USHER will be opened to a new group of colleges in January 1974. A second group will be admitted in September 1974 — with a possibility that other groups can get under way in subsequent months of January and September. Each group will continue operation for a 36-month period.

THE NEED FOR IMPROVED EDUCATIONAL MANAGEMENT

Many community colleges find themselves confronted with serious pressures. Some of these are external to the colleges, but others are internal.

Probably the most critical external pressure is the demand for educational accountability. This has been defined in several ways, but the essence of the demand is "responsibility for outcomes". But who is to assume responsibility for learning outcomes? Who is to assure that the taxpayer's money is efficiently allocated to achieve specific objectives? These are important questions both to educators and lay persons. Questions dealing with educational accountability cannot be answered without a clear statement of educational purpose. And herein lies the basic problem: many community colleges have lacked a clear definition of objectives, or a statement of expected outcomes. This lack of clearly stated educational objectives prevents the establishment of any meaningful accountability system for community colleges.

One of the most critical internal pressures is generated by conflict between faculty and administrators. Many educational agencies find themselves locked into a management-labor situation, with the administrators as management and the faculty as labor. In this win-lose struggle for power, it is assumed that there is a fixed amount of power in the educational system. Any gain in power by one of the two parties must then result in a corresponding loss in power for the adversary. This situation is a far cry from the cooperative efforts needed to make an effective educational system.

Realizing that past approaches to educational management are not up to today's task, educators are searching for alternative approaches. But the present operations cannot be stopped while the new approach is being developed. Thus, we are faced with the need for a "redesign" model rather than a "new design" model; we must transform the existing approach to educational management into a more effective approach.

The new approach must deal adequately with both the external and the internal pressures bearing on community colleges. To deal with only one of these classes of problems, to the exclusion of the other, may do more harm than good. For example, we might arrive at an effective solution to the accountability problem only to intensify the faculty-administrator conflict. Conversely, a solution to the faculty-administrator problem developed without consideration of other factors may only deepen the accountability problem. The new viewpoint which we develop must treat all aspects of the problem and consider their interrelation if this viewpoint is to be effective.

This new approach to educational management should help the people within a given community college obtain better answers to these fundamental questions:

(1) What are the objectives of our college?

(2) How should we organize our efforts to achieve these objectives?

(3) How should we allocate our resources to best achieve the objectives?

(4) How will we know if the objectives are being achieved?

The basic thesis of Project USHER is that good answers to these questions can be found and that these, in turn, will help solve both the accountability problem and the management-labor problem. And it is reasonable to assume that a solution to these problems will lead to more effective education for students.

Two OBJECTIVES OF PROJECT USHER

USHER is an acronym for "Uniting Science and Humanness for Educational Redesign". The underlying assumption is that the scientific dimension of educational management should be united with the human dimension in order to bring about constructive educational change.

Project USHER is designed to help community colleges "usher in" a new model of educational management to replace the traditional model. This new model incorporates the best of the scientific dimension of educational management and the best of the human dimension. The uniting of the two dimensions constitutes what we are calling a humanistic approach to educational management.

The purpose of Project USHER is to help community colleges implement a humanistic management system. This purpose is to be achieved by giving each participating college the capability to redesign its own educational system through implementing a planning-programming-budgeting-evaluation system (PPBE) within the context of participative management.

"Redesign" is a key word in the entire Project USHER concept. We do not mean to suggest that an educational system be halted, completely revamped, and then re-started on a new course. The comparison might better be made with that of a house being remodelled to fit the growing needs of its occupants while those occupants live in the house and carry on their normal activities. The occupants themselves actually conduct the remodelling but receive professional guidance. In the same way, Project USHER involves the faculty, administration, students, board members, and representatives of the general community (with professional guidance) in deciding how that institution can better serve the residents of the area community.

Involvement in Project USHER should provide the participating community college with the capability to carry out the following steps in the overall redesign process:

1. Organize and involve a planning team
2. Develop systemwide objectives
3. Assess needs and establish priorities
4. Estimate revenues
5. Establish a program structure
6. Analyze programs on a systematic basis
7. Develop a program budget
8. Allocate resources on a rational basis
9. Prepare operational plans
10. Develop an information system
11. Implement the operational plans
12. Evaluate and revise programs.

After completing one cycle of the redesign process, the participating community college should be self-sufficient in its future efforts in educational redesign. This is the staff's major criterion of success for the project. The redesign process, then, will become the method for managing the educational system.

It should be noted that Project USHER is an application project, not a research project. The methodology has been worked out and the necessary tools are ready to use. The purpose of the project is not to generate new knowledge, but to bring about constructive educational change through the use of existing knowledge. On the basis of past research and our own experience, we are confident that Project USHER is a practical approach to increasing the effectiveness of educational management.

Three EXPECTED BENEFITS

The specialists from Battelle's Center for Improved Education and the League for Innovation who will implement Project USHER are skilled and experienced. They have conducted programs of this type for community colleges and have developed the necessary techniques and tools for the special requirements of this project.

The successful implementation of Project USHER in a given college will require a number of substantial commitments on the part of the local educational agency, including the following:

- The genuine demonstrated commitment of the board and chief administrator
- Adequate preparation and involvement of the entire staff at the beginning of the project and throughout the duration of the project
- Sufficient released time for the staff to allow them to participate actively in the project
- The assignment of one person from half-time to full-time to serve as the redesign coordinator.

If these conditions are met, it is reasonable to assume that the participating community college will derive the following benefits:

- Community colleges participating in Project USHER should increase both their effectiveness and their efficiency. By "improving effectiveness", we mean doing a better job in accomplishing their objectives. By "improving efficiency", we mean doing a better job in allocating their resources. Both are essential.
- After completing one cycle of the redesign process, a participating college should be able to give better informed answers to these four fundamental questions: (a) What are the objectives of our college? (b) How should we organize our efforts to achieve these objectives? (c) How should we allocate our resources to best achieve the objectives? and (d) How will we know if the objectives are being achieved?
- The ability to answer these questions will demonstrate educational accountability at its best. In essence, the planning-programming-budgeting-evaluation system included in Project USHER is an accountability system. Through the application of PPBE, the college can show that it is planning and managing its operations in a rational and systematic manner.
- Participative management can clearly demonstrate the human dimension of management. The result should be improved relations between administrators and faculty, as well as improved relations between and among all groups within the broad educational community.
- The ultimate benefit of the project is improved education for the students. By increasing both the effectiveness and efficiency of its planning and management function, a participating college should be able to provide a better educational program for its students.

We believe that these expected benefits are sufficient to make Project USHER worthwhile to community colleges.

AOUr UNDERLYING PROPOSITIONS

The proposed model of educational management is appropriately called "humanistic management". By uniting science and humanness — the two fundamental dimensions of humanistic philosophy — we have a management model that is both rational and humane. The essence of this humanistic management philosophy is summarized in the following propositions.

Proposition 1:
Education should be viewed as a human enterprise.*

Education is sometimes viewed as a commercial enterprise. Given raw material (students), a production line in a factory (the physical plant of the school), workers on the line (faculty), and supervision (administrators), the assembly line will turn out educated persons once sufficient funds (taxes and tuition) are supplied to get the line moving. More recently, some people have viewed education as merely a human "happening", in which the emphasis is on student freedom. Each student "does his own thing" at his own pace; the various offerings of the educational system are presented cafeteria style, and each student selects only those offerings of interest.

But we believe that education should be viewed as a human enterprise. By "human", we mean that education should deal with the nature and potentialities of individual human beings, to help these individuals achieve self-fulfillment. By "enterprise", we mean that education should be an undertaking carried out for specific purposes. Education should be viewed as an enterprise that is planned and managed for specific purposes, and then is evaluated on the basis of how well it accomplishes these purposes.

* This thesis is elaborated on in Reference 13: Education as a Human Enterprise.

Proposition 2:
Education can be a successful enterprise through the application of science-based management.

Science-based management involves the use of tools such as:

- Management by objectives
- Systems analysis
- Needs assessment surveys
- Forecasting models
- Cost-effectiveness analysis
- Resource allocation models
- Management information systems

These management tools place emphasis on measuring, relating, predicting, and verifying. Decisions are made on the basis of facts; a high degree of rationality prevails.

The main features of science-based management are incorporated within the planning-programming-budgeting-evaluation (PPBE) system. Our premise here is that science-based management, in the form of PPBE, can be adapted effectively to the management of an educational system. By "adapt", we mean that the concepts and methods of PPBE as used in other types of organizations can be modified to satisfy the unique needs and conditions of a community college.

Proposition 3:
An educational system can be a successful human organization through the active involvement of the broad educational community.

The educational community has traditionally been considered as being largely within the confines of the physical plant; it included administrators, faculty, support personnel, and students. We are considering Community in a "Large C" sense, however, as being the geographical-political-economic Community which the educational system serves. Members of this Community must participate actively in the planning and management of the educational system if this system is to be truly effective.

We are speaking of an educational system as a human organization because it treats an individual human being as a subject (as an "I", a person) rather than an object (as an "It", a thing). The human being, as a subject, looks out at the world and has some influence on this world. The human being, as an object, is controlled and manipulated by the world. Our basic idea is that people within an educational system are treated as subjects to the extent that they are encouraged to participate in the planning and management of the educational system. This is the human dimension of educational management.

Proposition 4:
The scientific dimension of educational management can be united with the human dimension through participative management.

Participative management allows individuals to identify with particular objectives because these are their objectives. These individuals are much more likely to be motivated to work toward the accomplishment of these objectives than if the objectives are handed down from above. Participative management will then serve as the bond to unite the scientific dimension with the human dimension of educational management.

People within the educational system (administrators, faculty, and students) are "objects" to the extent that they are told where they are going and how they are going to get there. They are "subjects" to the extent that they participate in formulating objectives and in deciding on the means for achieving these ends. The key to success in increasing the effectiveness of educational management will be for members of the broad educational Community to understand the concepts and methods of science-based management. With this knowledge, they (as subjects) can apply this knowledge to the management of their own educational system. This is the essence of participative management.

5ive THE CONCEPT OF PARTICIPATIVE MANAGEMENT

Prevailing Models of Management

Three prevailing models of management found in present-day education are: (1) the autocratic, (2) the laissez-faire, and (3) the management-labor. The three management models are indicated in Figure 1.

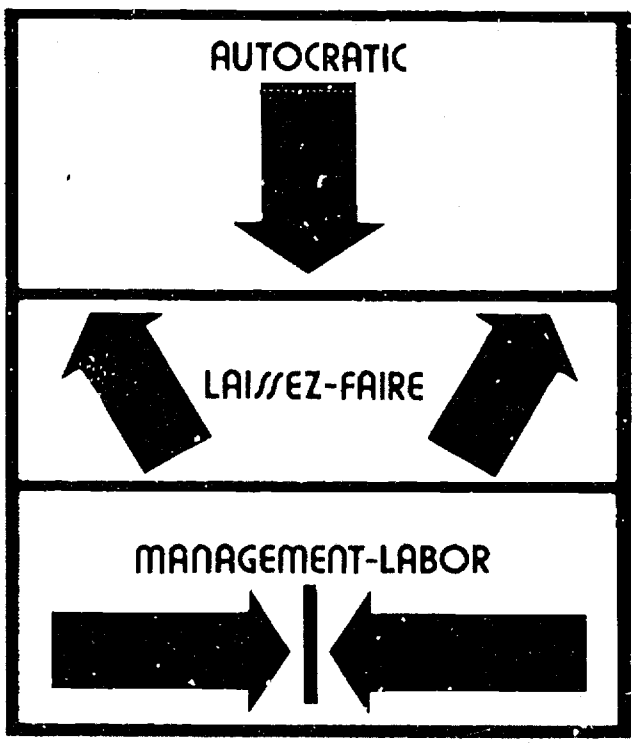


FIGURE 1. THREE MODELS OF MANAGEMENT

In the autocratic model, information flows "from the top down". The organizational structure is a well-defined hierarchy, with each person knowing his or her "pecking order" in the hierarchy. Individuals are told what to do and how to do it, and they comply — or else. Managers are "bosses" in the traditional sense of the term. This approach to management was prevalent in industrial management in the early part of this century. It also has been prevalent in the military services, and we see it in some schools and colleges.

This autocratic model has both strengths and limitations. On the positive side, we see that it produces clear-cut responsibilities and centralized control. It is efficient because only a single individual is involved in the decision-making process. On the negative side of the ledger is the simple fact that many people in this modern age will have no part in the autocratic model. The individual employee in such an organization is treated as an object, a thing, an "It". Typical reactions to this type of management are either complete passivity on the part of the employee (he becomes an automaton), or else he rebels.

The laissez-faire model of management stands in sharp contrast to the autocratic. Here there is complete noninterference in the affairs of others. Each person "does his own thing". The administrator may administer the paperwork, but he is not a manager of education. One reason why this approach to management (or lack of management) has evolved in education is a misinterpretation of academic freedom; it is assumed that each instructor should be given unrestricted freedom in the classroom. If this assumption were valid, then there would be no need for managers. A second reason for the existence of the laissez-faire model in education is that administrators, by and large, have not been trained adequately in the principles and concepts of management. Sometimes an individual moves directly from being an instructor to becoming an administrator; he moves from the classroom to the administrator's office without adequate preparation.

One major result of this approach to management is that the staff members feel that they have considerable freedom in their jobs. Some may like the idea that there is no one "standing over their shoulders", reviewing and commenting on their work. Other persons working in such an educational system, however, will dislike the lack of direction they receive. This system is perceived as a foundering ship with no one at the helm. In the present age of accountability, the laissez-faire approach to educational management can lead only to disaster.

The management-labor model in its present form has brought forth a true polarization of administrators and faculty. Administrators have become "management", and faculty have assumed the role of "labor". It's "us versus them". There is a struggle for power. Each side tries to maximize its own gains and minimize the gains of the other side. It is assumed by both sides that there is a fixed amount of power in an educational system; if one side gains in power, it then follows that the other side must lose a corresponding amount of power.

One reason for the emergence of the management-labor model was that faculty members were poorly paid for many years. A second reason was that faculty felt they had no say in the major decisions that affected their professional lives in the educational system. Faculty members wanted more money and they wanted to be a part of the action, so many of them unionized.

The management-labor polarization has produced in our educational system two distinct groups of people, each working toward different goals -- its own. This is the antithesis of the situation in which the various groups of employees are working together to achieve common goals.

We feel that none of these three management models is appropriate for an educational system. Participative management is the proposed alternative.

The Meaning of Community

In a number of his works, Martin Buber provides us with a rich description of community: "The real essence of community is undoubtedly to be found in the -- manifest or hidden -- fact that it has a center . . . But community, growing community is the being no longer side by side but with one another of a multitude of persons . . . Community is the overcoming of otherness in living unity . . . If the world of man is to become a human world, then immediacy must rule between men, and thus also between human house and human house . . . Community is where community happens."(2)

Building on these concepts of Buber's, we propose a broader definition of educational community than that which is commonly used. In our definition, the educational Community goes beyond the walls of the college campus. It includes all of those groups that have a vital interest in the educational system: faculty, administrators, supportive staff, students, board members, and the community-at-large. This constitutes the genuine educational Community.

The educational Community then becomes the educational organization. Chester Barnard, in "A Theory of Cooperation and Organization", defines an organization on the basis of three criteria: "An organization comes into being when (1) there are persons able to communicate with each other, (2) who are willing to contribute action, (3) to accomplish a common purpose. The elements of an organization are therefore (1) communication, (2) willingness to serve, and (3) common purpose."(1)

The community college should be viewed as a Community of all those people having a vital interest in the educational system. This is a humanistic view of the educational organization.

Toward Participative Management

In participative management, various groups within the educational Community cooperate in formulating educational objectives and in determining appropriate methods for accomplishing the objectives. These persons work together in deciding what they want to do and how they plan to get there. This is the essence of participative management.

The concept of participative management, which is suggested in Figure 2, stands in sharp contrast to the three approaches to management discussed above. In opposition to the autocratic approach, the participative approach encourages the flow of information in all directions — up, down, and lateral; there is rich communication throughout the system. As contrasted to the laissez-faire model, the participative model guides all efforts toward common objectives. Finally, in opposition to the management-labor model, the participative approach involves the cooperative efforts of all groups in the college in working toward agreed-upon objectives.

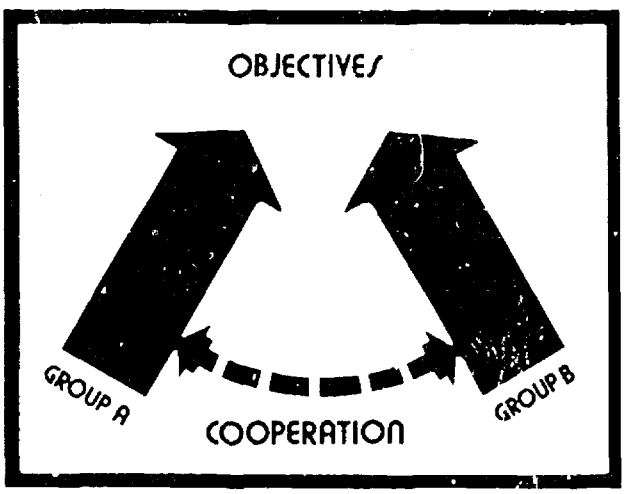


FIGURE 2. A MODEL FOR PARTICIPATIVE MANAGEMENT

Participative management is related to, but not identical with, pure democratic management. The latter type of management calls for rule by the majority; if 51 percent of the people vote one way, their voice prevails. In contrast, participative management calls for individual responsibility and accountability. The idea here is for the designated leader* to work closely with all members of his or her group in encouraging their active participation in the functions of management, but the leader has the final authority for decision making. In most cases, the group leader will be with the majority. In other cases, however, he may be in the minority. In either case, he has the authority to make the final decision, because he must assume the responsibility for the consequences of the decision.

Rensis Likert clearly articulates this point of individual responsibility: "The group method of supervision holds the superior fully responsible for the quality of all decisions and for their implementation. He is responsible for building his subordinates into a group which makes the best decisions and carries them out well. The superior is accountable for all decisions, for their execution, and for their results."(4, p. 51)

* This "designated leader" might be an administrator, a faculty member, or anyone else who has a leadership role for a particular area of responsibility.

A STRATEGY FOR EDUCATIONAL REDESIGN

As an extension of the ideas discussed up to this point, a general strategy for educational redesign is shown in Figure 3. This strategy represents the application of a planning-programming-budgeting-evaluation approach within the context of participative management. The steps are summarized below.

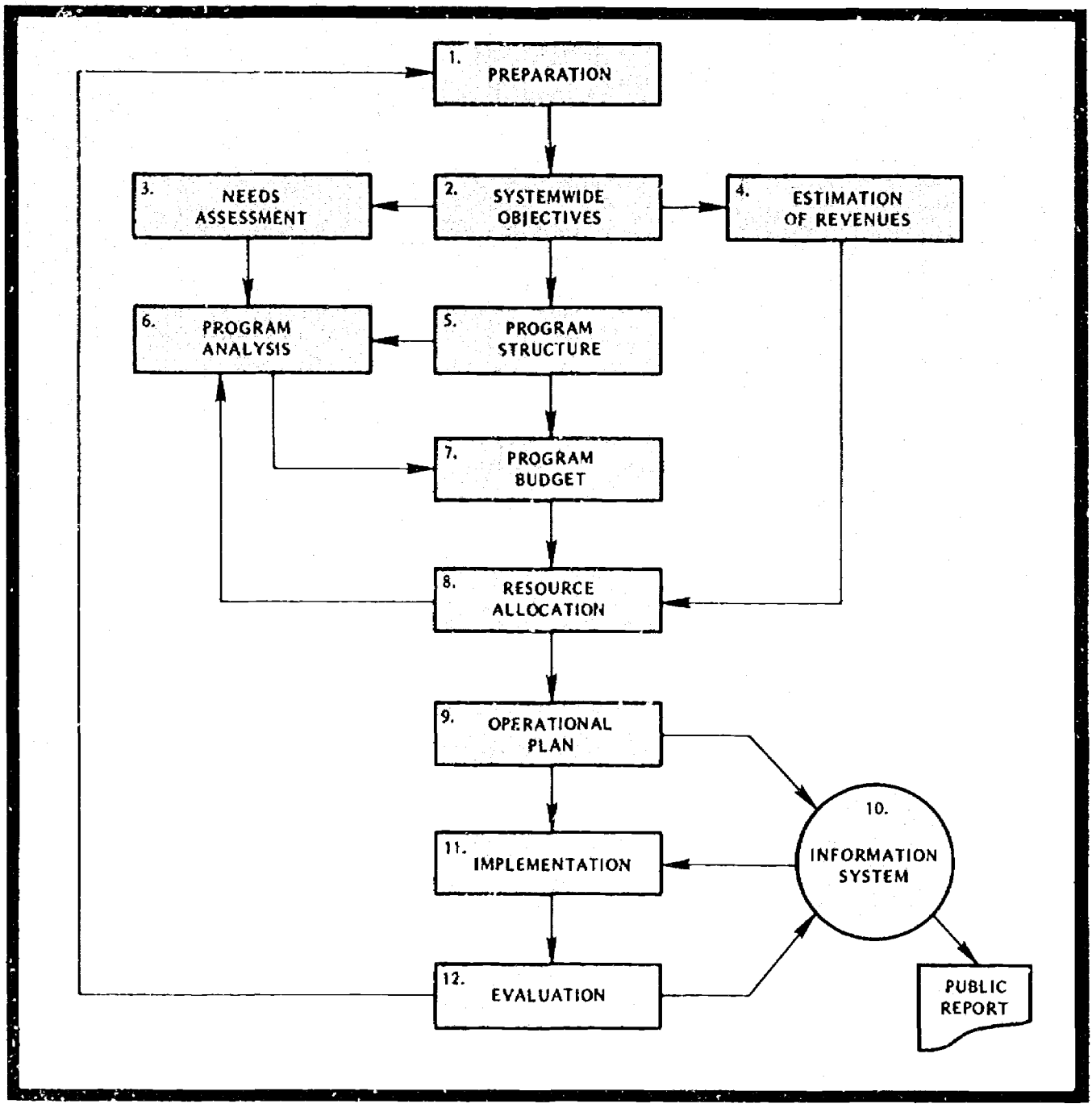


FIGURE 3. A GENERAL STRATEGY FOR EDUCATIONAL REDESIGN

1. Preparation

After receiving approval from the board to proceed with the redesign project, a planning team is organized. Included in this team are faculty, administrators, supportive staff, students, and representatives of the general community. These members are selected by the various groups of people whom they represent. Obtaining good representation of the broad educational Community is the essential requirement. After communicating the role and responsibility of the planning team, the members of the planning team are then given orientation and training in the concepts and methods of educational planning.

The planning team works as a single group during the initial steps of the redesign process. In subsequent steps, a steering committee assumes responsibility for coordinating the various activities, and task forces are selected to carry out specific steps requiring specialized knowledge.

2. Develop Systemwide Objectives

The planning team reviews the mission and systemwide objectives for the educational system. A mission statement serves as the integrating theme for the local educational agency as a whole. This is the ultimate "why" of the educational system. The systemwide objectives are the broad statements of purpose that delineate the mission statement and cut across all programs and activities.

The planning team refines the existing mission statement and systemwide objectives as necessary. This formulation of mission statement and systemwide objectives is based upon the values and beliefs of the educational Community and are gleaned from an analysis of existing documents and materials - to the extent that they are relevant to the task at hand. The important thing is that the objectives truly represent what the educational system is trying to accomplish and that they are arranged in a meaningful order. This statement of objectives is possibly the most important step in the entire process because it serves as the guide for all subsequent steps.

3. Assess Educational Needs

A need is defined here in terms of the discrepancy between what exists and what is desired. Needs are determined by comparing a description of the existing educational system with a model of a desired one. The model of the desired educational system is a criterion model, which is an in-depth exposition of the values of the members of the educational Community; this is a model of the educational system that they would like to have.

Perceptions about the actual educational system and the desired system may be obtained in the same needs assessment survey. The items on the survey should reflect the college or district as a whole. Each item is answered by the respondent in two ways: first, he gives his perception of the actual situation with respect to each item, and, second, he indicates the degree to which he believes this situation should exist in the educational system. (An example of an item would be: "The objectives of our community college are clearly stated.") The survey is administered to a representative sample of people from various groups within the educational Community. Analysis of the resulting data provides a useful means for identifying critical problems and establishing priorities.

4. Estimate Revenues

Estimated revenues are any funds that are likely to be available to the educational system. Sources of funds include local taxes, tuition, state support, Federal support, investment earnings, and others.

It is necessary to answer these questions: (a) What is the predicted student enrollment over the next several-year period? (b) What is the estimated revenue for the next several-year period?

It is generally acknowledged that any estimation of revenues beyond one year is highly tenuous. Nevertheless, it is necessary to state the appropriate assumptions and then make the best guess possible. Even though the error of estimate increases considerably as we go beyond the one-year period, this is better than making no estimate at all. These long-term estimates are then revised each year.

5. Establish Program Structure

A program is defined as a set of related activities directed toward common objectives. A program structure is an arrangement of programs showing their interrelations and encompassing all activities in the educational system.

Examples of traditional educational programs would be Mathematics, Science, English, and Art. Supportive programs would be Central Office Administration, Transportation, Food Service, and Health Service.

The program structure should be designed in such a manner to be logically consistent with, and supportive of, the statement of systemwide objectives. In formulating the program structure, it is useful to begin with a descriptive view of the existing programs (the actual) and then move toward a prescriptive view (the desired).

6. Conduct Program Analysis

While the formulation of systemwide objectives is probably the most important step in the planning process, program analysis is probably the most complex. This is a systematic and analytical approach to determining the most appropriate ways to carry out the various programs -- including both the educational programs and the supportive programs.

Program analysis involves this sequence of steps: (a) specify program objectives; (b) identify indicators of effectiveness; (c) investigate alternative approaches to the accomplishment of program objectives; (d) identify program constraints; (e) evaluate the alternative approaches on the basis of estimated effectiveness and estimated cost; (f) select recommended alternatives; and (g) prepare program proposals.

Program objectives should be consistent with, and supportive of, the systemwide objectives. Further, the program objectives should be responsive to the needs identified in Step 3.

The key concept in program analysis is the investigation of alternatives. By "investigate", we mean both the selection of existing alternatives and the generation of new alternatives. Representatives of the various programs being analyzed seek out existing alternatives that might be used to accomplish the specified objectives. They should not "reinvent the wheel"; they should make use of existing knowledge to the greatest extent possible. Whenever there are gaps in the availability of alternative approaches, the program representatives generate new alternatives for achieving the specified objectives.

The various alternatives are evaluated on the basis of these criteria: (a) estimated effectiveness in accomplishing the program objectives, (b) estimated resources required, and (c) constraints imposed upon the implementation of the alternative approach. What appear to be the most appropriate alternative approaches are then selected.

A program proposal including program objectives, recommended approaches, and estimated costs is prepared and submitted.

7. Develop Program Budget

The purpose of Step 7 in the planning process is to establish resource requirements for all of the programs, individually and collectively. These resource requirements are delineated in a program budget format, which is designed in accordance with the program structure.

Both "Top Down" and "Bottom Up" inputs are important in the budget-formulation step. "Top Down" inputs constitute a rational input based upon systemwide objectives and the corresponding priorities assigned to various programs. The "Bottom Up" approach uses cost estimates from program analysis as the basis for the initial program budget.

The educational system can convert from a traditional line-item budget to a program budget format by means of the "crosswalk" mechanism. In simple terms, this may be portrayed in a two-way table with the line-item budget presented horizontally and the program budget presented vertically. Both forms of the budget can be maintained, and each used as appropriate. But there is a fundamental difference between the two formats: the line-item approach is directed towards inputs, whereas the program budget approach is directed towards outputs.

8. Allocate Resources

The next step in the process is to allocate the available resources to the various programs. This allocation is based upon the estimated budget requirements and the estimated revenue.

Typically, the resource requirements can be expected to exceed the available resources. Therefore, Step 8 in Figure 3 must be recycled back to Step 7 until there is a "match" between the resource requirements and the available resources. This recycling involves taking a second look at previously considered alternative approaches (reference Step 6) — those that might be less effective than the preferred alternative, but less costly.

A recommended sequence of steps in resource allocation is as follows: (a) systematically choose a combination of alternatives for the various programs; (b) check the financial and resource feasibility of this combination; (c) if not feasible, choose another combination; (d) if it is feasible in terms of resources, check to see if the estimated effectiveness is satisfactory; (e) if the estimated effectiveness is not satisfactory, choose another combination; (f) if the estimated effectiveness is satisfactory, stop at this point.

The end product of this step is a set of recommendations on how the available resources should be allocated to the resource requirements established for the various programs. Preparation of a multi-year budget document is appropriate at this point.

9. Prepare Operational Plan

A multi-year operational plan for the educational system as a whole is then prepared. This plan integrates the results of Steps 2 through 8 and includes a procedure for program evaluation.

A plan may be defined as an explicit and systematic formulation of objectives, together with a description of the procedures, resources, and schedules which will be used to achieve those objectives in the environment anticipated. Each of these elements is an important ingredient in the written plan. By an "operational" plan, we mean that the plan is realistic in the sense that it is capable of being implemented.

10. Develop Information System

Effective educational management requires both (a) good planning and (b) implementation of the plans. The former without the latter is a sterile exercise. An essential requirement for successful implementation is a good information system. This information system must be designed to collect, store, and report all significant data pertaining to the plan during the period of implementation.

The operational plan itself can provide the major design requirements for the information system. Included here will be information requirements concerning objectives, schedules, budget allocations, and other elements of the operational plan.

The major purpose of the information system is to provide the educational practitioner with the information needed for evaluation and decision-making. To achieve this purpose, the information included in the system must be relevant, accurate, and timely.

The information system might be very simple in design (and require only manual operation), or be quite complex (and require the use of the computer), depending upon the size and complexity of the particular educational system. In either case, the information system should be designed so that it meets the needs of those people responsible for implementing the operational plan.

As described here, the information system is designed as a tool to assist in the implementation of the operational plan. It should be noted, however, that in subsequent cycles of the planning process, the data collected in the information system can be of great value to the planning process as such.

11. Implement the Plan

After approval by the board, the plan is put into operation. Each selected alternative is implemented in accordance with a specified time schedule. The responsibility for assuring that each selected alternative is implemented according to plan should be assigned to the appropriate person in the educational system.

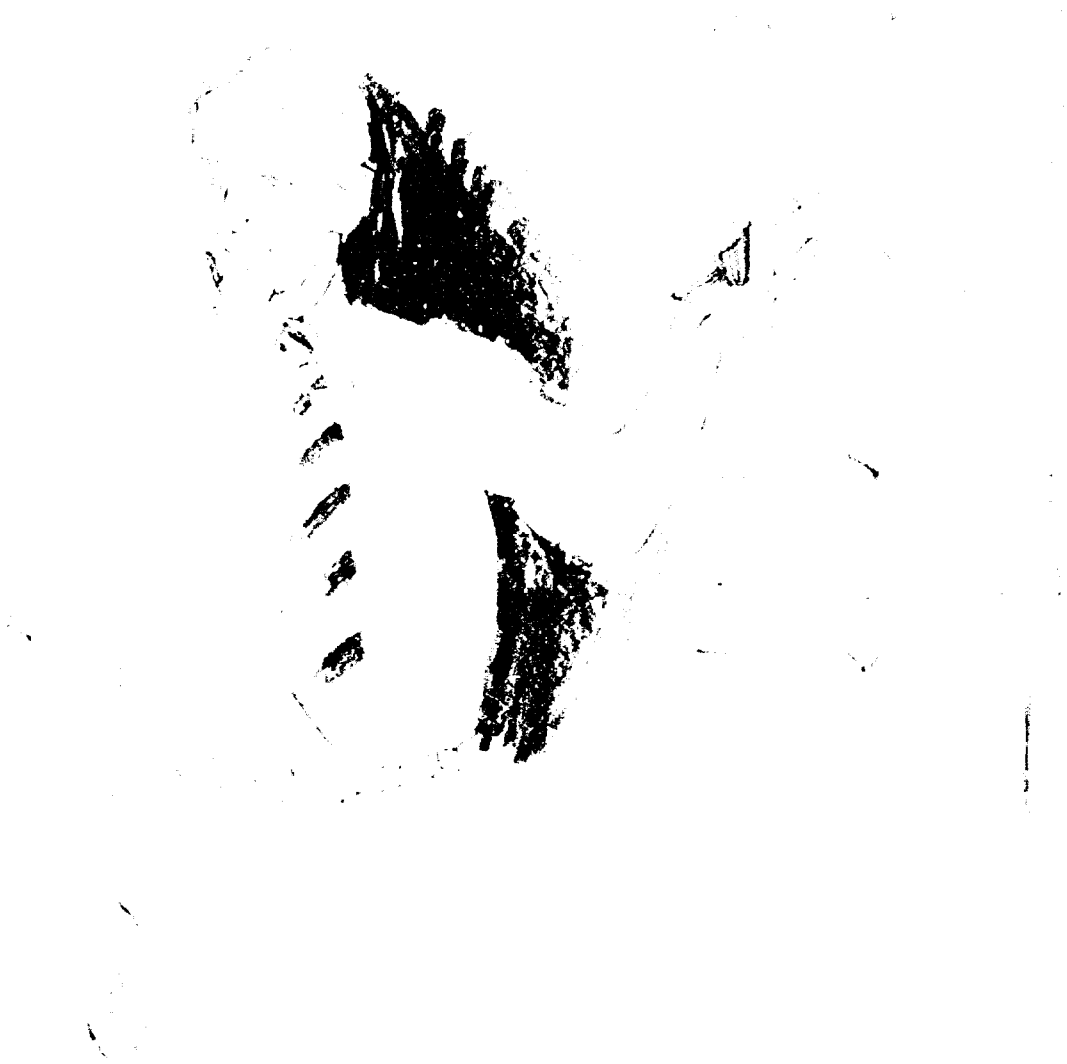
An important point to note here is that there may be many people within the educational system who are influenced by the plan but were not actively involved in the planning process. It is essential that all of these persons become familiar with the plan and how it affects them. This familiarization, of course, should begin during the time period in which the plan is being developed and not delayed until the point of implementation.

12. Evaluate and Revise

Program evaluation should take place on a continuing basis. The fundamental questions here are: (a) Which objectives are being achieved? (b) Which objectives are not being achieved? (c) Are expenditures consistent with budget? (d) What are the reasons for the discrepancies? (e) What should be done to improve? Data needed to answer these questions should be provided by the information system. Modifications are made in the actual operation of the programs as deemed necessary from the results of the evaluation.

Systemwide evaluation can be accomplished by re-administering the educational needs survey (which was described in Step 3). This is an effective means of "keeping track" of what is happening to the educational system as a whole -- as perceived by the various groups within the educational community.

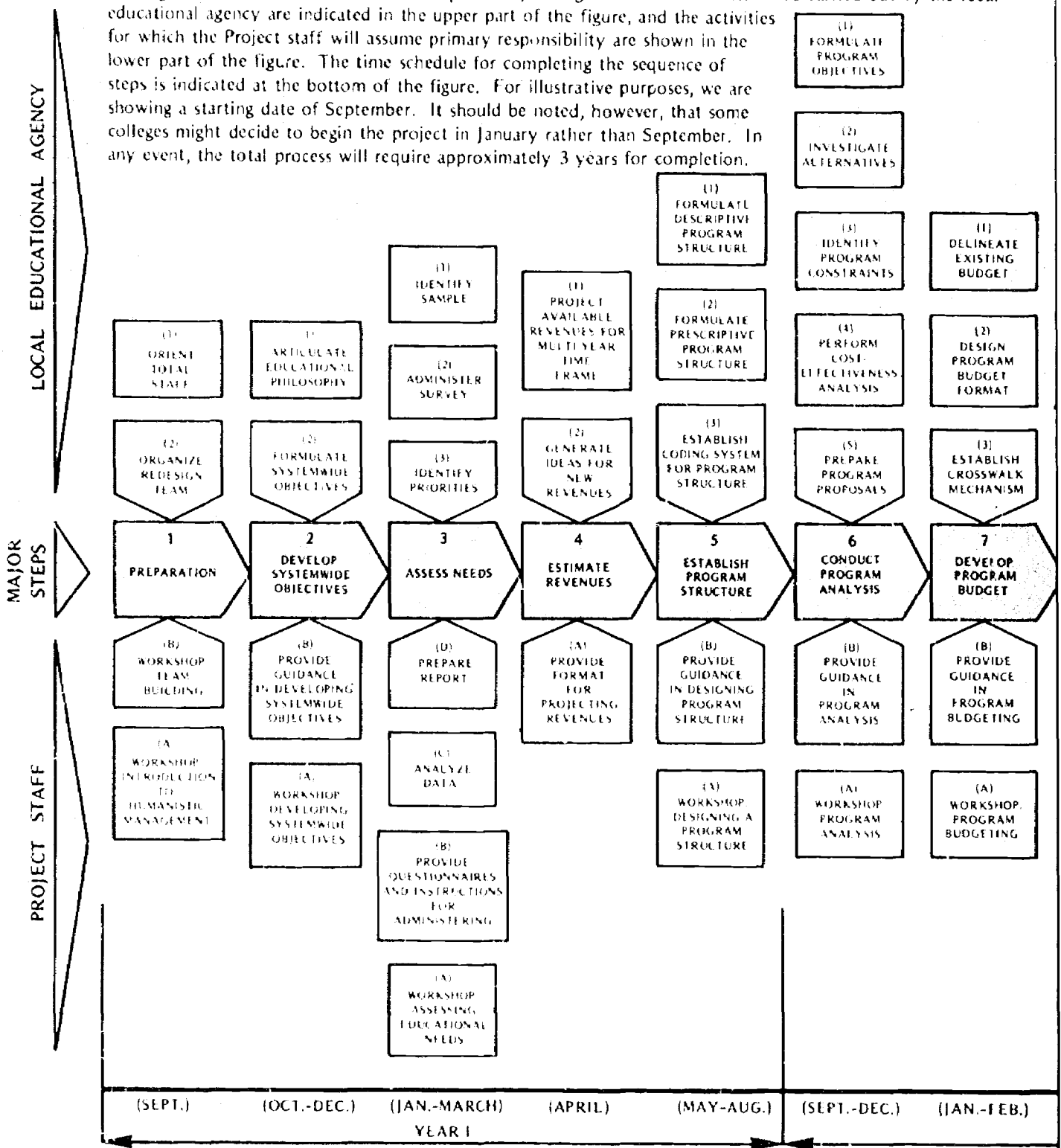
This 12-step process represents a broad strategy for educational redesign. In carrying out the strategy, we offer two additional recommendations. First, the sequence of steps should be repeated over time. This point is emphasized because planning should be viewed as a continual process – and not just a one-shot affair that ends up with a written report to be stored in a file drawer. A second recommendation is that large numbers of people be rotated into and out of the planning team over time. This is done for two reasons: first, to get wide participation of the educational Community, the second, to maintain a high degree of interest and enthusiasm on the part of the participants.



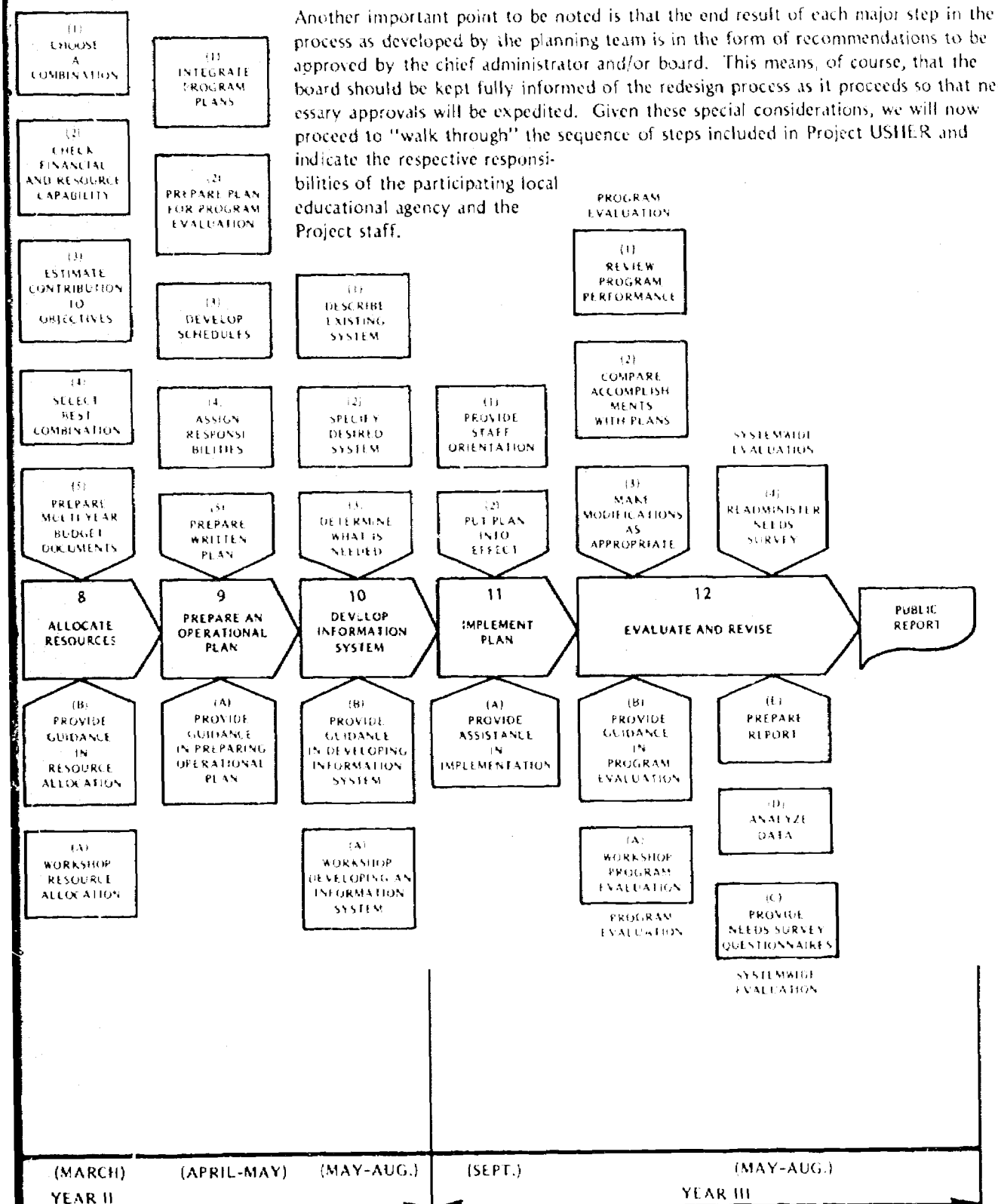
Seven

PLAN OF ACTION

The plan of action for implementing Project USHER is shown below. It will be noted that the steps shown in the rectangles are the same as those included previously in Figure 3. The activities to be carried out by the local educational agency are indicated in the upper part of the figure, and the activities for which the Project staff will assume primary responsibility are shown in the lower part of the figure. The time schedule for completing the sequence of steps is indicated at the bottom of the figure. For illustrative purposes, we are showing a starting date of September. It should be noted, however, that some colleges might decide to begin the project in January rather than September. In any event, the total process will require approximately 3 years for completion.



Another important point to be noted is that the end result of each major step in the process as developed by the planning team is in the form of recommendations to be approved by the chief administrator and/or board. This means, of course, that the board should be kept fully informed of the redesign process as it proceeds so that necessary approvals will be expedited. Given these special considerations, we will now proceed to "walk through" the sequence of steps included in Project USHER and indicate the respective responsibilities of the participating local educational agency and the Project staff.



LOCAL EDUCATIONAL AGENCY responsibility	PROJECT STAFF
1. PREPARE FOR EDUCATIONAL REDESIGN	
	Orient Total Staff
• Organize and Involve Planning Team	• Workshop: Introduction to Humanistic Educational Management* • Workshop: Team Building
2. DEVELOP SYSTEMWIDE OBJECTIVES	• Workshop: Developing Systemwide Objectives
• Articulate Educational Philosophy • Formulate Systemwide Objectives	• Provide Guidance in Developing Systemwide Objectives**
3. ASSESS NEEDS	• Workshop: Assessing Educational Needs
• Identify Sample • Administer Survey	• Provide Questionnaires and Instructions for Administration
	• Analyze Data • Prepare Report
• Identify Priorities	
4. ESTIMATE REVENUES	• Provide Format for Projecting Revenues
• Project Available Revenues for Multi-Year Time Frame • Generate Ideas for New Revenues	
5. ESTABLISH PROGRAM STRUCTURE	• Workshop: Designing a Program Structure
• Formulate Descriptive Program Structure • Formulate Prescriptive Program Structure • Establish Coding System for Program Structure	• Provide Guidance in Designing Program Structure
6. CONDUCT PROGRAM ANALYSIS	• Workshop: Program Analysis
• Formulate Program Objectives*** • Investigate Alternative Means for Achieving Objectives • Identify Program Constraints • Perform Cost-Effectiveness Analysis on Alternatives • Prepare Program Proposals	• Provide Guidance in Program Analysis

*The workshops are designed for these groups: Planning Team, Steering Committee, Task Force, and Program Directors. We have indicated in the appendix the particular groups for which each workshop is intended. The workshops will be conducted at the college.

**Sequentially, this guidance is provided during the time that the LEA is carrying out the associated steps.

***It is recommended that objectives be developed for all programs at this point, but that the detailed analysis that follows be carried out only on selected programs. In each succeeding year, additional programs will then be analyzed.

LOCAL EDUCATIONAL AGENCY responsibility	PROJECT STAFF
7. DEVELOP PROGRAM BUDGET	• Workshop: Program Budgeting
• Delineate Existing Budget • Design Program Budget Format • Establish Crosswalk Mechanism	• Provide Guidance in Program Budgeting
8. ALLOCATE RESOURCES	• Workshop: Resource Allocation
• Choose a Combination of Alternatives • Check Financial and Resource Capability • Estimate Contribution to Objectives • Select "Best" Combination of Alternatives	• Provide Guidance in Resource Allocation
9. PREPARE AN OPERATIONAL PLAN	
• Integrate Program Plans • Prepare Plan for Program Evaluation • Develop Schedules • Assign Responsibilities • Prepare Written Plan	• Provide Guidance in Preparing Operational Plan
10. DEVELOP INFORMATION SYSTEM	• Workshop: Developing Information System
• Describe Existing System • Specify Desired System • Determine What is Needed	• Provide Guidance in Developing Information System
11. IMPLEMENT PLAN	
• Provide Orientation for Staff as Needed • Put Plan into Effect	• Provide Assistance in Implementing Plan
12. EVALUATE AND REVISE	
A. Program Evaluation	• Workshop: Program Evaluation
• Review Program Performance • Compare Accomplishments with Plans • Make Modifications as Appropriate	• Provide Guidance in Program Evaluation
B. Systemwide Evaluation	• Provide Needs Survey Questionnaires
• Readminister Educational Needs Survey	• Analyze Data • Prepare Report

As indicated in Figure 3 as the final step at the end of the 3-year process, a public report is prepared and submitted. Such a report, of course, might be prepared and submitted at any stage during the 3-year cycle, depending upon the desires of the local educational agency.

The complementary roles of the participating college and the Project staff are clearly indicated in this outline. The participating college is taking the primary responsibility for actually carrying out the redesign process, while the Project staff is providing the training, guidance, and written materials that will assist the college in acquiring the knowledge and skills to be used in carrying out the process.

Eight PROCEDURAL DETAILS

Time and Costs

A period of 36 months is required to complete the tasks included in Project USHER. We plan to start working with one group of colleges in January, 1974, and a second program will be started in September, 1974. In subsequent years, new groups will be started in September and January.

The cost for the services provided in Project USHER is as follows:

	Annual Cost	Total Cost
Single-Campus College	$30,000	$ 90,000
Two-Campus District*	$32,000	$ 96,000
Three-Campus District	$34,000	$102,000

This amount covers the time of the Project staff, materials, data processing services, travel time for Project staff, and miscellaneous costs. Also included here is an amount to cover a reasonable number of long-distance collect telephone calls from the participants to the Project staff to provide informal answers to questions or to discuss implementation of the project.

Communication

The major means for communication between the Project staff and the representatives of the participating college will be in face-to-face meetings at the college. All of the workshops will be conducted on the campus of the participating college, and much of the consulting service will be provided on-site. In addition, we would expect that many of the day-to-day questions could be handled via telephone.

As an integral part of the communication process, the Center for Improved Education will provide each participating college with 25 copies of the following Center-developed written guides:

- A Humanistic Management System
- Development of a Management Information System

*As can be seen, the annual cost for each additional campus in a district is $2,000.

Project Organization

Project USHER will be the responsibility of the Center for Improved Education of Battelle's Columbus Laboratories under the direction of Dr. William D. Hitt, Director*. Each project with a given college (or college district) will have an USHER staff member to serve as project director. This project director will be assisted by other USHER staff members, other educational specialists within Battelle, and outside consultants. Biographical sketches for persons expected to play a major role in Project USHER are presented in the Appendix.

Group Sponsorship

Although Project USHER is designed to serve the needs of a single community college (or community college district), there are certain advantages which accrue when several colleges collectively support the program. Specifically, the most important advantage is the sharing of information and data. Over the next several years, Project USHER will generate considerable information and data pertaining to educational objectives, needs assessment, revenue forecasting, program analysis, program budgeting, resource allocation, and program evaluation. In addition, we will gain additional knowledge concerning experiences, problems, and solutions regarding the implementation of various aspects of the management model. Even though each community college is unique, the sharing of this information will have considerable value for all of the participating colleges. We will maintain the anonymity of each participating college, of course, whenever we give one college information collected in other colleges.

Another obvious economy will be effected in joint support of Project USHER through the workshop feature. Developing a workshop for a number of sponsoring institutions will save time for the Center for Improved Education; this saving will result in benefits through additional services.

*Battelle will be the prime contractor; the League for Innovation will be a subcontractor to Battelle.

REFERENCES

(1) Barnard, Chester, "A Theory of Cooperation and Organization", pp. 96-98 in *Some Theories of Organization* (edited by Albert Rubenstein and Chadwick Haberstroh). Homewood, Illinois: Richard D. Irwin (1966).

(2) Buber, Martin, *Between Man and Man*. Boston: Beacon Press (1955).

(3) Hitt, William D., *Education as a Human Enterprise*. Worthington, Ohio: Charles Jones Publishing (1973).

(4) Likert, Rensis, *The Human Organization: Its Management and Value*. New York: McGraw-Hill (1967).

APPENDIX
outline of workshops

workshop I

INTRODUCTION TO HUMANISTIC EDUCATIONAL MANAGEMENT

Participants: Planning Team, Program Directors, Board, Chief Administrator

Duration: 1 Day

A. THE NEED FOR IMPROVED EDUCATIONAL MANAGEMENT

B. THE SCIENTIFIC DIMENSION OF MANAGEMENT

C. THE HUMAN DIMENSION OF MANAGEMENT

D. UNITING THE SCIENTIFIC DIMENSION AND THE HUMAN DIMENSION

E. A MODEL FOR HUMANISTIC EDUCATIONAL MANAGEMENT

F. OBJECTIVES OF PROJECT USHER

G. PLAN OF ACTION FOR PROJECT USHER

workshop II

TEAM BUILDING

Participants: Planning Team, Chief Administrator

Duration: 1 Day

A. DEFINITION OF TEAM BUILDING

B. HOW TEAM BUILDING CONCEPTS DEVELOPED

C. THE GOALS OF TEAM BUILDING

D. REQUIREMENTS FOR EFFECTIVE TEAM BUILDING

E. TYPICAL PROBLEMS OF TEAM BUILDING

F. METHODS FOR OVERCOMING PROBLEMS

G. THE ROLE OF THE LEADER IN A TEAM

H. APPLICATIONS OF TEAM BUILDING

workshop III

DEVELOPING SYSTEMWIDE OBJECTIVES

Participants: Planning Team, Board, Chief Administrator

Duration: 1 Day

A. PERSONAL VALUES AND BELIEFS

B. ORGANIZATIONAL PHILOSOPHIES

C. THE INTERACTION OF PERSONAL AND ORGANIZATIONAL PHILOSOPHIES

D. AN EDUCATIONAL INSTITUTION'S STATEMENT OF PHILOSOPHY

E. THE MISSION STATEMENT

F. SYSTEMWIDE OBJECTIVES

G. THE OBJECTIVES HIERARCHY

H. A PLAN OF ACTION

workshop IV

ASSESSING EDUCATIONAL NEEDS

Participants: Planning Team, Board, Program Directors, Chief Administrator

Duration: 1 Day

A. A RATIONALE FOR EDUCATIONAL NEEDS ASSESSMENT

B. GUIDELINES FOR SAMPLING AND ADMINISTERING A SYSTEMATIC NEEDS ASSESSMENT

C. INTERPRETING AND ANALYZING THE RESULTS

D. COLLECTING ADDITIONAL DATA FOR INPUT

E. GUIDELINES FOR REPORTING RESULTS

F. DEVELOPING A PLAN FOR IMPLEMENTING NEEDS ASSESSMENT

workshop V

DESIGNING A PROGRAM STRUCTURE

Participants: Steering Committee, Task Force, Chief Administrator

Duration: 1 Day

A. THE RATIONALE UNDERLYING PROGRAM STRUCTURE

B. RELATIONSHIP BETWEEN PROGRAM STRUCTURE AND AN ORGANIZATIONAL CHART

C. RELATIONSHIP BETWEEN PROGRAM STRUCTURE AND SYSTEMWIDE OBJECTIVES

D. CRITERIA FOR EVALUATING A PROGRAM STRUCTURE

E. AN ILLUSTRATIVE PROGRAM STRUCTURE

F. DEVELOPING A PROGRAM CODING SYSTEM

G. A STRATEGY FOR DEVELOPING A PROGRAM STRUCTURE

H. A PLAN OF ACTION FOR CREATING A PROGRAM STRUCTURE

workshop VI

PROGRAM ANALYSIS

Participants: Steering Committee, Task Force, Chief Administrator

Duration: 2 Days

A. DEFINITION AND PURPOSE OF PROGRAM ANALYSIS

B. SELECTING PROGRAMS FOR ANALYSIS

C. FORMULATING PROGRAM OBJECTIVES

D. SPECIFYING PERFORMANCE INDICATORS

E. GENERATING ALTERNATIVE SOLUTIONS

F. SPECIFYING PROGRAM CONSTRAINTS

G. EVALUATING ALTERNATIVES ON THE BASIS OF ESTIMATED EFFECTIVENESS AND ESTIMATED COSTS

H. GUIDELINES FOR RANKING ALTERNATIVES

I. SPECIFYING CRITERIA FOR EVALUATION

J. PREPARING A PROGRAM PROPOSAL

K. A PLAN FOR OPERATIONALIZING PROGRAM ANALYSIS

workshop VII

PROGRAM BUDGETING

Participants: Steering Committee, Task Force, Program Directors, Chief Administrator

Duration: 1 Day

A. DEFINITION AND PURPOSE OF PROGRAM BUDGETING

B. RELATION BETWEEN PROGRAM BUDGETING AND TRADITIONAL BUDGETING

C. "TOP DOWN" AND "BOTTOM UP" APPROACHES TO BUDGETING

D. COST-CODING METHODS

E. COST-ALLOCATION METHODS

F. AGGREGATION LEVELS

G. THE "CROSSWALK"

H. MULTI-YEAR BUDGETING

I. AN ILLUSTRATIVE PROGRAM BUDGET

J. A STRATEGY FOR ESTABLISHING A PROGRAM BUDGET

workshop VIII

RESOURCE ALLOCATION

Participants: Steering Committee, Task Force, Program Directors, Chief Administrator

Duration: 1 Day

A. DEFINITION AND PURPOSE OF RESOURCE ALLOCATION

B. REVIEWING THE PROGRAM PROPOSALS

C. FORMING COMBINATIONS OF ALTERNATIVES

D. ANALYZING COMBINATIONS

E. FINAL SELECTION OF ALTERNATIVES

F. A STRATEGY FOR ALLOCATING RESOURCES

workshop IX

DEVELOPING AN INFORMATION SYSTEM

Participants: Steering Committee, Task Force, Program Directors, Chief Administrator

Duration: 2 Days

A. THE NEED FOR INFORMATION SYSTEMS

B. OBJECTIVES OF AN INFORMATION SYSTEM TO SUPPORT PPBE

C. MAJOR FUNCTIONS OF THE INFORMATION SYSTEM

D. RELATING THE INFORMATION SYSTEM TO THE DATA BASE

E. COMPUTER REQUIREMENTS

F. INTEGRATING INFORMATION SYSTEMS

G. A PLAN OF ACTION FOR DEVELOPING THE INFORMATION SYSTEM

workshop X

PROGRAM EVALUATION

Participants: Steering Committee, Program Directors, Chief Administrator

Duration: 1 Day

A. DEFINITION AND PURPOSE OF PROGRAM EVALUATION

B. SUMMATIVE AND FORMATIVE EVALUATION

C. GUIDELINES FOR ANALYZING AND INTERPRETING DATA

D. REVISING OPERATIONS AS A RESULT OF EVALUATION

E. REPORTING RESULTS

F. DECISIONS FOR THE FUTURE

G. A STRATEGY FOR CREATING EVALUATION PLANS

APPENDIX capabilities

Battelle

Battelle, essentially humanitarian and charitable in its objectives, is a public organization established by Gordon Battelle as a memorial to the Battelle family. His will provides for the "encouragement of creative research . . . the making of discoveries and inventions . . . the education of men." These several purposes, when joined together, constitute the basis of Battelle's primary mission: the advancement and utilization of science for the benefit of mankind.

Battelle is a not-for-profit organization, and the true measure of its effectiveness is determined by how well it serves its humanitarian purposes. The motivation of the Institute derives not from profit but from dedication to an ideal - to use science to serve mankind. Battelle was founded on this ideal and, to this, it contributes its resources and talents. Over the years, the world has changed, and the Institute has grown and diversified in response to changes, but the Battelle ideal remains.

More and more, the rational approach of scientific research seems to be the best hope for solving problems that only a few years ago would have been considered well beyond the domain of science. Thus, Battelle has consciously moved even more into the mainstream of human affairs. It has evolved from a single research center designed to solve well-defined problems for specific industrial companies to a large international organization with an active role in all phases of research and education.

Research and development are conducted at Battelle in practically all fields of science and technology. In conducting research, Battelle provides the physical plant, equipment, and personnel on a contract basis for industrial concerns, groups of companies, school districts and colleges, and Government agencies.

Center for Improved Education

The Center for Improved Education is part of the Columbus Laboratories of Battelle. It is organizationally separate from, but is linked to, Battelle's educational research groups.

The primary mission of Battelle's Center for Improved Education is to help schools and colleges redesign their educational systems through the use of existing knowledge. Putting knowledge into action is the key idea.

The Center serves as a change-agent in the redesign of schools and colleges. This is a twofold purpose: (1) to serve as an advocate and promoter of educational change and (2) to provide the services needed by schools and colleges for effecting constructive change.

The Center for Improved Education is guided by a humanistic philosophy of education. Underlying this philosophy is the proposition that the scientific dimension and the human dimension in education can - and should - be integrated to form a new educational model. The central belief of this humanistic philosophy is that education should be viewed as a human enterprise. By "human", we mean that the primary concern of education should be to help students be effective human beings. By "enterprise", we mean that education should be an undertaking that is planned, organized, and managed for specific purposes.

While the Battelle research groups are concerned with the generation of new knowledge, the Center is concerned with the dissemination and utilization of existing knowledge. These efforts are mutually supportive: (1) the research groups provide valuable inputs to the Center in the form of new knowledge and technical expertise in specialized areas, while (2) the Center contributes to the efforts of the research groups by assisting in defining the problems of the educational practitioner, by generating ideas for research, and by helping the researcher implement the results of his or her research.

League for Innovation

The League for Innovation in the Community College is a national organization of selected community college districts which aims, through cooperative work, to encourage and evaluate innovations and experimentation designed to improve varied aspects of college operations. Work of the League includes an emphasis on improving management practices, curriculum development, the improvement of instruction, and the strengthening of student personnel services.

The League is chartered under the laws of the State of California as a nonprofit educational corporation, pursuant to the provisions of Education Code Section 1072.

The League is supported by membership dues and by other contributions (including staff time, facilities, and funds) by its members, by foundation grants, and by government and other contracts. The League has received grants from such agencies as the National Science Foundation, the United States Office of Education, the Kettering Foundation, and the Institute for Instructional Improvement.

League Programs — supported by external funds — include projects on:

Increasing efficiency in community college courses

New developments in teaching college physics

Use of single concept films in teaching

Individualizing the teaching of English composition

New trends in student personnel services

Multimedia instruction in biology

Computer-assisted instruction

A systems approach to community college teaching

Division chairman leadership

Increasing efficiency of community college learning resource centers

As a national organization with members in all sections of the country, the League influences and takes leadership in community college development throughout the nation. It is notable that three of the last four elected presidents of the American Association of Community and Junior Colleges are administrators in League districts.

The League is not only committed to programs which contribute to the continuing improvement of member colleges, but also to provide nationwide leadership within the community college movement. The findings of the League programs and studies are shared with community colleges nationally, and non-League colleges are continually involved in League activities.

APPENDIX
biographical sketches

Following are biographical sketches of the Project staff and consultants who are expected to play a major role in Project USHER.

Project Staff

William D. Hitt

Director of Project USHER
Director, Center for Improved Education
B.A., University of Kentucky, 1951
M.A., Psychology, The Ohio State University, 1954
Ph.D., Psychology, The Ohio State University, 1956

For over fifteen years, Dr. Hitt has been deeply involved in seeking solutions to educational problems. He has concerned himself with both the planning and management aspects of education. Currently, as director of the League-Battelle Community College Project, his special interest is in promoting a better relationship between humanness and technology. Dr. Hitt is concerned about people, and through his work with the League-Battelle project is applying his humanistic philosophy in helping people create more effective educational systems. His professional affiliations include the American Psychological Association and Sigma Xi. He is author of the book, *Education as a Human Enterprise.*

David L. Hamilton

Associate Director of Project USHER
Program Director, Management Systems, Center for Improved Education
B.S., Education, Ashland College, 1957
M.A., Education Administration, The Ohio State University, 1967
Ph.D. (Candidate), Educational Administration, The Ohio State University

As associate director and senior technical advisor for the League-Battelle Community College Project, Mr. Hamilton is working to improve educational organizations by systematically applying the practical techniques of modern management with effective human relations concepts. As a former educational administrator, Mr. Hamilton has had practical experience in all phases of management. Now, as an educational management consultant, he is applying his practical experience by advising numerous school districts and conducting workshops in the areas of needs assessment, management by objectives, and school-community relations. Mr. Hamilton is a member of the Society for Advancement of Management and the Academy of Management.

B. Lamar Johnson

Executive Director, League for Innovation in the Community College
B.S., University of Minnesota, 1925
M.A., University of Minnesota, 1927
Ph.D., University of Minnesota, 1930
Postdoctoral Study, University of Michigan, 1931-32

The name of Dr. B. Lamar Johnson is a byword in the field of education. Educators throughout the world have known and respected Dr. Johnson for his dedicated and innovative leadership. Before assuming the directorship of the League for Innovation in the Community College, Dr. Johnson was a professor of Higher Education at the University of California, Los Angeles. While at the University, Dr. Johnson wrote one of his most notable works, *Islands of Innovation Expanding: Changes in the Community College.* Recently, Dr. Johnson served as a consultant on the Establishment of Community Junior Colleges in Vietnam for the USAID Mission and Vietnamese government. As a senior member of Project USHER, Dr. Johnson will be applying his vast knowledge and experience in community college education in helping to increase the effectiveness of community college management.

Arthur D. Schmidt

Senior Program Associate, Management Systems, Center for Improved Education
B.S., Math-science Education, Southern Oregon College, 1958
N.S.F. Grant, University of Colorado, 1962-63
M.B.S., Math-science, University of Colorado, 1966

As an associate professor, college dean, and educational consultant to over thirty community colleges, Arthur Schmidt has given education able and effective leadership. Before assuming his position of Senior Program Associate with Battelle's Center for Improved Education, Mr. Schmidt was a program associate for the National Laboratory for Higher Education, Junior and Community College Division, Durham, North Carolina. While at the laboratory, Mr. Schmidt researched, developed, and tested products related to change in the Junior-Community College movement. Mr. Schmidt is providing the League-Battelle Community College project with technical expertise, as well as practical educational management experience. Mr. Schmidt is a member of the American Association of University Professors and the Theta Delta Phi National Academic Honorary.

Arthur Berchin

Assistant Executive Director, League for Innovation in the Community College
B.A., English, University of California, Los Angeles, 1964
M.A., English, University of California, Los Angeles, 1966
Ph.D., Educational Administration, University of California, Los Angeles, 1970

The community college setting is a familiar one to Dr. Berchin. Before accepting the position as assistant executive director to the League for Innovation in the Community College, Dr. Berchin was the director of Self-Study at Miami Dade Junior College. His experience in administration and instruction makes him a valuable member of the Project USHER staff. He is a member of the University of California's Doctoral Alumni Association and, among his many writings, has published *Toward Increased Efficiency in Community Junior College Courses.*

Gerald L. Robinson

Manager, Educational Systems Section, Battelle-Columbus
B.S., Electrical Engineering, Massachusetts Institute of Technology, 1950
M.S., Industrial Engineering, New York University, 1957
Ph.D., Industrial Engineering, The Ohio State University, 1972

Dr. Robinson's fields of interest include operations research, management science, systems analysis, and industrial engineering as applied to business and social systems. Since joining Battelle in 1965, Dr. Robinson has participated in long-range planning of aircraft maintenance resource requirements, a study of the role of business in ghetto economic development, and simulation modeling for analysis of airport baggage-handling systems. In the field of education, Dr. Robinson has been involved in developing a technical model of PPBE in the public school systems. For the past year, he has done extensive research on the technical components of the PPBE System for the League-Battelle Project and has provided technical consultation to members of the League-Battelle staff on the technical components. Dr. Robinson is a member of the Institute of Management Sciences, Operations Research Society of America, and Sigma Xi.

John R. Powers, III

Program Director, Educational Data Systems, Center for Improved Education
B.A., Psychology, Hendrix College, 1964
M.A., Experimental Psychology, Purdue University, 1969
M.A. (still completing), Information Science and Technology Systems, American University

Mr. Powers' primary interest is in the application of computer capabilities to the field of education. Currently, as Program Director for Information Systems, Mr. Powers is designing the Management Information System for the League-Battelle Community College Project. His objective is to develop an information system that will assist educational practitioners in making more effective decisions. Mr. Powers is conducting a study of the National Center of Higher Educational Management Systems as these apply to planning and management, and is designing and demonstrating a computer system for competency-based inservice teacher training.

Thomas H. Gripp

Consultant, League for Innovation in the Community College
District Director for Program Planning and Budgeting Systems, Coast Community College District
B.A., English, University of Puget Sound, 1954
M.A., English, California State College, 1966
Ed.D., Educational Administration, University of California, Los Angeles

As District Director for PPBE for the Coast Community College District, Dr. Gripp is administrating and coordinating all of the district's PPBE activities. Coast Community College District is one of the first college districts to participate in the League-Battelle Community College Project. Dr. Gripp's experience with the project is an invaluable resource to the League-Battelle effort. In addition to his expertise in the area of PPBE, Dr. Gripp has consulted with many universities and community colleges on educational management and has traveled throughout the country speaking on management by objectives and faculty motivation to such groups as the American Association of Community and Junior Colleges.

Daniel E. Molnar

Senior Systems Analyst, Management Systems Group, Battelle-Columbus
B.S., Industrial Engineering, The Ohio State University, 1962
M.A., Industrial Engineering, The Ohio State University, 1963

Since joining the Battelle staff in 1963, Mr. Molnar has been involved in the development of a variety of simulation models. He has performed cost-effectiveness studies and management studies for the Federal Government. His work includes experience in long-range planning for NASA; specifically, he performed cost analysis. More recently he has performed systems analysis studies related to educational problems. He was a task leader for a large research program sponsored by the State of Ohio to study current needs and resources in the area of educational technology. For the past year, Mr. Molnar has been working on the League-Battelle project. He has been completing extensive research on the technical components of the PPBE System. Mr. Molnar is a member and past officer of the Operations Research Club of Central Ohio.

J. D. Gammel, Jr.

Program Director, Instructional Systems, Center for Improved Education
B.S., Business Administration, Mississippi State University, 1962
M.A., Education, Murray State University, 1966
Ph.D. (candidate), Educational Development, The Ohio State University

While working in the areas of human relations and affective learning, Mr. Gammel's primary objective has been to integrate human concerns and systems techniques to develop more humanistic educational systems. Currently, he is involved in developing a three-year human relations program focused on public education. In the field of instruction he is developing a system for integrating affective objectives into the total instructional program. Mr. Gammel has been an instructor, administrator, and consultant in college and secondary school settings. Mr. Gammel's experiences in human relations and affective learning is being used in the League-Battelle Project. Mr. Gammel is a member of Phi Delta Kappa, the Association for Educational Communication and Technology, and the Association for Supervision and Curriculum Development.

Karen E. Clark

Program Associate, Management Systems, Center for Improved Education
B.S., English/Speech, Northwestern University, 1967
M.A., Education (still completing), The Ohio State University

With a background in management and human relations training, Mrs. Clark is interested in applying management and human relations concepts to the field of education to improve its effectiveness. Mrs. Clark has been a teacher in secondary school settings and for four years a bank training and development officer. Currently, as a program associate for Management Systems, she is helping to design and implement training programs for the League-Battelle project. Mrs. Clark is a member of the Zeta Phi Eta, a National Speech honorary, and was the first woman selected to serve on the National Training and Development Committee for the American Bankers Assocation.

Robert S. Garmise

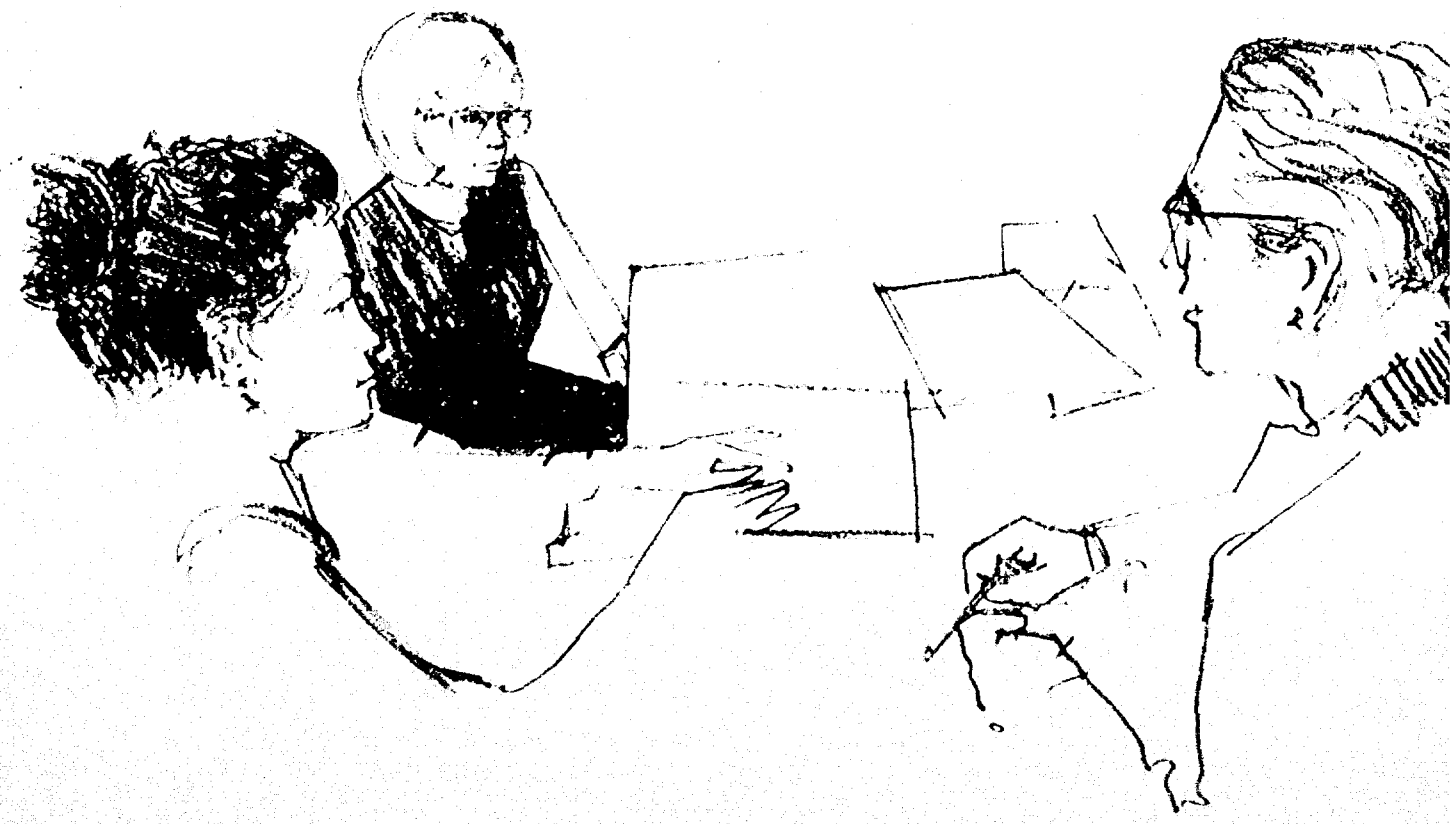
Senior Program Associate, Information Systems, Center for Improved Education
B.S., History/English, University of Wisconsin, 1966
M.S., Computer Science, The Ohio State University, 1972

Mr. Garmise's interests and activities lie in the design, implementation, and evaluation of computer systems for educational institutions. His experience includes the development of a resource information system for Special Education and assisting in developing a method for evaluating computer systems in general. In addition, he has a strong background in the use of Computer-Assisted Instruction (CAI) and has designed entire CAI systems for specific applications. His work with Project USHER will involve the design of the Management Information System and its training components. With his excellent technical expertise, Mr. Garmise is an invaluable resource to the Project.

Alfred S. Forsyth, Jr.

Program Associate, Instructional Systems, Center for Improved Education
B.A., French, Brown University, 1967
M.A., Geography, Columbia University, 1972

Mr. Forsyth's professional interests and work experience have centered on man-environment relationships in various cultural settings. Within this framework, he has worked in research, in preparation of educational material, and in public relations. Maintaining an interest in public education on environmental issues, Mr. Forsyth was employed by the Institute for the Study of Health and Society in Washington, D.C., during the summer and fall of 1970. He was actively involved in preparing educational games, films, and written materials on environmental awareness and over-population problems under funding from the Federal Department of Health, Education, and Welfare. Recently, in his work for Battelle, Mr. Forsyth coauthored "A Guide to Developing Affective Learning Objectives".



Consultants

Fay-Tyler M. Norton

B.A., Louisiana State University, 1945
Graduate work, Louisiana State University, University of Texas, Radcliffe, Florida State University
Ph.D., Experimental Psychology, Learning, Florida State University, 1958

Dr. Norton has been a professor of psychology and chairman of the Department of Behavioral Sciences at Cuyahoga Community College, Cleveland, Ohio. While at Cuyahoga, she was intensely interested in innovative teaching strategies and in involvement of the faculty in the governance of the college. Dr. Norton has presented papers on the *Needs of Two-Year College Teachers* and *Organizing Instructional Staff to Improve Instruction in the Large Urban Community College* and has, among her many publications, published an article on "Two-Year College Instruction", *American Psychologist*, 1972. Currently, Dr. Norton is a chairperson on the ad hoc Committee on Two-Year College Education and Training Board, American Psychological Association.

James H. Nelson

Professor of Administration and Higher Education, Michigan State University
B.A., University of Colorado, 1951
M.P.S., University of Colorado, 1952
Ed.D., University of California, Los Angeles, 1961
Post-Doctoral Fellowship, Battelle Memorial Institute, 1972

Dr. Nelson has had extensive higher education experience in both instruction and administration. His administrative background includes community college assignments in research, student personnel, and instruction as well as chief administrator for a new community college. During the past year, Dr. Nelson has been studying planning and management systems applicable to higher educational institutions under a Battelle Institute Fellowship. His professional interests are focused on management development, organization development, and planning and management systems. Dr. Nelson is a member of the American Psychological Association, the American Association of Community and Junior Colleges (and a member of its Board of Directors), and Phi Delta Kappa.

CONTRACTING OFFICER