DOCUMENT RESUME

ED 088 151 EA 005 774

AUTHOR	Wirt, John; And Others
TITLE	Organizing for Innovation: Alternative Designs for the American Educational R&D System.
INSTITUTION	Rand Corp., Santa Monica, Calif.
SPONS AGENCY	Department of Health, Education, and Welfare, Washington, D.C.
REPORT NO	WN-7793-HEW
PUB DATE	Feb 72
NOTE	133p.; Related documents are EA 005 765, 766, 768, and 785
EDRS PRICE	MF-$0.75 HC-$6.60
DESCRIPTORS	Agencies; Archives; Decision Making; Education; Educational Assessment; Educational Innovation; *Educational Research; *Federal Government; *Federal Programs; *Interagency Planning; Management; *Organization; Program Planning; Program Proposals
IDENTIFIERS	*National Institute of Education; NIE; NIE Archives

ABSTRACT

This work has been done as part of the effort to plan the National Institute of Education (NIE). The report, one of a series, proposes and analyzes alternative ways of organizing and managing (1) the proposed National Institute of Education, (2) the relationship between NIE and the rest of the Department of Health, Education, and Welfare's educational system, and (3) the connection between R&D and the users of R&D. It examines the functions to be performed by NIE and analyzes alternative methods for managing and performing these functions. The major functions considered here include needs assessment, policy analysis and decisionmaking, research, product practice and improvement, program management, research and development capability-building, and innovation. The discussion is broken into (1) a number of alternative organizational designs for NIE, including all of its management and performance responsibilities except innovation; (2) a number of alternative strategies and a set of methods useful for performing and managing innovation at the local level, including discussion of the federal role; and (3) a number of alternative organizational designs for managing the interface between the NIE and the U.S. Office of Education. (Author/DN)

WN or R No: 7793-HEW

Copy No:

Assigned to:

Project No:

Contract No:

Task Order No:

Temporary cover sheet for RAND external publications*

number WN-7793-HEW

title ORGANIZING FOR INNOVATION: ALTERNATIVE DESIGNS FOR THE AMERICAN EDUCATIONAL R&D SYSTEM

author(s) John Wirt, Arnold Lieberman, Lyle Spencer

date February 1972

*Please use this form as the temporary cover page for WN's and R's released to the Communications Department for publication. Final cover and title page will be prepared in the Communications Department from the information appearing on this sheet.

PREFACE

This working note contains alternative designs for both the internal structure of the proposed National Institute of Education (NIE) and innovation systems for implementing the results of educational research and development. This note will be part of a Preliminary Report on the NIE, prepared by the Planning Staff of the Assistant Secretary for Planning and Evaluation in the Department of Health, Education, and Welfare. The purpose of the report is to propose a broad range of organizational design options for the NIE and for the education R&D system as a whole.

Dr. Lyle Spencer, one of the authors of this working note, is a member of that Planning Staff. He has collaborated with the two RAND authors in the development of the alternative designs, and has contributed equally to the writing of this report.

The work was done as part of a larger effort to plan the National Institute of Education. This report is a continuation of a series of other RAND reports on the proposed Institute. The others are:

- National Institute of Education: Preliminary Plan for the Proposed Institute (R-657-HEW)
- National Institute of Education: Methods of Managing Fundamental Research (WN-7676-HEW)
- National Institute of Education: Methods for Managing Practice-Oriented Research and Development (WN-7677-HEW)
- National Institute of Education: Methods for Managing Programmatic Research and Development (WN-7678-HEW)
- National Institute of Education: Organizational and Managerial Alternatives (WN-7679-HEW)
- National Institute of Education: Evaluation of Methods of Managing Research and Development (WN-7680-HEW)

CONTENTS

I. INTRODUCTION

This paper proposes and analyzes alternative ways of organizing and managing:

(1) The proposed National Institute of Education (NIE),

(2) The relationship between NIE and the rest of the "DHEW educational system" (the Office of the Secretary (OS) and the Office of Education (OE), and

(3) The connection between R&D and the users of R&D.

Such a comprehensive approach is crucial at this stage in the NIE planning process to ensure proper coordination among the agencies involved after the NIE begins operations.

THE PROBLEM

The overriding objective behind the initiative to establish NIE is to *improve educational practice through research and development.*

However, more than just research and development must be conducted to be successful in achieving this objective. An entire system must be built involving the performance of several functions:

- *A Needs Assessment Function;* to monitor and understand the problems of education and the state-of-the-art in education knowledge and technology.
- *A Policy Analysis and Decision-Making Function;* to set priorities and guide choices among alternative resource allocations.
- *A Research Function;* to search for new knowledge about education and methods for understanding its problems.
- *A Product and Practice Improvement Function;* to translate ideas and information into useful and practical products and techniques.
- *A Program Management Function;* to build coherent attacks on major problems within the educational system.

- *An R&D Capability-Building Function;* to raise the quality and quantity of R&D manpower and institutions available for conducting education R&D.
- *An Innovation Function;* to ensure a widespread awareness and utilization of products and practice improvements produced by the R&D system.

The level of intensity at which each of these functions should be performed, and the means for managing, performing, and interconnecting each of these functions, are the subjects of this paper. A careful approach to planning for the NIE is important because few of these functions are being accomplished satisfactorily at the present time.

The division of responsibility for each of these functions among OS, OE, and NIE that will be assumed in this paper appears in Table 1. Responsibility for needs assessment, problem solving, and innovation will be shared by the Office of Education and NIE in some arrangement. Responsibility for policy planning will be shared by all three federal agencies in some arrangement; and responsibility for the other R&D functions -- research, practice improvement, and R&D capability-building -- will solely be NIE's.

The purpose of this paper is to describe and analyze alternative methods for managing and performing these functions. The discussion will be broken into the three parts:

- A number of *alternative organizational designs for NIE,* including all of its management and performance responsibilities except innovation.
- A number of *alternative strategies and a set of methods useful for performing and managing innovation* at the local level, including discussion of NIE's, OE's, and OS's role.
- A number of *alternative organizational designs for managing the interface between NIE and OE,* including the role of OS.

These parts are identified by the groupings of functions into blocks in Table 1.

Table 1

Division of Responsibility for Managing and Performing R&D Functions

Function	Office of the Secretary	Office of Education	National Institute of Education
Needs Assessment		M P	M P
Policy Analysis	M P	M P	M P
Research			M P
Practice Improvement			M P
Problem-Solving		M P	M P
R&D Capability-Building			M
Innovation		M P	M P

Key: M = Agency has responsibility for managing the function.
P = Agency has responsibility for performing the function.

The discussion of alternatives for NIE does not include methods for managing and performing innovation since these are treated as a separate topic. However, in discussing alternatives for the NIE, care will be taken to indicate where in its organization NIE would link to innovation activities. A number of options for sharing the responsibility for innovation between NIE and OE are possible and are indicated crudely by the dotted lines in Figure 1.

- NIE could have no responsibilities for managing or performing innovation.
- NIE could have responsibility for managing and performing a portion of the innovation task (for certain products or to certain user groups).
- NIE could have responsibility for overseeing performance of innovation by OE.
- NIE could have total responsibility for managing and performing innovation.

These options will be discussed in more detail in Chapter IV.

OBJECTIVES

The alternative organizational designs for NIE and the NIE/OE interface must be compatible with the objectives of these agencies and OS.

Objectives of the NIE

We assume the objectives of the NIE to be:*

- *To build a vigorous and effective educational research and development system* by improving the quality and quantity of the people and institutions involved in educational R&D.
- *To concentrate the presently fragmented R&D effort* by increasing the scale of work on selected topics and coordinating independent efforts.
- *To help solve or alleviate chronic national problems and achieve the objectives of American education* by applying R&D more directly to these practical concerns.
- *To aid in implementing improved educational practices* by building linkages between R&D and the education community.

NIE could be designed to stress achievement of all these objectives equally or some more than others. The purpose of this paper is not to analyze which objectives are more important, but to present several alternative organizational designs that stress achieving different combinations of these objectives over the others. Deciding which of the objectives are most important and, therefore, which organizational design to select is a decision that belongs to key officials in the DHEW educational system.

The NIE/OE Interface

OE and NIE desire different things from each other in pursuit of their respective objectives and responsibilities. From NIE, OE needs:

- Analyses of educational policy issues and assistance in evaluating OE programs.

---

*These objectives are drawn in part from Levien, Roger E., *National Institute of Education: Preliminary Plan for the Proposed Institute*, The Corporation, R-657-HEW, February, 1971, but have been modified to reflect our emphasis on management.

- Programs for solving high-priority education problems.
- Responses to requests for assistance from practitioners and other users of educational R&D

From OE, in turn, NIE will need:

- Information on the status of American education.
- Rankings of which are the important national education problems.
- Rankings of which are the important local educational needs.
- Assistance in the dissemination and implementation of NIE products (depending on the division of responsibilities for innovation between NIE and OE).

A diagram of these mutual needs appears in Figure 1.

Office of the Secretary of HEW

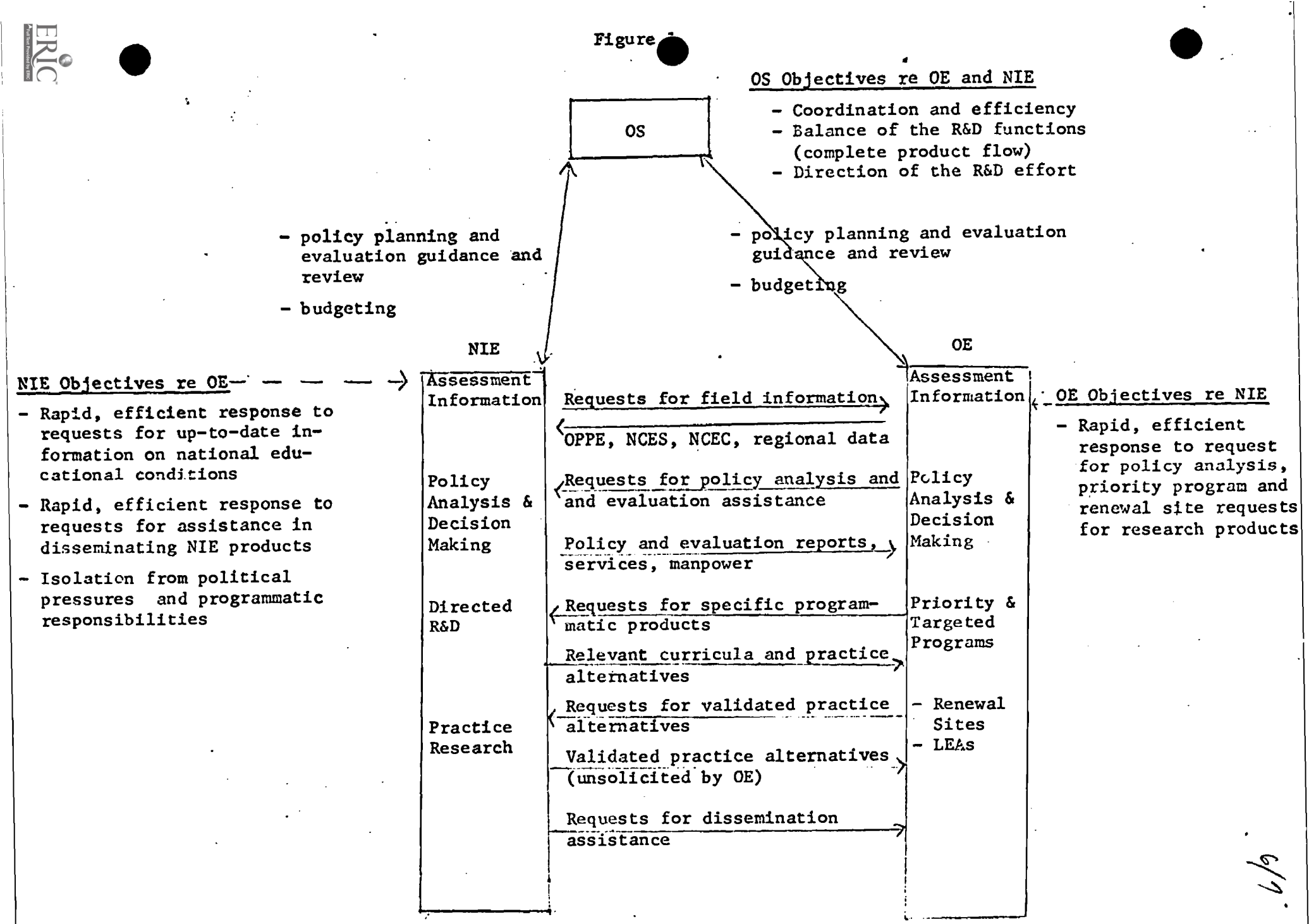
In relation to the organization of the NIE and the NIE/OE interface, the objectives of the OS are:

- *To assure that the mutual needs of OE and NIE are sufficiently coordinated* that wasteful duplication of efforts and excessive conflict over jurisdiction are avoided.
- *To assure that all the educational R&D functions listed earlier are performed well and in proper balance.*
- *To guide the overall direction of the R&D system toward* the DHEW goals of equalization, non-dependency, and institutional reform.

PLAN OF THE PAPER

The alternative organization designs for achieving these objectives appear in the next three chapters. Chapter II contains alternatives for the NIE; Chapter III contains alternatives for the NIE/OE interface; and Chapter IV contains alternative strategies and methods for innovation.

Figure


OS
OS Objectives re OE and NIE
- Coordination and efficiency
- Balance of the R&D functions (complete product flow)
- Direction of the R&D effort
- policy planning and evaluation guidance and review
- budgeting
- policy planning and evaluation guidance and review
- budgeting
NIE
OE
NIE Objectives re OE
- Rapid, efficient response to requests for up-to-date information on national educational conditions
- Rapid, efficient response to requests for assistance in disseminating NIE products
- Isolation from political pressures and programmatic responsibilities
Assessment Information
Policy Analysis & Decision Making
Directed R&D
Practice Research
Requests for field information
OPPE, NCES, NCEC, regional data
Requests for policy analysis and and evaluation assistance
Policy and evaluation reports, services, manpower
Requests for specific programmatic products
Relevant curricula and practice alternatives
Requests for validated practice alternatives
Validated practice alternatives (unsolicited by OE)
Requests for dissemination assistance
Assessment Information
Policy Analysis & Decision Making
Priority & Targeted Programs
- Renewal Sites
- LEAs
OE Objectives re NIE
- Rapid, efficient response to request for policy analysis, priority program and renewal site requests for research products

II. ORGANIZING THE NIE

Each of the alternative organizational designs for the NIE will emphasize achieving one and sometimes two of the four NIE objectives:

- *Build a vigorous and effective educational R&D system*
- *Concentrate the presently fragmented R&D effort*
- *Help solve or alleviate chronic national problems and achieve the objectives of American education*
- *Aid in implementing improved educational practices*

At least one design will be presented for achieving each objective with highest priority; however, all designs will go part-way toward achieving the remaining objectives, for clearly each is important if the education R&D system is to be in healthy balance. For some objectives more than one alternative design will be presented. Presenting pure alternatives is advisable for two reasons: (1) the differences between the organizational designs are clarified, and (2) one of the "pure" designs may be the appropriate choice.

If the NIE-OE-OS leadership decides not to choose one of the "pure" designs presented here, they could easily follow a mixed strategy by combining the alternatives. In most cases the way to combine the models will be evident from the descriptions presented.

A total of seven alternative designs for the NIE will be proposed in this chapter. These alternatives do not exhaust the possibilities for designs, but do span a relatively wide range of themes.

Build a Vigorous R&D System

- Model I: Emphasizes Developing R&D Resources

Concentrate R&D Activity

- Model II: Emphasizes Programmatic R&D*
- Model III: Emphasizes Concentrating R&D Activity

---

*This model also emphasizes solving practical problems.

Solve Practical Problems

- o Model IV: Emphasizes Solving Practical Problems Nationally
- o Model V: Emphasizes Solving Problems Regionally
- o Model VI: Emphasizes Feeding Back Problems to R&D

Build Linkages to Practice

- o Model VII: Emphasizes Building Linkages to Practice

Most are adaptations of strategies currently being followed by federal R&D agencies.

The format in which the models are presented does not include an evaluation of the comparative advantages and disadvantages of each model. A partial evaluation is implicit in the selection of a primary objective for the design to achieve. Since this objective guided the construction of each model, it follows that the other NIE objectives would be less well served in each case. A more comprehensive evaluation is possible, and will be done in the next version of this report.

MODEL I: Develops R&D Resources

BASIC PREMISE

A presumption underlying Model I is that forced efforts to apply existing R&D knowledge and products to practical problems or to strongly concentrate the existing R&D activity would be very unlikely to succeed at the present time in education because the supply of competent R&D manpower, useful knowledge, and useful products is severely limited.

The premise is that NIE's top priority now should be fostering the development of R&D manpower, knowledge and product resources. The premise is also that the best way to develop these resources is to give R&D performers considerable freedom and encouragement to generate ideas and choose the topics of their work.

- So few operational concepts are known in education and measurement is so difficult that broad-scale efforts to concentrate R&D activity would (1) be very difficult to coordinate, and (2) run very high risk of taking an infeasible or ineffective approach.
- The presumption is that in the long run far greater progress will be made if many approaches are explored, with many people contributing ideas, before substantial resources are committed to highly directed programs.
- A great increase in the portion of the R&D effort concerned directly with solving practical problems would also be premature. A much better strategy would be to follow up strongly with a developmental effort only when sufficient exploratory results have been obtained to demonstrate the soundness of a solution method.
- Great effort in building linkages for diffusing R&D products would also be premature, for R&D will have little to deliver in the first few years. NIE would only be creating problems

for itself by promising more than it can deliver. The network for diffusing NIE products to users can be built simultaneously with NIE capacity to deliver innovations and, in fact, the difficulty of this task would be eased by having quality educational knowledge and products available.

PRIMARY MANAGEMENT EMPHASES

The Model I organizational plan for NIE follows from these premises. Model I emphasizes reliance on the R&D community and practitioners for program direction and content, a multiplicity of program priorities, and building the capacity of the R&D system. NIE management would have primarily three roles: (1) attracting R&D manpower and building R&D institutions in priority areas, (2) stimulating collaboration among R&D performers, and (3) managing intensified development and implementation programs when R&D discovers an effective problem solving approach. This strategy would be accomplished by several means:

- Most of NIE's budget would be allocated to extramural programs where the R&D and practitioner communities are heavily involved in program planning, selection and evaluation. Extensive use would be made of R&D conferences and workshops to build communications in the R&D community.
- NIE's role in the extramural programs would be limited largely to guiding and coordinating the R&D effort toward problems important to education.
- Strongly focused, programmatic R&D efforts would be mounted only when extramural R&D had demonstrated that a problem solving approach would likely be effective.
- A sizable proportion of NIE's budget would be allocated to R&D manpower training and institutional development programs in selected problem areas.

ORGANIZATION

An organizational plan for NIE follows from these basic premises and managerial emphases. To facilitate attracting high quality R&D manpower and to encourage the formation of R&D peer groups as a quality control measure, the major units of NIE would be (1) predominantly extramural, and (2) homogeneous in the type of R&D activity supported. The types of R&D supported would be fundamental research, practice-oriented research, directed R&D, and manpower and institution-building. By separating activities this way, managerial policies can be employed that are most attractive to performers in each type of R&D activity.

Following this reasoning the NIE would consist of four major directorates: a Directorate for Educational Research, a Directorate for Educational Development, a Directorate for Special Programs, and a Directorate for Institutional Programs.

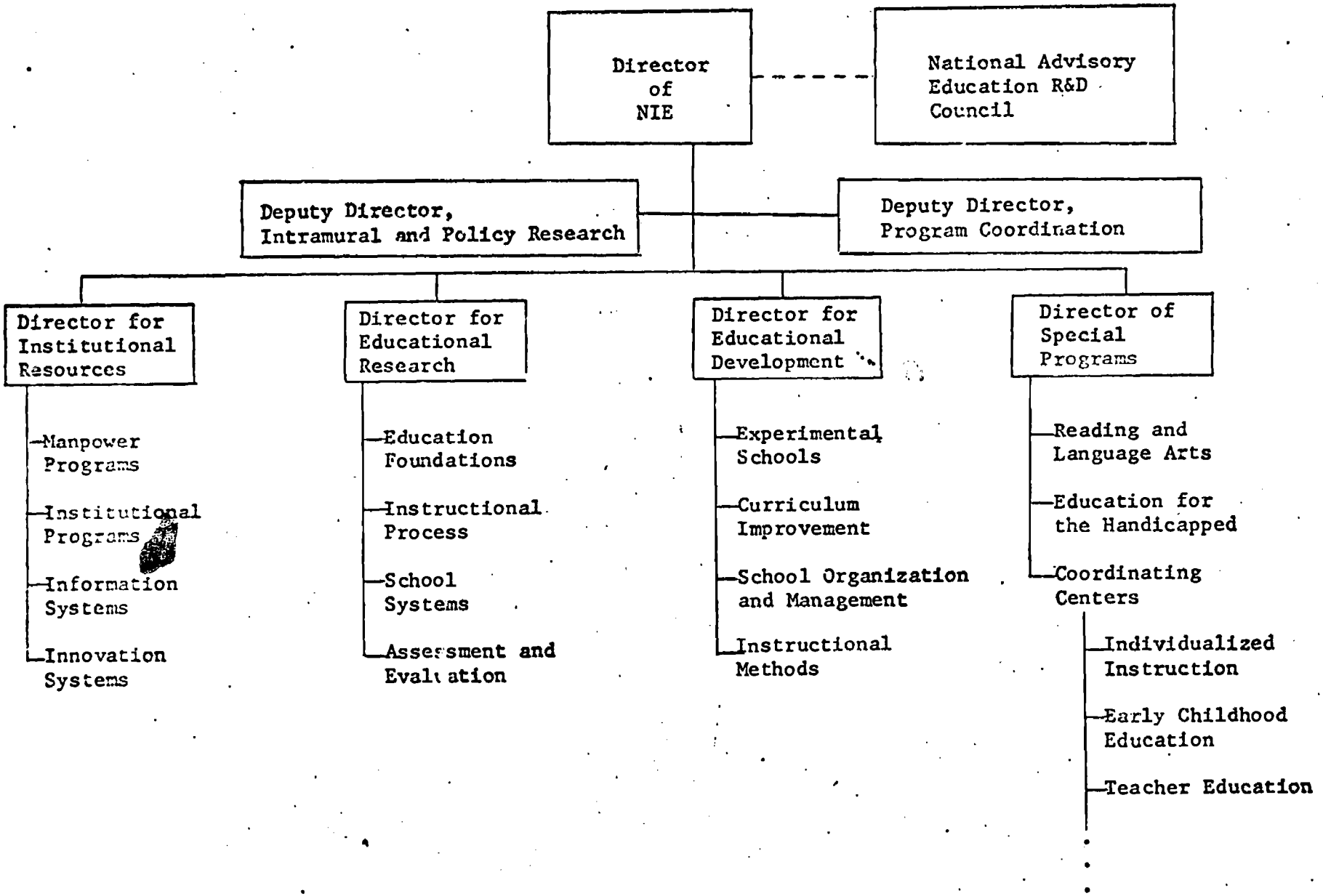
The Directorate for Educational Research would consist of four divisions:

- o A division that would (1) fund extramural projects in basic science areas relevant to education, and (2) where most projects would be done by individual investigators in universities and R&D centers, and
- o Three more divisions that would (1) extramurally fund research, experimentation, and evaluation projects on practical educational phenomena and where (2) most projects would be done by individuals and teams of individuals in a variety of settings.

The Directorate for Educational Development would also consist of four divisions:

- o A division which would fund extramural projects to develop and demonstrate innovative formats for whole schools or school systems, and
- o Three more divisions, which would fund extramural projects to develop improved curricula, instructional methods, and management techniques.

Figure 2: Organization Chart for Model I (Develop R&D Resources)



Projects in this directorate would be performed by teams of R&D and practitioner personnel in a variety of institutional settings.

The Directorate for Institutional Resources would also consist of four extramural divisions:

- o A Division for Manpower Programs.
- o A Division for Institutional Programs, which would award "block-grant" support to developing R&D institutions.
- o A Division for Information Systems, which would experiment with, develop, and evaluate educational R&D information networks.
- o A Division for Innovation Systems, which would do extramural R&D on improved means for transferring R&D results into practice.

The Directorate for Special Programs would consist of two types of organizational units: Coordinating Centers and Special Divisions. These units would be NIE's means of "spinning-off" R&D activities directed at solving important practical problems when successes in the other directorates prove the soundness of an R&D approach. In effect the Research, Development, and Resources Directorates would be "seed beds" for targeted developmental programs conducted in the Special Programs Directorate.

- o The first stage of spin-off would be managed with a Coordinating Center. Coordinating Centers would be assigned to work on a comparatively well-defined, practically important problem area in which R&D had not yet been very successful. (These problem areas would be well-defined in comparison to the problem areas of divisions in the other NIE Directorates).
- o Coordinating Centers would have no authority to fund projects or conduct R&D. The Center staff would act as a linkage team, working closely with managers in all the other NIE divisions to stimulate interesting new work and build a coordinated program of R&D studies.
- o The second stage of spin-off would be managed with a Special Division. When sufficient R&D success was obtained in a Coordinating Center its status would be elevated to a Special Division.

- Special Divisions would have full authority to fund all types of R&D projects. The Special Divisions would target developmental efforts toward solving specific problems in their problem area. As much as possible of the work would be planned programmatically.

The NIE Director's Office would have two principal deputies: (1) a Deputy for Intramural and Policy Research, and (2) a Deputy for Program Coordination.

- The Deputy Director for Program Coordination would be responsible for managing the linkage between OE and the NIE, and NIE's dissemination activities.
- The Deputy Director for Intramural and Policy Research would be responsible for conducting a program of research on the State of American education, analyze and evaluate educational policies, and recommend educational R&D program priorities to the Director of NIE.

RUDIMENTS OF OPERATION

Institutional Resources Directorate

Each of the divisions in the Institutional Resources Directorate would operate in a slightly different way.

- The Manpower Programs Division would allot funds for training grants to other divisions based on assessments of need conducted by its own staff, and priorities established by the NIE Director and the National Advisory Council on Education Research and Development.
- The Manpower Programs Division would also be responsible for evaluating the effect of the training programs conducted by the divisions.
- The Institutional Programs Division would establish categories of institutional development programs and, according to the NIE Director's and the Council's priorities, allot funds to these

categories. Proposals would be accepted in each of these categories and ranked for payment through a peer review system. All grants would be for a finite period of time.

- The Information Systems and Innovation Systems Divisions would be more aggressive in specifying project designs than the other divisions. A staff of intramural researchers would aid in project planning.

Educational Research Directorate

The divisions in the Educational Research Directorate would all operate in approximately the same way. Primary responsibility for managing all R&D activities would be delegated to Program Directors, who would have great responsibility for building a quality R&D program. The emphasis would be on finding quality Program Directors, giving them great latitude in decision-making,but holding them responsible for the quality of their program. This flexibility and responsibility enables the Program Director to find and build the top quality R&D talent.

- Each division would divide its total effort into a number of program areas. Each program area would be managed by a Program Director.
- Each Program Director would be assisted in his management responsibilities by several Assistant Program Directors so that substantial time would be spent on program planning and keeping abreast of technical progress.
- The Program Director and his Assistants would be responsible for the quality of their program and guiding it in directions relevant to practical education.
- The program management team would meet this responsibility by spending considerable time maintaining a network of contacts in the R&D community.
- The Program Director would be responsible for making the decision on which projects to support.

- Workshops and small R&D conferences run by the program management team would be prominent activities in all divisions. These activities would be used for stimulating collaboration, exchanging information, evaluating progress, and/or program planning.
- Each Program Director would have authority to award training grants in conjunction with research grants as an extra measure of control over program direction.
- Annually, the Division Director would use a number of peer panels to evaluate all the programs in his division and recommend changes in emphasis.
- The decision to initiate a new program or terminate an old one would be made by the Division Director.

Educational Development Directorate

The divisions in the Educational Development Directorate would operate in the same way as divisions in the Educational Research Directorate except that Program Directors and Assistant Program Directors would travel extensively in the practitioner community.

Special Programs Directorate

The Divisions and Centers in the Special Programs Directorate would also operate in the same way as divisions in the Educational Research Directorate except that:

- Program Directors and Assistant Program Directors would travel extensively in the practitioner community.
- The Special Divisions might assemble task-forces to plan and manage problem-solving efforts in high-priority areas.
- Each Special Division would be chartered for only five years' duration. Advisory Council approval of a new charter would be required for a Special Division to continue for another five years.

STAFF

The staffing pattern would be approximately the same in each Directorate.

- Under each Division Director, there would be a number of Program Directors, each aided by several Assistant Program Directors.
- Most of the Program Directors would originally have been accomplished R&D performers or managers and have been promoted from the ranks of Assistant Program Directors.
- Different Assistant Program Directors in each program would have different job roles. One would deal primarily with administrative matters and arrangements. Another would have responsibility for (1) linking with NCEC in the Office of Education (as a means of dissemination) and (2) linking with program directors of other OE programs. A few would do intramural research and also function as technical consultants to the program managers. The rest would assist the Program Director directly in his management responsibilities.
- The Assistant Program Directors responsible for OE coordination and the in-house technical consultants, would report respectively to the Deputy Director for Program Coordination and the Deputy Director for Intramural and Policy Research in the NIE Director's office.
- A sizable portion of the Assistant Program Director staff would be employees on temporary assignment, especially the technical consultants.
- The Deputy Director for Intramural and Policy Research would have some staff working for and reporting only to him.

LINKS WITH THE OFFICE OF EDUCATION

The primary linkages with the Office of Education would be through the program managers at the sub-divisional level and the NIE Director.

- At the request of the Commissioner of Education through the Secretary of HEW, the NIE Director could establish a division or coordinating center in the Special Programs Directorate to work on a high priority OE problem, or a special program in one of the existing Divisions.
- At the program management level, OE concerns would be transmitted to NIE management through the Assistant Program Directors responsible for NIE/OE coordination.

LINKS TO PRACTICE

There would be several linkages to practice in the Model I plan for NIE:

- The Assistant Program Director for NIE/OE Coordination would work in close relationship with counterparts in NCEC, which would be managing a nationwide network of extension agents and dissemination aids. Problems would be filtered back through this network to NIE.
- Program management from NIE divisions would travel in the practitioner community.
- Practitioners would apply to the Education Development Directorate for project support.

LINKS FOR IMPLEMENTATION

- Assistant Program Directors responsible for coordinating with NCEC would be the principal linkage.

MODEL II: Emphasizes Programmatic R&D

The two basic premises of Model II are (1) that first priority in education R&D is solving chronic national education problems, and (2) that the best management strategy for achieving success would be to determine an overall program objective and then plan and coordinate a large number of research, development, experimentation, evaluation, and implementation projects aimed at achieving that overall program objective. The overall program objective would initially be broad in scope, such as "provide equal access to education," but would be broken down into a number of sub-objectives during the planning process. In determining what projects to perform under each sub-objective, a balance would be struck between the two extremes of deductive planning, where project priorities would be logically deduced from overall program objectives, and inductive planning, where program objectives would be at best implicit in the array of supported projects.

- The programmatic approach to R&D management assumes that (1) the R&D manpower and knowledge resources relevant to a problem area available at the outset of a programmatic effort are sufficient to provide reasonable chances for success and a sound basis for decision making, and that (2) any other knowledge and manpower resources needed can be created as the need arises.
- Model II also assumes that results obtained from a nationally directed, programmatic R&D effort can be diffused into practice through coordianted implementation efforts that are part of the programmatic effort. It is assumed that permanent systems for diffusing R&D results into practice would be helpful but need not exist.

PRIMARY MANAGEMENT EMPHASES

The Model II organizational plan follows from these premises. Model II emphasizes (1) setting program objectives to guide the generation and selection of project ideas, (2) a balance of in-house and extramural

responsibility for program management, (3) a finite lifetime for each program, and (4) continuing investment in R&D resources to provide a basis for future programmatic efforts. This strategy would be accomplished by several means:

- Most of NIE's budget could be allocated to a small number of large, multiproject programs.
- Project ideas would be generated both outside NIE by extramural performers and inside NIE by intramural staff.
- Program ideas would be generated in most cases within the NIE.
- Program objectives would be set by intramural staff subject to external review.
- Each program would be managed by a finite lifetime task force of managers and researchers from other NIE programs.
- The rest of NIE's budget would be allocated to separate fundamental research, intramural research, practice-oriented research, and institutional development programs for the purpose of developing resources for future programmatic efforts.

ORGANIZATION

An organizational plan for NIE follows from these basic premises and managerial emphases. The major unit of NIE would be a Directorate for Programs, which would "house" each of the major programmatic efforts during its lifetime. Housing all the programmatic efforts together facilitates enforcing a finite lifetime on programs and using a matrix staffing policy. Another major unit would be a Directorate for Research and Development, which would have the function of generating the R&D resources (ideas and manpower) for future programmatic efforts, and for the same reasons as in Model I, would be divided by type of R&D activity. Another reason for separating the Programs Directorate and the Research and Development Directorate is that, in being separate, the Research and Development Directorate is a more unbiased source of R&D resources for new programs (that is, less committed to existing programs). The third major arm of NIE would be the Center for Education Studies, which would have the major responsibility for planning new programmatic

efforts, evaluating existing ones, and conducting policy studies--all mutually reinforcing activities and desirably separated from the more operational parts of NIE--again for reasons of objectivity.

The Directorate for Programs would contain a few multiproject, directed programs, each aimed at reaching a nationally important, educational improvement objective in a finite time period.

- Each program would consist of whatever research, development, experimentation, and evaluation projects were needed to meet the program objective.
- The detailed organizational structure would be tailored to particular needs.
- Each program would be managed by a Program Director and a Program Task Force of NIE employees.
- Each program would be advised by a Program Advisory Council of outside experts. This Council would have primary responsibility for program evaluation.
- Most of NIE's funds would be allocated to this Directorate.
- Typically, less than ten years would be allowed for program completion.

The Directorate for Research and Development would consist of three major divisions: a Division of R&D Resources, a Division of Educational Practice, and a Division of Educational Foundations.

The Division of R&D Resources would have three component offices:

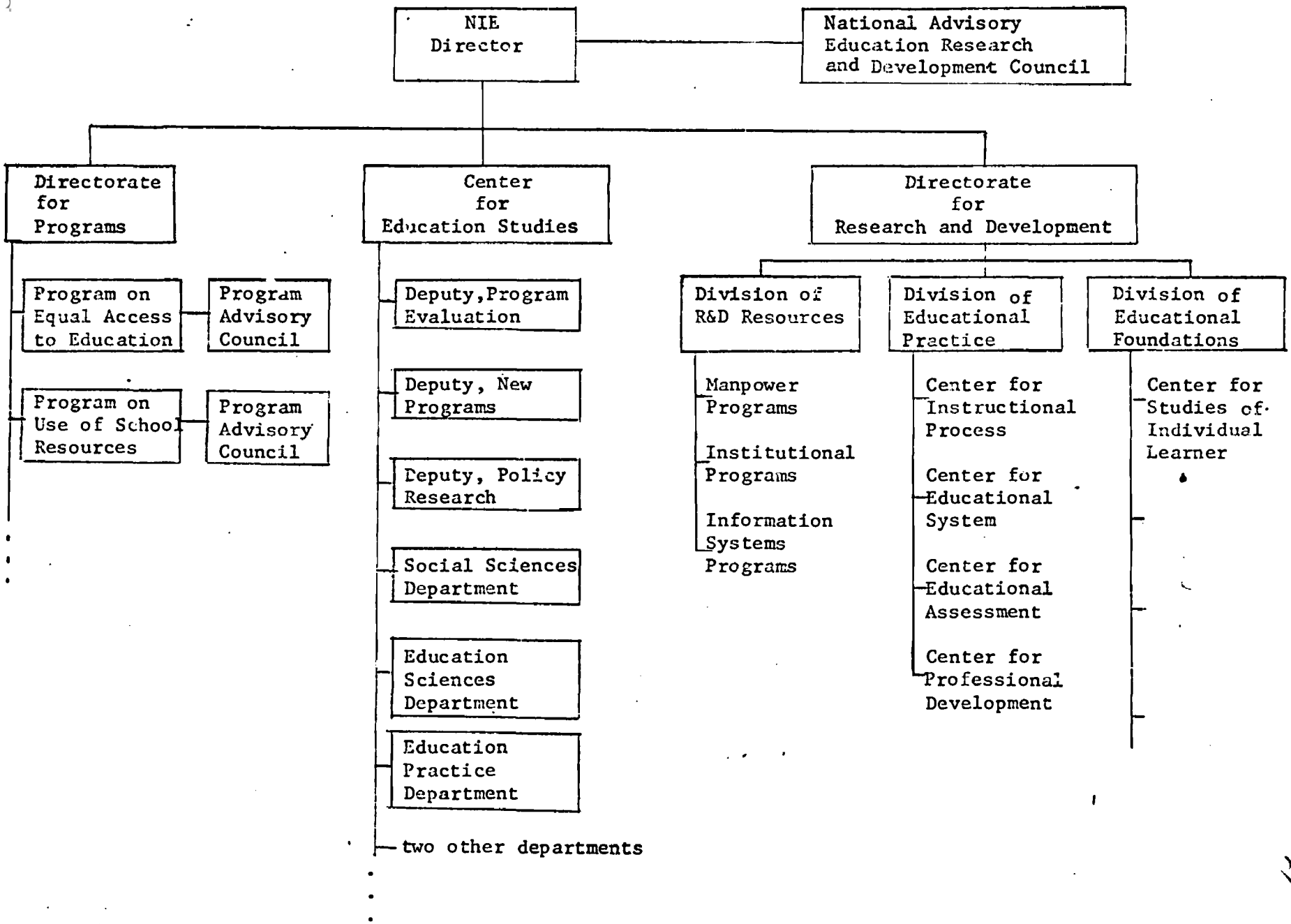
- An Office of Manpower Programs.
- An Office for Institutional Programs.
- An Office for Information Systems.

Each of these offices would work closely with the Center for Education Studies in directing support into areas and for the types of resources most relevant to future problem-solving needs.

The Division of Educational Practice would consist of four practice-oriented centers:

- A Center for Instructional Process
- A Center for Educational System
- A Center for Educatonal Assessment
- A Center for Professional Development

Figure 3: Organization Chart for Model II (Programmatic R&D)



Each center would have a number of practice-oriented R&D programs, including research, development, evaluation, and experimentation activities. Each program would consist of many projects performed by individuals or teams of investigators. Projects would not fit into a coordinated overall plan, but each Center would take action to concentrate R&D activities on a few selected problem areas judged important to NIE's present and future programmatic problem-solving efforts.

The Division of Education Foundations would sponsor peer-directed research into the fundamental relationships underlying educational phenomena. This division would apply less control over research priorities than any other part of NIE, recognizing the nature of basic research and the need for critical scholarship as a feedback mechanism for the programmatic effort.

The Center for Education Studies would be responsible for performing five functions for the NIE:

- Conducting a program of research on the state of American education.
- Analyzing educational policies at the federal, state, and local levels.
- Assisting the Program Advisory Councils in the annual evaluation of the programs in the Program Directorate.
- Proposing outlines for new NIE programmatic efforts to the Director of NIE.
- Assisting in the evaluation of projects and programs in the Directorate for Research and Development.

By fulfilling these functions the Center for Education Studies would be the principal means of feeding information on the availability of resources and the nature of education's problems to the planning process for programmatic R&D. These inputs would be gathered as a by-product of the Center's responsibilities for (1) assisting in the evaluation of programmatic efforts and (2) research and development projects, (3) doing analyses of educational policy issues, and (4) performing educational R&D.

RUDIMENTS OF OPERATION

Programs Directorate

- The initial activities on all new NIE programs would be to (1) define the target audience of the program, (2) breakdown the overall program objective to a number of more specific endpoint objectives, (3) work backward from the endpoints to sketch decision points and intermediate objectives, (4) select a program oraganization, and (5) acquire the necessary staff. These activities would be performed by the Program Task Force.
- After these initial activities program operation would be a continuing cycle of generating project ideas, evaluating project proposals, selecting projects, evaluating performance, and revising program plans until the endpoint of the program was reached.
- The Program Task Force would rely most on its own staff for project ideas, although in uncertain areas might be solicited from the outside.
- Reformulation of program plans and priorities during development and execution of a program would be the Program Task Force's responsibility.
- Most of the project work would be performed under contract.
- Project proposals would be evaluated for technical merit by ad hoc panels of NIE staff and some outsiders. The winning proposals selected by the Program Task Force.

Center for Education Studies

The Center staff would be loosely organized and free to engage in self-directed inquiry much of the time.

- Each Center staff member would belong to one of four departments in the Center.
- The self-directed inquiry conducted by the Center staff would be managed by the heads of these four subject matter departments. The department heads would be responsible for acquiring staff of the best quality whose interests coincide with NIE's

concerns.

The rest of the time, the Center staff would operate as follows:

- o During the course of its self-directed inquiry, the intramural staff would generate ideas for new NIE programmatic efforts. Some of these ideas would be carried through a pilot stage in the Center, including preliminary tests of critical propositions, resource estimation, and objective formulation. These program planning efforts would be managed by the Center's Deputy for New Programs.
- o The NIE Director and the National Advisory Council on Education Research and Development would decide on the basis of the pilot stage work what new programs to start in the Program Directorate. Many of the staff involved in the pilot phase of a program would be appointed to the Program Task Force.
- o Evaluation of ongoing programs in the Programs Directorate would also be done by Center staff working under the direction of a Program Advisory Council. The Center staff's effort would be managed by the Center's Deputy for Program Evaluation. An evaluation might involve funding independent surveys and assessments.
- o The policy research functions of the Center would be managed by the Center's Deputy for Policy Research. This Deputy would provide analysis of issues posed by the NIE Director and encourage the Center staff to prepare analyses of issues they thought were important.
- o Evaluation of ongoing programs in the Education Research and Development Directorate would be done by having a few members of the Center staff sit on the panels used by the R&D Directorate in evaluating its programs.

Directorate for Education Reserach and Development

Each of the Centers and Programs in the Education Research and Development Directorate would consist of a number of extramural R&D programs in topical areas. Each program would consist of a number of

investigator-proposed projects performed by individuals or small teams of individuals. Each program would be managed by a Program Director assisted by one or two Assistant Program Directors.

- The Program Director and his staff would determine priority problems within his topical area and disseminate these priorities to the R&D community.
- The Program Director would rely on the R&D community for project proposals.
- Based on comments mailed in by selected reviewers, the Program Director would fund the collection of projects that he thought would be best for solving his priority problems.
- The program of projects selected by the Program Director would be evaluated annually by a panel of experts for technical merit and appropriateness of program objectives. An evaluation panel would meet for five or six days per year and review the programs of three Program Directors.

STAFF

Programs Directorate

- The Program Task Force would consist of approximately ten managers and researchers, most of whom would transfer from the Center for Education Studies or the Directorate for Education Research and Development. Only a few of these Task Forces members would serve part-time in their old positions while working on the Task Force.
- Staff to the Task Force would come for the most part from other parts of NIE on a part-time basis. The expertise of intramural researchers in the Center for Education Studies and comprehensive knowledge of managers in the Education Research and Development Directorate would be the principal sources of technical information for NIE's programmatic effort.
- By participating in NIE's programmatic effort, managers would know what the critical problems were in the programmatic effort and be influenced to readjust their priorities for

extramural R&D projects in favor of these problems.

Center for Education Studies

The Center staff would be largely intramural researchers and organized in matrix fashion. The staff would be permanently assigned to one of four subject matter departments. For temporary periods the staff would be tasked to one of three Deputies for New Programs, Program Evaluation, and Policy Research, respectively.

- The Center staff would be a mixture of academically and practically accomplished professionals in all subject areas important to the NIE.
- A vigorous program of fellowship appointements awarded to academicians, practitioners, and Office of Education personnel would be undertaken to bring new ideas and talents into the NIE.
- The fellowship appointments program would also serve as an important recruiting mechanism for longer-term NIE personnel.

Directorate for Education Research and Development

- Program Directors would come most often from the ranks of Assistant Program Directors or from the Center for Education Studies.
- Assistant Program Directors would come from the Center for Education Studies, or from academic, managerial, or practitioner positions.
- Some of the Assistant Program Directors would be on temporary assignment, which would also serve as recruiting mechanisms.
- One of the Assistant Program Directors would be responsible for liaison with the Office of Education's dissemination unit, the National Center for Educational Communications, and with related OE operating programs.

LINKS WITH THE OFFICE OF EDUCATION

There are three principal links with the Office of Education in

Model II:

- At the highest management level, the Commissioner of Education could request through the HEW Secretary that NIE undertake a particular programmatic effort.
- At the program management level, the Assistant Program Directors responsible for liaison with OE would be able to relay OE problems to NIE.
- At the working level, some OE personnel would work for temporary periods in the Center for Education Studies. As the major source of ideas for new NIE programs, this linkage could be very effective.

LINKS WITH PRACTICE

- A portion of the Center for Education Studies Staff would be practitioners.
- Practitioners could be appointed to Program Task Forces or to the Task Force's staff.

LINKS WITH IMPLEMENTATION

- Implementation of results from programs in the Programs Directorate would be the responsibility of each program.
- Implementation of R&D results from the Education Research and Development Directorate would be accomplished by NCEC. Coordination between NCEC and NIE would be provided by the Assistant Program Directors for liaison in NIE.

MODEL III: Concentrates R&D Activity

BASIC PREMISE

The basic premise of Model III is that reducing the fragmentation of the educational R&D effort among a multitude of topics and a large number of independent individual investigators must be NIE's most important priority. Another premise is that an important aspect of this fragmentation in education R&D is the general lack of *in vivo* experimentation on a scale large enough to produce conclusive results. The conclusion is that higher-quality results will be obtained and, hence, greater progress will be made in education R&D if NIE considers its top priorities to be (1) concentrating both research activity and development activity on selected problems (either theoretical or practical problems) and (2) emphasizing large-scale experimentation as a means of conducting education R&D.

- Raising the quality of R&D manpower is not as critical a factor in improving the effectiveness of education R&D as changing the way education R&D is conducted. The primary change that needs to be made is getting greater numbers of personnel working together on selected problems. The intent is to realize a "critical mass" effect in education R&D, and thereby improve the quality of the R&D produced.
- The concentration of both research activities and development activities needs to be increased, and enough is known in education R&D to be successful with development efforts targeted toward producing solutions to specific educational problems.
- Greatly increasing the influence of practical concerns on the R&D effort is not of primary importance either. In fact, greatly increasing the influence of practical concerns would tend to counteract the primary objective of concentrating the R&D effort, because practical concerns occur over a very wide spectrum of need.

- Building linkages between R&D and the practitioner communities for the purpose of delivering innovations is also secondary in importance. Improving the quality of R&D produced by concentrating effort will make the task of delivering innovations easier.

PRIMARY MANAGEMENT EMPHASES

The Model III organizational plan for NIE emphasizes (1) high concentration of all R&D effort on selected problems and (2) large-scale experimentation. Concentration and large-scale experimentation are accomplished by several means:

- A sizable program of large-scale experimentation would be conducted in which project ideas and experiment designs would be generated and managed by intramural staff.
- A modest amount of programmatic R&D would be conducted (1) which would be developmental in nature; (2) which would be directed toward a few specific, clearly achievable objectives; and (3) in which most program and project ideas would be generated within NIE.
- A program of largely unsolicited extramural R&D projects would be conducted, in which NIE management exerts strong influence on R&D priorities.
- Evaluation of all NIE programs as a means of program control would be heavily emphasized. This responsibility would be assigned to an internal management unit.

ORGANIZATION

An organizational plan for NIE follows from these basic premises and management emphases. NIE's heavy responsibility for generating ideas, designing experiments, and evaluating programs requires extensive in-house technical competence, a requirement that would be met by maintaining a large, diversified intramural staff.

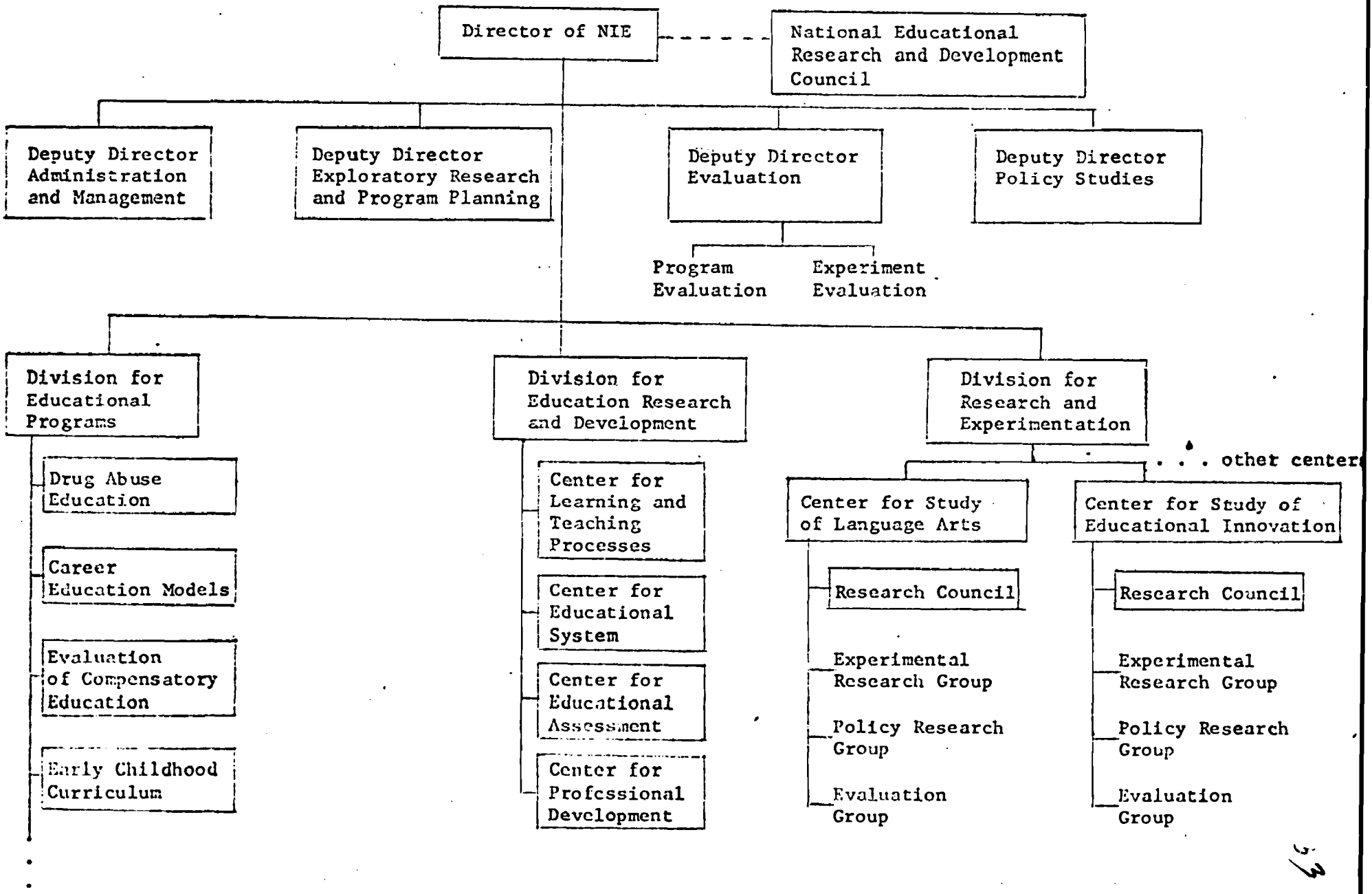
To facilitate concentration and quality performance of R&D activities, the major units of NIE would be grouped by R&D type. One unit would design and manage the educational experiments -- a task requiring specialized management skills. Another unit would be separated to manage the programmatic R&D efforts. Separation would facilitate enforcing a finite program lifetime and utilizing a matrix staffing structure. A third major unit, different in management style from the previous two units, would be the resources development arm of NIE. This unit would sponsor extramural R&D and rely almost totally on the performer community for project ideas. To further aid in concentrating R&D, all the program control functions of NIE would be performed by the Director's Office -- creating a fourth major unit. The program control functions that would be performed are: policy research, program evaluation, generation of program ideas, program planning, program evaluation, and resource allocation. To perform these functions completely the Director's Office would share intramural staff with the unit managing educational experiments.

Following this plan, NIE would consist of three major divisions (a Division for Educational Programs, a Division for Educational Research and Development, and a Division for Research and Experimentation) and, of size equal to a division, the Directorship of NIE. An organization chart appears in Figure 4.

The Division for Educational Programs would contain several, multi-project, coordinated programs each aimed at inventing a solution for a specific national education problem in a finite period of time. The programs would consist largely of strongly managed and coordinated development and implementation activities.

The Division for Educational Research and Development would contain four Centers that each manage extramural research, development, evaluation, and experimentation projects on educational phenomenon and problems of continuing national significance. Both fundamental and practice-oriented research would be conducted. Projects would be performed by individual researchers, teams of researchers, or teams of practitioners and researchers. Projects would not fit into a coordinated, overall plan; but, each Center would take on to concentrate R&D activities on a few selected problems.

Figure 4: Organization Chart for Model III (Concentrate R&D Activity)



The Office of Research and Experimentation would be the principal intramural portion of the NIE, and would concentrate on generating ideas for designing, managing, and evaluating large-scale education experiments. Experiments would all be performed extramurally under contract to NIE. The purpose of experimentation would be to increase knowledge about educational phenomena, leading to subsequent development and implementation programs.

This Office would consist of a number of Centers, each chartered to investigate problems in a particular area for a finite period of time.

The Directorship of NIE would consist of five principal parts:

- An Office for Administration and Management, which would handle all management support functions.
- An Office for Exploratory Research and Program Planning, which would be a primary source of proposals for new Centers in the Research and Experimentation Division and would develop the initial set of plans for proposed directed programs.
- An Office for Evaluation, which would be responsible for conducting periodic evaluations of NIE's directed programs and conducting and proposing evaluative research on other education programs at the federal, state, and local levels.
- An Office for Policy Studies, which would operate as a "think-tank" for education and the NIE.

Each of these offices, including the Office of Administration and Management, would have intramural staff. Most of these staffs would also be capable as managers or planners, and there would be considerable interchange with staff in the Divisions.

RUDIMENTS OF OPERATION

Programs Division

- Each program in the Programs Division would be organized in the best way to achieve its objectives.

- A variety of program planning, project idea generation, project selection, project monitoring, project evaluation, and implementation methods could be used depending on circumstances and needs.
- Each program would be carefully evaluated at least biannually by the Evaluation Office to determine what revisions should be made. No program could continue more than ten years without approval of the National Advisory Education Research Council.
- Most of the work would be conducted under research contract.

Educational Research and Development Division

Each Center in the Educational R&D Division would sponsor extramural research projects in several program areas related to the Center's concern.

- Each program would be managed by a Program Director, with, in most cases, the assistance of a peer review panel.
- The Program Director would work extensively with the panel in setting expenditure priorities and disseminating them through the research community.
- Progress in these programs would be evaluated by the Evaluation Office, but not as extensively as in the Program Division.

Research and Experimentation Division

Each Center in the Division would consist of three informal groups: Policy Research group, an Evaluation group, and an Experimental Research group. Each group would have a different responsibility in designing and managing large-scale education experiments.

- The Policy Research Group would conduct analytical, policy-oriented research related to the Center's assigned problem area. As a byproduct of this research the Policy Research Group would be a primary source of ideas for Center projects. This group would be analytically-oriented.

- The Experimental Research Group would be expert at assembling the ideas and resources necessary to conduct a large-scale experiment. This group would be action-oriented.
- The Evaluation Group would be expert in designing evaluations for large-scale experiments to assure that policy-relevant information and research knowledge would be obtained. This group would be design-oriented.
- The Center Director would act to maintain a high level of interaction between these three groups to facilitate the generation of ideas and maintain high quality in the work produced.
- Evaluations would be performed extramurally under a very closely monitored contract and experiments would be performed under a grant. Technical assistance would be provided to contractors as needed.
- Each Center would be chartered for no more than ten years. At the end of this time Advisory Council approval of a revised charter would be required.
- Each Center would be advised by a Research Council that would be primarily involved in reviewing project plans before the RFP-development stage of work begins. In effect, this decision determines the content of a Center's program.

NIE Directorship

The Directorship of NIE would operate analogously to a center in the Research and Experimentation Division in that three staff groups, each taking a different perspective, would be involved and each would have substantial intramural research activity. The Directorship's primary responsibility would be generating ideas and initial plans for programs, and evaluating the progress of the programs after they have been transferred to a Division for development and execution.

- The Exploratory Research and Program Planning Office would be encouraged to fund pilot studies, assemble problem formulation panels, and engage in other exploratory activities. This group would also be assigned responsibility for outlining programs suggested by other sources.
- Staff in the Evaluation Office and Policy Studies would critique these outlines and also be encouraged to generate their own program ideas.
- Responsibility for maintaining interaction among these three groups in the creation of program initiatives and for presenting the Director of NIE with a menu of alternatives would be assigned to a Deputy Director of NIE.

STAFF

Educational Programs Division

The management team for each new program assigned to the Programs Division would be assembled by transferring personnel from within NIE and by hiring from the outside.

- The top levels of program management would usually be the same people involved in initial program planning, who would transfer from the Directorship of NIE to the new programs. Most program personnel would work full-time on the program during its lifetime.
- At the end of a program, program personnel would transfer to positions in the Directorship or other NIE Divisions. Because of the large intramural component in the Directorship and the Research and Experimentation Division, staff flexibility would be high.

Educational Research and Development Division

Staff for the Educational R&D Division would be more permanent and almost exclusively management-oriented.

- Program managers would be responsible for working with research and practitioner communities to set priorities, stimulating R&D in these priority areas, and encouraging collaborative efforts.

Research and Experimentation Division

Staff for the Research and Experimentation Centers and the NIE Directorship would be common and organized in a matrix fashion.

- Experimental Research Group staff in the Research and Experimentation Centers would report administratively to the Exploratory Office in the NIE Directorship, but be collocated with and work at least part-time for a Center. Periodically, Experimental Research Group staff would move to another Center or work full-time at the Directorship level in the Exploratory Research Office.
- Evaluation Group and Policy Research Group staff would be similarly organized. Evaluation Group members would be "matrixed" with the Evaluation Office in the NIE Directorship, and the Policy Research Group "matrixed" with the Policy Studies Office.
- Most of these staff members would have a problem area or discipline competency and be capable of doing quality analytical work, few would be primarily managers.

LINKS WITH THE OFFICE OF EDUCATION

The primary linkages with the Office of Education would be through the Directorship of NIE.

- Requests from the Commissioner of Education for specific R&D products (such as Career Education curriculum models) would be considered for addition to NIE programs by the NIE Director and the National Advisory Council. Initial program planning would be done by a team composed of staff from the Exploratory Research and Program Planning Office and personnel from the Office of Education.

- The Evaluation Office in the NIE Directorship could conduct evaluations of Office of Education programs at the request of the Secretary of DHEW or the Office of Education.
- In conducting policy research on education problems, the Office of Policy Studies would necessarily consider possible new policies for the Office of Education either at the request of OE or the Office's own initiative.
- Office of Education personnel would be assigned sabbatic terms in NIE's Policy Studies Office or the Research and Experimentation centers.

LINKS TO PRACTICE

Linkages to practice would be largely indirect in the Model III plan for NIE:

- Practitioners would apply to the Educational R&D Division for support to conduct an R&D effort.
- Practitioners would be included on the program management teams in the Development Programs Division.
- Practitioner representatives would serve on the National Advisory Council.
- Some of the program managers in the Educational Research and Development Division would maintain a network of contacts in the practitioner community.

IMPLEMENTATION OF R&D RESULTS

Each Division of NIE would have different means for implementing R&D results.

- The responsibility for implementing the results of programs in the Educational Programs Division would be with each program.
- Results from projects in the Educational Research and Development Division would be distributed to the national network of Renewal Centers and other diffusion systems managed by the Office of Education.

- Successful experiments developed by the Research and Experimentation Division would be transferred to another federal, state, or local agency to be run as demonstration sites and the center of a diffusion effort, or converted into programs in the Educational Programs Division.

MODEL IV: Solves Practical Problems Nationally

BASIC PREMISES

In Model IV, the assumption is that NIE's most important priority is applying R&D effort to help solve the continuing, practical problems which are common to education across the country. It is also assumed that maximum progress toward this goal will be made if the full range of R&D activities -- basic research, practice-oriented research, development, experimentation, programmatic R&D, and manpower and institutional development -- are closely coordinated toward the overriding objective of solving practical problems. The presumption is that basic researchers will not choose problems whose solutions are very relevant to making improvements in practice unless strongly influenced by pressures from outside the research community. The presumption is also that educational developers and program managers will not seek out and make use of research results in creating improvements for practice unless these results are made more available through managerial actions. Furthermore, the presumption is that for national-level problems, R&D activity will be much better coordinated, and therefore more effective in solving problems, if the coordination is done at the national level. In summary, the basic premises are that if all research and development activities could be more closely coordinated with each other at the national level and applied to the solution of practical problems, then maximum progress would be made toward NIE's primary objective of solving national-level practical problems.

- Building the quality and quantity of available R&D manpower and institutional resources is not primary for much can be done with what exists. R&D resources do need to be increased, but the building effort should be managed to support NIE's practical concerns.
- Concentrating R&D activity on a few problems is not of utmost importance, either. There is a great variety of practical problems , and few of these problems are more clearly solvable with

R&D or a particular approach to R&D than others. No better progress can be expected in the long run by directing most of the R&D effort to a few of these problems than by simultaneously trying many approaches to many problems, and emphasizing the ones that work best.

- Building extensive linkages to practice is not crucial to NIE problem-solving effort either. Problems can be diagnosed without an extensive network of feedback linkages, and solutions can be implemented through efforts organized separately from NIE.

PRIMARY MANGEMENT EMPHASES

The Model IV plan for NIE follows from these premises. Model IV emphasizes: (1) national level coordination of all R&D activities toward the solution of practical, educational problems, (2) a balance of extramural and inhouse responsibility for management, (3) continuing rather than finite programs R&D, and (4) modest investiment in R&D manpower and institutional resources as a means of furthering NIE's problem-solving objective. This plan would be accomplished by several means:

- Most of NIE's budget would be allocated to a comparatively large number of continuing, extramural R&D programs.
- Each R&D program would be free to support the full range of R&D activities.
- Program and project ideas would be generated for the most part by the performing community (1) to take advantage of the great variety of skills in the performer community and (2) because many of these performers are "close" to the actual problems.
- Programs and projects would be selected at the national level by program managers to achieve better coordination of all the relevant R&D activities toward NIE's problem-solving objective.

- NIE would be predominantly an extramural agency although a small amount of intramural research would be done to support program management.
- Each program would have some authority to invest in R&D manpower and institutions.

ORGANIZATION

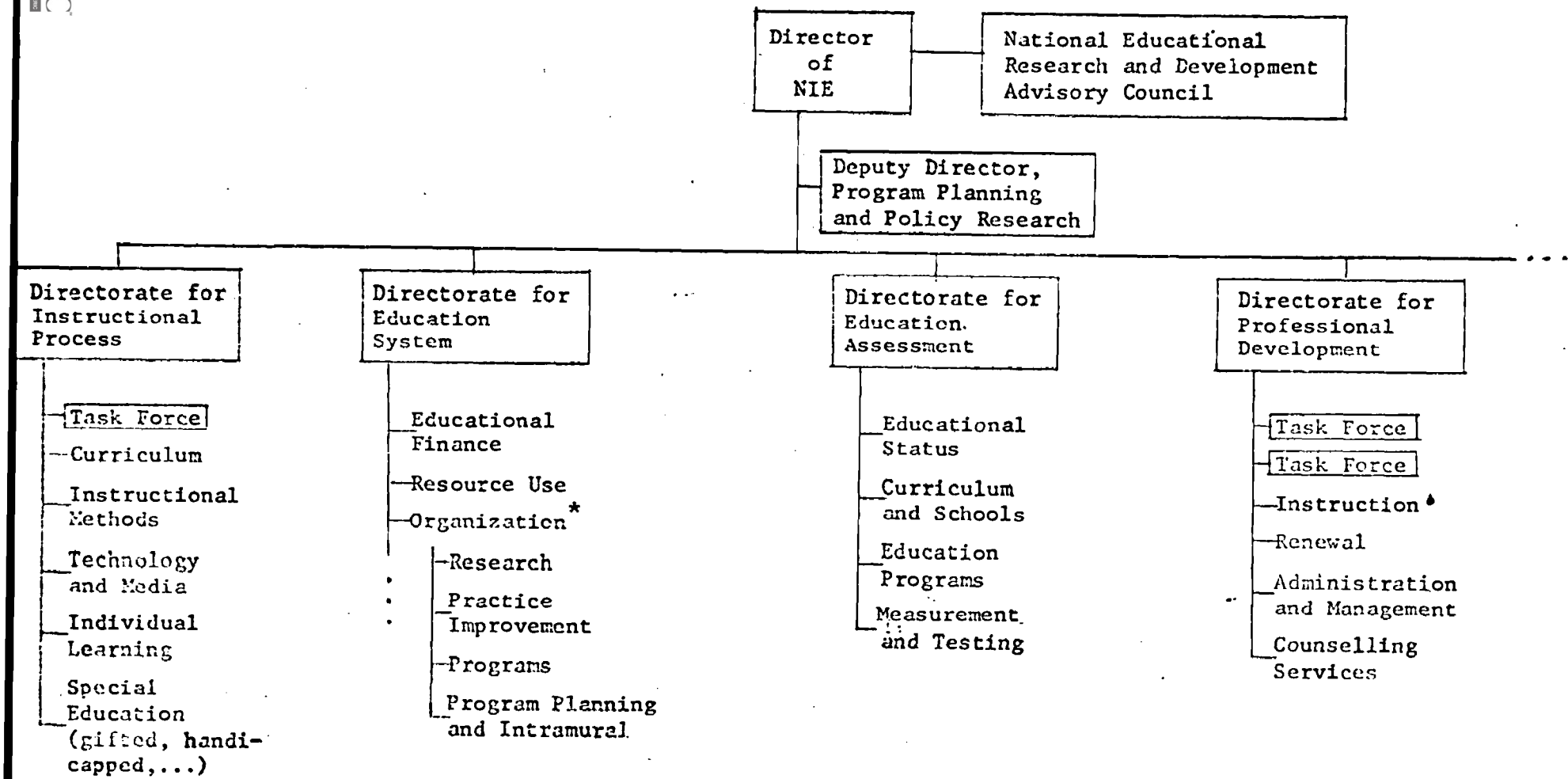
The Model IV organizational plan follows from these premises and managerial emphases. The overriding objective of making all R&D activities responsive to practical concerns can be achieved by dividing the NIE by educational problems at both the top and the second level of organization and giving each unit at the second level full authority to sponsor all types of R&D activity -- research, development, experimentation, directed programs, and resource development. Most of the second level units would also conduct a small amount of intramural research as a means of analyzing where its resources should be allocated. The organization resulting from this plan is very much more homogenous across every management unit than any of the previous plans for NIE. Each second level (1) supports all types of R&D activity, (2) works on an educational problem, and (3) follows a similar management strategy. Each of these second level units is called a Program Area.

Following this plan NIE would would consist of several major units (called Directorates), each one named for a class of educational problems. Each Directorate would be further divided into a number of Program Areas. One taxonomy of NIE into major units and Program Areas appears in Figure 5a. Clearly, many others are possible.

Since each of the Directorates and Program Areas are managerially and organizationally homogeneous, the organization and management of Directorates and Program Areas can be discussed generically. Therefore, we depart from the previous format in presenting the organization and management of Model IV.

Each Program Area would be headed by an Area Manager, who would have overall responsibility for (1) allocating the budget in his area to all R&D activities, (2) maintaining the quality of these R&D activities, and (3) coordinating the work in his Area with other Areas.

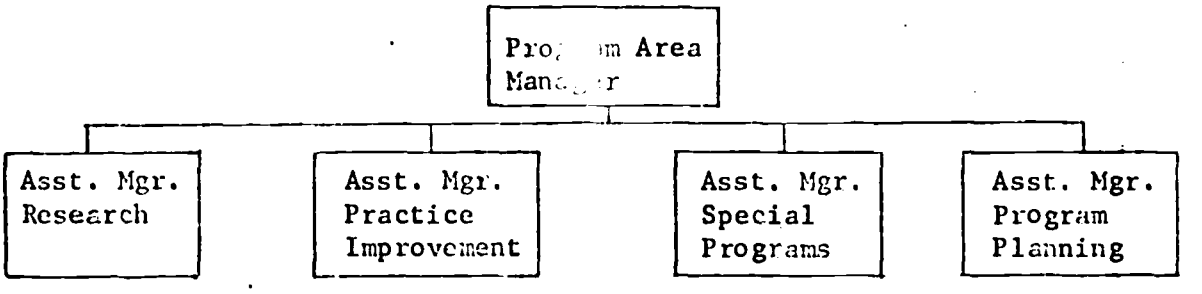
Figure 5a:. Organization Chart for Model IV (Solves Practical Problems Nationally)



* All program areas have a similar sub-structure to the "Organization" program area.

Five Assistant Managers would report to each Area Manager. These Assistants would be for Research, Practice Improvement, Programs, and Program Planning. Each Assistant would be aided by one to several professional staff members. Thus, the organization of most Program Areas would be as shown in Figure 5b. The activities supported by each

Figure 5b: Organization Chart for a Program Area



of these units would be as follows:

- o Research -- extramural, basic studies on topics relevant to the problems being addressed in the Program Area.
- o Practice Improvement -- practice-oriented research, development, small experiments, and evaluation of the continuing practical concerns of education.
- o Special Programs -- programmatically planned extramural efforts to solve particular problems, large-scale experiments, and responsibility for disseminating all results produced by the Program Area.
- o Program Planning -- intramural research, policy research, and program analysis for the Program Area (a completely inhouse activity).

The Program Areas would not necessarily be organized by R&D function but grouping responsibilities by R&D function at some level in an organization is probably essential for management efficiency. Otherwise, every manager would have to be expert in managing each type of R&D activity -- a difficult role switch for most people.

In general, the Program Areas would have the following characteristics:

- A high level of interaction among the staff within an Area to coordinate R&D activity and assure problem relevancy.
- A lower level of interchange between staff in different Program Areas, although some staff-level interchange would occur on an informal basis.
- A budget level of $10 million per year for most Program Areas.
- A relatively long lifetime for each Area, although successful ones might be elevated to Directorates.
- Greater emphasis on research in some Areas than in others reflecting the effectiveness of research in those Areas.
- Greater emphasis on programmatic R&D in some Areas reflecting needs and the state of knowledge.

Each Directorate of NIE would be headed by an Assistant Director of the Institute. The responsiblities of each Directorate would be:

- Approving the program plans of the Program Areas.
- Establishing Task Forces to plan and implement programmatic efforts requiring contributions from staff in several Program Areas. The Task Forces would be staffed with personnel from any Program Areas in the NIE having the expertise needed, and would not be limited to one Directorate.
- Deciding when to add a new Program Area.
- Allocating the Directorate's budget to Program Areas.

The Office of the Director of NIE would be simply organized. The Director's principal assistant would be a Deputy Director for Program Planning and Policy Research. The Deputy Director would have a number of professional program analysts and intramural researchers on his staff. This Deputy would have three primary responsibilities: (1) analyzing each Area's program of activities, (2) recommending changes to the Assistant Directors and Areas Managers, and (3) conducting policy research on the state of American education and recommending priorities to the NIE Director.

One or two members of the Deputy Director's staff would be collocated with each Program Planning staff in each of the Areas to faciltiate communication and avoid adversary relationships between the Area Managers and the Deputy Director. The Deputy Director would be more a coordinator of NIE programs than an evaluator of NIE programs. The Deputy Director's office would be the principal means of linking the activities of the Program Areas together.

RUDIMENTS OF OPERATION

Each Program Area would operate in approximately the same way:

- The Area Manager and Assistant Area Managers would decide collectively on program priorities. These priorities would be disseminated to the performer community by the Assistant Area Managers.
- In setting priorities, the Area Managers would be assisted analytically by the Program Planning staff.
- Except for an Area's programmatic efforts, project ideas would be generated by the performer community and submitted as proposals.
- On programmatic efforts many project ideas would be generated by the Area staff.
- Proposals would be ranked for technical merit by peer panels for all extramural activities.
- The final project selection decision would be made collectively by the Area Manager and the Assistant Area Managers sitting as a review panel.
- Progress on all programs would be assessed periodically by the Program Planning staff.
- One or two staff members from Office of the Deputy Director for Program Planning and Policy Research would be collocated with the Area Planning staffs and would aid the Planning Staff in this progress review.
- The Area staff would travel extensively in the R&D and practitioner communities as a principal means of understanding the nature and extent of education problems.

- The Area staff would sponsor many workshops and formatted conferences as means of learning about practical problems and coordinating R&D efforts.
- As an additional lever over the application of R&D effort to practical problems the Area Manager would have a limited amount of funds to spend on training grants and institutional support.

STAFF

- Area Managers would for the most part be chosen to have an education-problem orientation.
- A significant portion of the intramural staff in each Area would be on temporary assignment from other R&D institutions.
- A portion of the intramural staff could be practitioners on temporary assigment.

LINKS WITH THE OFFICE OF EDUCATION

Linkages with the Office of Education would occur primarily at two levels within the respective organizations:

- At the level of the NIE Director and Commissioner of Education, agreement would be obtained through any of a variety of coordinating mechanisms on whether new Directorates should be established or whether cross-area Task Forces should be developed in response to high priority education needs.
- At the level of program management, OE/NIE communication would take place between the NIE Assistant Area Manager responsible for implementation (the Assistant Area Manager for Special Programs) and NCEC communication and extension program managers.

LINKS TO PRACTICE

Links to practitioners would also occur at different levels and through different intermediaries.

- Practitioners would apply for project support.
- Area staff would travel extensively in the practitioner community.
- Area staff would invite practitioners to participate in conferences and workshops.
- Practitioners would serve on temporary appointment as intramural staff.

LINKS FOR IMPLEMENTATION

- Assistant Area Manager responsible for coordination with NCEC would be the principal linkage.

MODEL V: FEEDS BACK PROBLEMS TO R&D

BASIC PREMISES

In Model V, as in Model IV, the assumption is that NIE's most important priority is applying R&D effort to help solve the continuing, practical problems common to education across the country. And, as in Model IV, the premise is that both research and development need to be carefully coordinated in service to the overall objective or neither activity will work maximally to the benefit of the other and to the solution of practical problems. Models IV and V differ in the management strategy presumed best to achieve these results. One basic premise in Model V is that research activity and development activity will be of much greater quality and still responsive to practical needs, if managed as separate activities but coordinated, or linked together, by a team of separate organizational unit.

A second basic premise of Model V is that the R&D effort will be more effective in solving problems if it is strongly linked into the practitioner community. Linkages to practitioners would be a means of knowing what problems are important for R&D to solve, and whether or not the solutions being produced by R&D are effective in practice. The same organizational unit used to link research and development together can be used to feed back educational problems to R&D.

- Complete integration of R&D functions by mixing all types of R&D activities together under managers responsible for solving specific problems runs the risk of forcing research to survive in an environment of short deadlines and demands for practical products, which is usually a debilitating environment for research.
- Complete separation of R&D functions by managing each type of R&D with a separate, especially designed organizational unit runs the risk of having no mutual interaction between the performers of the different types of R&D, which would be detrimental to the overall quality and effect of the R&D.
- A sound solution to this dilemma is to manage the R&D functions separately but assign responsibility for coordinating the separated R&D functions to an auxiliary, coequal organizational unit.

- Building the quality and quantity of available R&D manpower resources is not a primary objective of the NIE, but it can be a useful tool of the organizational unit responsible for coordinating R&D activities.
- Concentrating R&D activity on a few problems is not of utmost importance, either. There is a great variety of practical needs, and few of these problems are more clearly solvable with R&D or a particular R&D approach than others. No better progress can be expected in the long run by directing most of the R&D effort to a few problems than by stimulating many approaches to many problems and emphasizing the approaches that work best.
- It is essential for NIE to build linkages to practice for feeding-back to R&D (1) assessments of educational problems, and (2) the effectiveness of NIE's products, but widespread building of linkages for the purpose of implementing NIE's products is not essential.

PRIMARY MANAGEMENT EMPHASES

The Model V plan for NIE follows from these premises. Model V emphasizes: (1) national level coordination of most R&D activities toward the solution of practical problems, (2) careful attention to coordinating the interaction between performers of various R&D functions, (3) a sizeable, though decentralized, intramural program as a means of coordinating R&D activities, (4) use of a planning staff to feedback problems from practice to R&D, (5) a balance of external and NIE-inhouse responsibility for program management, and (6) mostly continuing rather than finite and highly directed R&D programs. This plan would be accomplished by several means:

- Roughly half of NIE's budget would be allocated to a number of continuing extramural R&D programs.
- Most of the rest of NIE's budget would be allocated to a number of regional development laboratories and R&D centers. The latter would be collocated with universities.

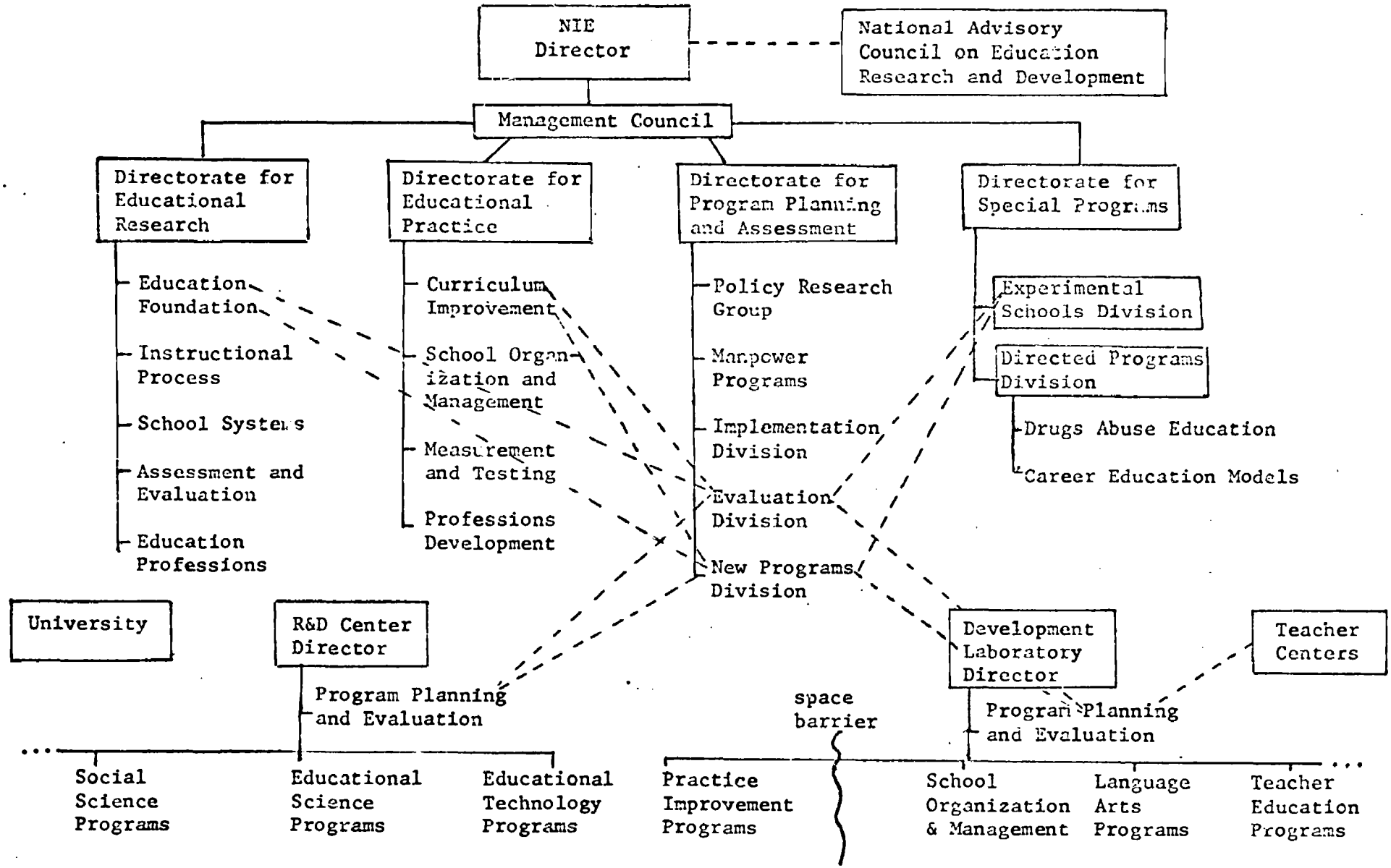
- The program of activities in these laboratories and centers would be strongly influenced by NIE priorities, but also by the priorities of the laboratories and centers.
- A distinct planning staff in NIE would be responsible for diagnosing practical problems and translating these diagnoses into NIE R&D priorities and programs. To facilitate this coordination, a portion of the NIE planning staff would be located in the laboratories and centers, and in NIE's extramural management units.
- The management mechanism of collocating some personnel from one R&D organization in another R&D organization would be frequently used as a means of coordinating geographically or managerially separated R&D activities.

ORGANIZATION

An organizational plan for NIE follows from these basic premises and managerial emphases. To facilitate producing the highest quality R&D results, the major units of NIE would be divided by type of R&D managed. The types of R&D managed would be fundamental and practice-oriented research, development, large-scale experimentation, and directed R&D. To facilitate coordinating R&D activities, each major unit would manage a number of education laboratories or centers located across the country. Coordination would also be facilitated by an additional major organizational unit of the NIE responsible for diagnosing educational problems and translating them into R&D priorities for the other major units. By separating activities in this way, managerial policies can be optimized to produce the best quality of R&D, and still maintain program coordination. Thus, the Model V plan for NIE is both highly differentiated (by R&D function) and highly integrated (that is, coordinated).

Following this reasoning the NIE would consist of four major directorates: a Directorate for Educational Research, a Directorate for Educational Practice, a Directorate for Program Planning and Assessment, and a Directorate for Special Programs. A diagram of the organization appears in Figure 6.

Figure 6: Organization Chart for Model (Feedback of Problems to R&D)



The Directorate for Educational Research would consist of five divisions:

- A division that would (1) fund extramural projects in basic science areas relevant to education, and (2) where most of these projects would be done by individual investigators in universities, and
- Four more divisions that would (1) extramurally fund research, experimentation, and evaluation projects on practical education problems, and (2) where most of these projects would be done by individuals or teams of individuals in a variety of settings.

The Directorate would also manage a number of R&D Centers collocated with universities that would conduct studies of the same type as the extramural projects. Approximately one-half of the Directorate's budget would be spent in the Centers.

The Directorate for Educational Practice would consist of four divisions that would fund extramural projects to develop improved curricula, instructional methods, and management and evaluation techniques. These extramural projects would be performed by teams of R&D and practitioner personnel in a variety of institutional settings. The Directorate would also manage a number of Development Laboratories located across the country that would conduct programs of the same type. To facilitate communication between the R&D centers, which would be research-oriented, and the Development Laboratories, which would be development-oriented, a portion of the Development Laboratory staff would be collocated with R&D centers. Approximately half of the Directorate's budget would be spent on the Laboratories.

The Directorate for Special Programs would have two organizational units:

- An Experimental Schools Division, which would fund extramural projects to develop and demonstrate innovative formats for whole schools or school systems, and
- A Directed Programs Division, where programmatic efforts to solve specific education problems would be managed. Each of these programmatic efforts would be a finite series of

extramural projects planned by inhouse staff.

The Directorate for Program Planning and Assessment would perform the systems coordination function of translating problems uncovered in the field to NIE research priorities. The Directorate would consist of five divisions--each comparatively homogeneous in function but grouped together for mutual benefit:

- A Policy Research Group, which would sponsor assessments of the state of American education and conduct a program of studies on educational programs and policies.
- A Manpower Programs Division, which would award monies for training R&D personnel in subject areas of greatest need.
- An Implementation Division, which would coordinate the implementation of NIE's R&D results with whatever innovation system existed.
- An Evaluation Division, which would work with the other Directorates in conducting assessments of all NIE programs and recommend improvements.
- A New Programs Division, which would work with the other Directorates in revising R&D priorities and identifying key project needs and opportunities.

In both the Evaluation Division and the New Programs Division, much of the staff would be collocated with R&D managers in the Directorates and managers in the R&D Centers and Development Laboratories. These two divisions, the Evaluation and New Programs, Division would be the principal feedback mechanism for translating education problems into nationwide R&D priorities.

The Management Council of NIE would consist of all four heads of the Directorates (Assistant Directors of the NIE) and the Director of NIE. The Council would meet frequently to approve program plans and evaluation recommendations for the whole Institute.

RUDIMENTS OF OPERATION

Directorate for Educational Research

The five divisions in the Educational Research Directorate would all operate in approximately the same way.

- Each division would be divided into four or five program areas that would form a basis for planning. Each program area would be managed by a Program Director.
- Each Program Director would be assisted in his management responsibilities by one or two Assistant Program Directors, so that considerable time would be spent stimulating research projects in priority areas and keeping abreast of technical progress. Each Program Director would also be assisted in program planning and evaluation by staff from the Program Planning Directorate -- an arrangement which will be discussed in more detail shortly.
- The Program Director and his Assistants would be responsible for the quality of their program and guiding it in directions relevant to practical problems.
- On the average, half of the Program Director's projects would be performed in R&D Centers collocated with universities.
- The rest of the Program Director's projects would be extramural. Unsolicited and stimulated proposals would be evaluated with the assistance of mail reviewers. The decision on which projects to support would be made by the Program Director.
- A similar procedure would be employed with R&D centers. The basic unit of planning would be a Research Work Unit (RWU). On the initiative of a team in the R&D Center or the Program Director, a "charter" would be drawn up specifying the research goals, intermediate objectives, resources, and approaches that a team in the Center would employ in working on a problem. Charter would last for five years, but would often be rewritten during that time depending on research outcomes and changing priorities. All RWU charters would have to be approved by the Assistant Director for Educational Research.

- A Program Director could have RWU's in several R&D Centers.
- The R&D Centers would be encouraged to develop other sources of support, but forbidden from applying for extramural projects.
- Each Division would maintain a peer panel of extramural researchers to semiannually review all new RWU's and extramural projects awarded during the previous period with regard to the appropriateness of research objectives and estimated quality. The panel's comments would be a check on the Program Director's performance and decisions.

Directorate for Educational Practice Improvement

The divisions in the Educational Practice Directorate would operate in the same way as divisions in the Educational Research Directorate except that Educational Laboratories instead of R&D centers would perform RWU's.

Educational Laboratories would be development-oriented facilities located away from universities. Education Laboratories would be strongly encouraged to build mutual support relationships with school districts and Teachers Centers, and in general become a problem-solving resource for a geographic region.

To coordinate the flow of information and problems between research and development, a small portion of the Laboratory staff would be collocated with one or more R&D Centers. Also, RWU's could be supported in R&D centers.

Directorate for Special Programs

The Experimental Schools Division would also work in the same way as divisions in the Research Directorate. RWU's would be supported in both R&D Centers and Education Laboratories, but would be a much smaller proportion of total Division activity than in the other Directorates.

The Directed Programs Division would operate and be staffed in the same way as the Educational Programs Division in Model III. Task Forces staffed from NIE and the outside would plan and fund a series of projects aimed at producing a solution to a specific problem.

Directorate for Program Planning and Assessment

Each of the five groups in the Directorate for Program Planning and Assessment would have a different functional responsibility, but group managers would take extra care to maintain a high level of informality and personal interaction between the groups as a crucial factor in successfully coordinating NIE's R&D activities.

The Policy Research Group would operate as a "think tank" for education and produce analyses of educational R&D policies.

The Manpower Programs Division would stimulate and fund R&D manpower training projects at locations where educational R&D is being performed. The Manpower Group would work closely with the Evaluation Division and the New Programs Division to target training monies into areas of greatest need.

The Implementation Division would consist of a number of staff people responsible for coordinating the flow of R&D results from the other NIE directorates to the agencies responsible for educational innovation.

The Evaluation Division would be much larger than the previous three divisions in the Planning Directorate.

- The Division would be divided into a number of program categories that cut across a number of programs in the other directorates.
- Each program category would be headed by a Program Manager.
- The Program Manager and his staff would be responsible for monitoring extramural projects and RMU's conducted in the R&D Centers and Laboratories for the purpose of: (1) diagnosing problems encountered during project performance, (2) recommending changes in program direction, and (3) notifying the Implementation Division of R&D results.
- The Program Manager's staff would be skilled as (1) subject matter specialists and (2) working with project teams in a cooperative relationship.
- A sizable portion of the staff would be distributed throughout

other NIE organizational units; one or two in each R&D Center and Laboratory and one or two with each Program Director.

- The principal channels for implementing recommendations would be: (1) through the Evaluation personnel collocated with program personnel directly to the program personnel, and (2) through the Evaluation Director to the Management Council.
- The Management Council would meet frequently to consider program planning and evaluation issues and decide on courses of action for the Directorates to follow.
- The Evaluation Division would have authority to fund independent evaluations of NIE programs and projects upon approval of the Management Council.

The New Programs Division would operate and be staffed in much the same way as the Evaluation Division. The major differences would be as follows:

- The Division would be responsible for: (1) diagnosing educational problems and translating them into R&D programs and projects, and (2) assessing the rank ordering of importance among these educational problems.
- The Division staff located in the R&D Centers and Laboratories would maintain a network of contacts in the research and practitioner communities respectively as a means of detecting needs and opportunities for new programs.

STAFF

The staffing pattern would be roughly the same in the Research and Practice Directorates.

- Under each Division Director, there would be a number of Program Directors, each aided by one or two Assistant Program Directors and one or two staff members from the Evaluation Division and the New Programs Division.

- Most of the Program Directors and assistants would originally have been accomplished R&D performers or managers.

The Evaluation Division staff and New Programs Division staff would include some intramural researchers as sources of inhouse technical competence.

- Many of these intramural researchers would be visitors on temporary tour of duty.

LINKS WITH THE OFFICE OF EDUCATION

The primary linkages with the Office of Education would be through the NIE Director and the New Programs Division.

- At the request of the Commissioner of Education through the Secretary of DHEW, the NIE Director could bring program requests to the Management Council.
- The New Programs Division could locate a number of its staff in the Office of Education's Office of Program Planning and Evaluation.

LINKS TO PRACTICE

There would be several links to practice in the Model V plan for NIE:

- The Education Laboratories through cooperative relationships with local education agencies would provide taps into practice.
- The New Programs Division staff would maintain a network of contacts in the education community, including Teacher Centers and other renewal groups.
- Practitioners could apply for project support from the Educational Practice Directorate.

LINKS TO IMPLEMENTATION

- The Implementation Division would coordinate implementation of NIE extramural results and results from the Laboratories and Centers.

MODEL VI: Solves Practical Problems Regionally

Model VI has not been completed. Model VI will consist of a number of regional R&D laboratories supported by formula grant from the federal government and a matching amount from state and local sources. Federal influence on program direction would be through evaluation activities and funding of special, high priority projects to solve urgent problems.

MODEL VII: Builds Linkages to Practice

BASIC PREMISE

The basic premises of Model VII are that (1) building linkages between R&D and practitioners is the crucial problem facing NIE and that (2) having practitioners themselves select and perform R&D projects within (3) a decentralized management structure is the best way to build these linkages. The presumption is that educational developments are more likely to be accepted and used in schools if practitioners are heavily involved in selecting and performing R&D projects. The presumption is, also, that because of significant geographical and socioeconomic differences in values, resources, and organization, development in education is inherently a localized process of organizational change and practitioner development. These presumptions deny that most educational developments can be created at the federal level and marketed nationwide.

- Leading practitioners are ahead of education researchers in their ability to create innovations which advance the state of practice. Therefore, the involvement of practitioners in selecting and performing R&D projects will produce high-quality R&D, and there is no need to emphasize the improvement of R&D manpower as NIE's primary objective.
- However, the R&D produced by practitioners will be better understood and more transferable to other practitioners if the practitioners are teamed with R&D specialists in performing R&D projects. These specialists will come from universities and other parts of the education R&D system managed by NIE.

PRIMARY EMPHASES

The Model VII organizational plan for NIE emphasizes program planning and decision-making by committees of practitioners, and performance of R&D projects by teams of practitioners and R&D specialists.

- Practitioners and school administrators are heavily involved in stimulating research and development proposals, planning R&D programs, and allocating the budget for R&D.

- The R&D budget is allocated at the regional level by Regional Councils of practitioners.
- The Regional Councils are assisted in program planning and evaluation by (1) a full-time professional staff, (2) a regional Director, who directs the professional staff, and (3) subcommittees of practitioners responsible for planning.

ORGANIZATION

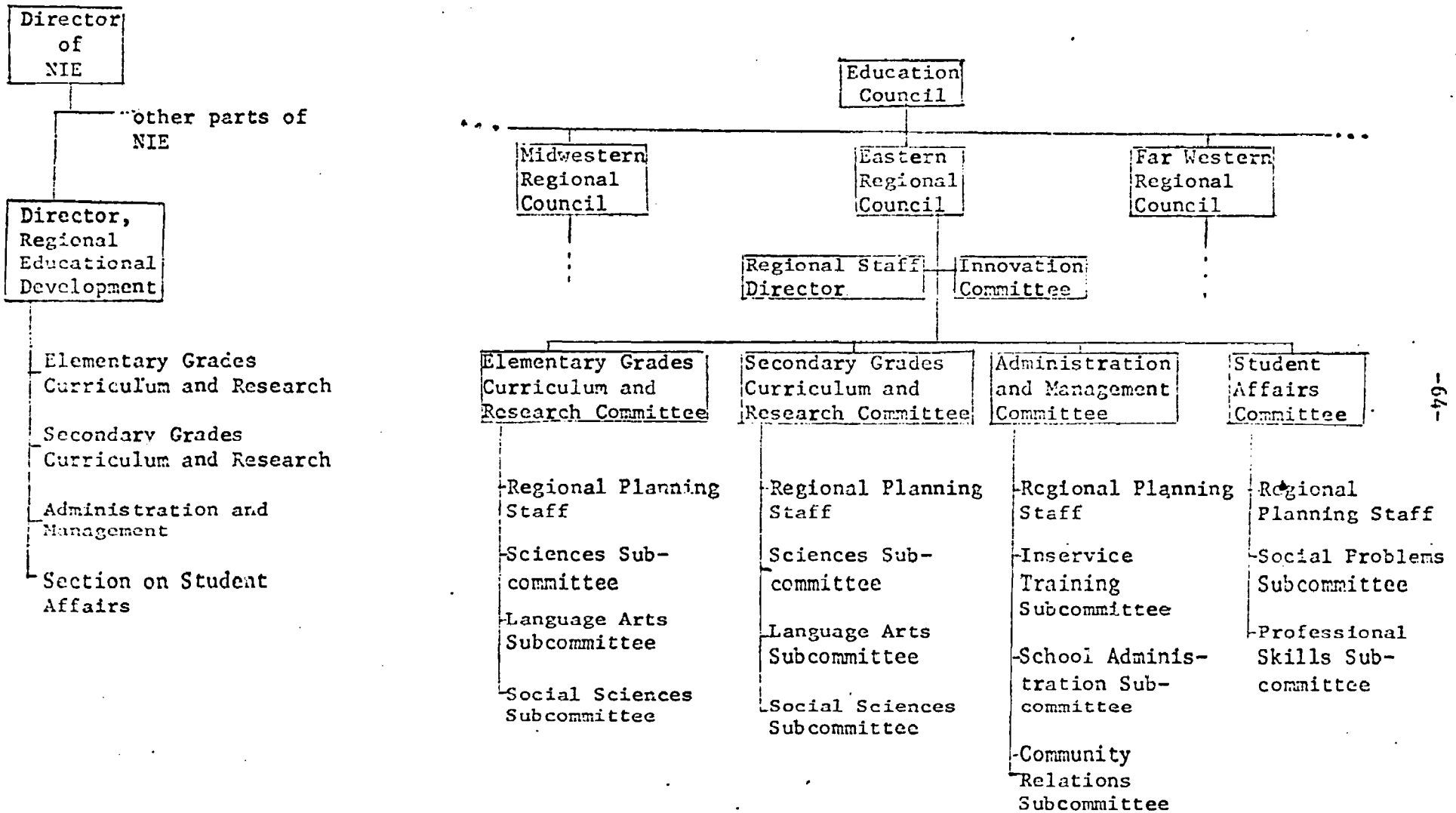
The Model VII organizational plan for NIE follows from these premises and managerial emphases. Recognizing the importance of local differences in educational needs, resource allocation is highly decentralized. And, recognizing the technical contributions that practitioners can make to educational development, and the authenticity that practitioners would give to the development process, resources are allocated by Councils of practitioners. To aid in planning and evaluation the Councils would be assisted by full-time professional staff.

The Model VII organizational plan for NIE consists of four layers of regional committees of practitioner and citizen representatives. The two layers at the bottom allow for separation of responsibility for program planning and resource allocation, which increases both objectivity and participation. The two layers at the top are for intra- and inter-regional coordination. The practitioner committees would be assisted at the regional level by a Regional Planning Staff and at the national level by the NIE's Regional Education Development staff.

The topmost committee would be the Education Council. Below this Council would be eight Regional Councils, one for each of eight (or more) regions into which the county is divided. The Regional Councils would be advised by four or more Subject Matter Committees in selecting R&D projects. R&D projects would be planned and stimulated by a number of practitioner subcommittees.

The nationwide R&D effort would be divided into twelve (or more, as desirable) program areas. Each Regional Council would have some project activity in each of these programs. Regional Councils could

Figure 8 : Organization Chart for Model VII (Build Linkages to Practice)



start new programs or drop old ones upon approval of the Education Council. The Regional Councils would have a Subject Matter Subcommittee for each program area.

- These subcommittees would be grouped under four Subject Matter Committees; Curriculum and Research for Elementary Grades, Curriculum and Research for Secondary Grades, Administration and Management, and Student Affairs.
- The Subcommittees would be responsible for (1) diagnosing problems in their program area, (2) stimulating R&D projects to solve these problems, and (3) recommending project expenditure priorities within their program area to the Subject Matter Committees.
- All practitioners, administrators, or R&D specialists in a region would be eligible to submit proposals for projects they would like to perform.
- A number of full-time professional staff members would work with the Subcommittees on program planning.

The four Regional Subject Matter Committees would be responsible for (1) evaluating all project proposals submitted, (2) recommending a list of preferred projects to the Regional Council, and (3) recommending expenditure priorities between and within program areas to the Regional Council.

The final decision-making authority in each region would be the Regional Education Council. The Council would receive a formula determined amount of money from the NIE to be divided by the Regional Council among the Subject Matter Committees. The Council would approve the expenditure priorities and project lists presented to the Council by the Subject Matter Committees.

- The Regional Council's federal funds would have to be matched one-to -one, or more, by state and local sources.
- The Council membership would represent a cross-section of the practitioner, public, and R&D communities.
- The Council would have authority to direct that a Subject Matter Committee revise its planning priorities to account for community-wide concerns overlooked by the Subject Matter Committee.

- The Council would be served by a full-time Regional Staff Director, who would provide staff work for the Council and manage the Regional Planning Staffs working with the Subject Matter Subcommittees.

In addition to the Subject Matter Committees, an Innovation Committee would report to the Regional Education Council. The Innovation Committee would be responsible for evaluating the extent of adoption and the effect of Council projects on students and schools. These evaluations would be published openly after approval by the Regional Council.

The Innovation Committee would have a fixed portion of the total regional budget to spend on evaluation projects.

The Education Council's principal responsibilities would be: (1) recommending "High Priority" objectives that the Regional Education Council should adopt in allocating resources, and (2) reviewing project activities in the twelve program areas and recommending changes to the Regional Councils. As a means of demonstrating its priorities to the regions, the Education Council would have a budget to spend on "High Priority" projects.

Within the NIE, the regional R&D program would be managed by the Directorate for Regional Educational Development. The Directorate would be divided into divisions corresponding to the Subject Matter Committees in the Regional Councils. In each division there would be a number of program directors, several for each of the twelve program areas.

The principal responsibility of these program directors would be monitoring and evaluating progress in the regions in each program area and providing staff work for the Education Council.

The Directorate would also audit expenditures on regional projects.

RUDIMENTS OF OPERATION

Subject Matter Subcommittees

The Subject Matter Subcommittees would be responsible for recommending project priorities to their subject matter committee and stimulating project proposals.

- The Subcommittees would spend one month per year (mostly during the summer) discussing problems in their program area and preparing a list of project priorities.
- The Subcommittees would spend four weeks per year traveling in their region searching out ideas for solving the priority problems and encouraging the formation of teams to start pilot projects.
- For a few days' time twice annually, the Subcommittee would meet to: (1) evaluate proposals for pilot projects and recommend funding priorities to the Subject Matter Committee, and (2) review progress annually on all current projects and recommend funding priorities to the Subject Matter Committee.
- The Subcommittee would be aided in all these tasks by the Regional Planning Staff members.

Subject Matter Committees

Each Subject Matter Committee would review the projects submitted for approval by the subject matter subcommittees with regard to (1) the desirability of achieving the project objective, (2) the adequacy of the project team, (3) the quality of the R&D plan, and (4) the provisions for implementation of results. The Committee's recommendations would be forwarded to the Regional Council for final approval.

- The Committee would meet for three days twice annually to review proposals for pilot projects and evaluate progress on continuing projects.
- The Committee would have authority to approve pilot projects up to a budgeted amount.
- The Committee would recommend several projects for "High Priority" status.
- The Committee would recommend a division of its budget among Subcommittee priorities to the Regional Council.
- The Committee would call on the Regional Planning Staff for assistance and advice in the review process as necessary.

Innovation Committee

The Innovation Committee would select which improvements to evaluate, stimulate proposals for evaluation efforts, and recommend a list of desirable projects to the Regional Council for its approval. The Innovation Committee, which would have the assistance of a one- or two-man staff, would also monitor the performance of these projects and release project results publicly on the Regional Council's approval.

Regional Education Council

The Regional Council would meet twice per year to review the budget plans of the Subject Matter Committees for continuing projects. The Council would focus its attention on a few of the program areas at each session, commenting on the desirability of the objectives being pursued and the quality of the work being done. Over a two-year period all program areas would be covered. The Council would also review and forward recommendations for High Priority projects to the Education Council.

- In performing its review of Committee budgets, the Council would consult with program directors from the Directorate for Regional Educational Development.
- The Regional Council would decide the allocation of its budget to Subject Matter Committees.

Education Council

The Education Council would advise the Regional Councils on problems important to several regions which should be given extra consideration for High Priority funding. The Education Council would also review proposals for High Priority projects and select a number for funding.

- The Education Council would call on program directors from the Regional Education Development Directorate for evaluation advice.
- High Priority projects would be managed by the Subcommittee which originally proposed them.
- High Priority projects would have a finite lifetime, renewable only as a new project proposal.

- High Priority projects would be funded as an addition to the Regional Council's formula budget, and award of a fixed dollar amount of high priority projects would not be automatic. Therefore, the Regional Councils would be encouraged to respond to the Education Council's priorities.

Directorate for Regional Educational Development

Program directors would be responsible for monitoring progress in their program area in all regions of the country and doing research on needs in their program area.

- At least once every five years each subcommittee's program would be reviewed by a team of program directors and outside consultants. The principal topic of discussion would be what new directions the subcommittee should take rather than a review of progress. This approach would stimulate better cooperation between the Subcommittees and the Directorate.

STAFF

Subject Matter Subcommittees

The Subject Matter Subcommittees would be composed mostly of accomplished teachers, but some school administrators, education researchers, curriculum developers, students and lay citizens would also serve. The composition would be fixed by charter.

- Subcommittee members would be nominated by professional associations, the subcommittee, and the Regional Planning Staff, and selected by the Subject Matter Committees.
- The term of service would be three years.

Subject Matter Committees

The Subject Matter Committees would also be composed mostly of teachers, but some school administrators, education researchers and developers, and lay citizens would also serve. Committee members would

be appointed by the Regional Council from nominations submitted by the Subcommittees and the Regional Planning Staff.

Regional Council

Regional Councils would be appointed by the major education interests in a region. Each interest would have a specified number of seats on the Council to fill and would be required to fill these seats through election by their membership. The balance of representation would favor most heavily teachers and lay citizens.

Education Council

The Education Council would be composed of nine members, two from each region and three appointed by the Director of Regional Educational Development. The regional representatives would be elected by the Regional Councils.

Regional Planning Staff

The Regional Planning Staff would be hired by the Regional Staff Director. Background in teaching, education research, education development, or program management would be preferred. The Regional Planning Staff would be permanent and full-time.

Regional Educational Development Directorate

The staff of program directors would be hired by the Director of Regional Educational Development. The staff would be permanent and full-time.

LINKS WITH THE OFFICE OF EDUCATION

Links with the Office of Education would be through Program Directors in the Directorate for Regional Educational Development.

LINKS WITH PRACTICE

The links with practice are about as strong as theoretically possible,

since committees of practitioner representatives decide how R&D monies will be spent and teams of practitioners are involved in performing the R&D projects. Furthermore, decision-making is highly decentralized, making it possible to tailor the R&D effort to localized concerns.

LINKS FOR IMPLEMENTATION

Several links useful for implementing R&D results are inherent in the Model IV:

- o R&D projects can be conducted in Teacher Centers, exposing a number of teachers to the development effort.
- o It is convenient for a number of the head teachers in a local area not formally part of the project team to be involved in the planning, trial, performance, and evaluation stages of R&D projects.
- o The Council and committee members involved in planning and approving a project have a commitment to see it implemented.

III. ORGANIZING THE NIE-OE INTERFACE

Each of the Models of Chapter II describing alternative designs for the internal structure of the National Institute of Education specifies the location of links between NIE and the Office of Education. This chapter will present alternative designs for those linkage structures. The focus of the chapter will be at the organizational level of the program manager or the agency directors. Design alternatives for the NIE-OE interfaces at the levels of practitioner and R&D performer are presented later in Chapter IV, "Organizing for Innovation."

The basic premise of this chapter is that there should be no single interface structure or mechanism which will unite OE and NIE efforts at all levels of operation and for all coordination purposes. Instead, the interface should consist of a number of different kinds of linkage mechanisms, each with its own advantages and disadvantages, and each used where most appropriate. The organization of this chapter reflects this point of view.

Six structural and operational methods useful for coordinating NIE-OE interagency efforts are discussed below. These alternatives span a wide range of mechanisms for promoting coordination and maintaining accountability, and may be used in concert with each other or serve as substitutes for any particular interagency program or function:

Structural Interface Mechanisms

- The Program or Project Manager
- The Lead Agency
- Interagency Committees and Task Forces
- Liasions

Operational Interface Mechanisms

- Joint Funding and Responsibility Arrangements
- "Free Market" Arrangements

Each mechanism will be defined and evaluated in terms of its major advantages and disadvantages. No attempt is made to present entire systems of these mechanisms encompassing all OE-NIE interfaces.

PROGRAM OR PROJECT MANAGER

In this approach, a temporary or permanent individual or group located in the OS is responsible for organizing, directing and controlling the definition, development and execution of a plan of action. This mechanism could be used to coordinate overall OE and NIE activities, or special, high-priority projects requiring the participation of each. The two basic alternatives within this approach are (a) the creation of an "Assistant Secretary for Education" to whom both the Commissioner of Education and the Director of NIE would report, and/or (b) establishing OS-based project managers (e.g., for such priority programs as Right to Read), to whom only relevant OE and NIE personnel in the project area would report.

Advantages:

- One individual is responsible and accountable for system or project performance.
- High-level visibility is maintained.
- Direct lines of communication to the Secretary and access to all OS staff services are established.
- Direct fund allocations within OS are provided (rather than parts of separate agency budgets in which agencies and programs compete for funds).
- Representation and perspective of the overall system without a particular agency bias is promoted.
- Top management has maximum lattitude and flexibility in selecting a program manager from any source to represent the desired perspective of the department.
- Ability to use the program manager structure to defer decisions on where program components will be placed until sufficient information is available, or issues become less controversial, is increased.

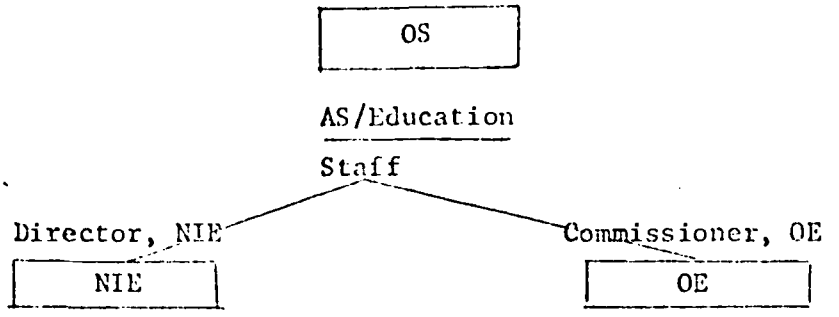
Disadvantages:

- Legislative restrictions may limit delegation of authority to a program manager. (The House version of the NIE bill prohibits the Director of NIE from reporting to or through

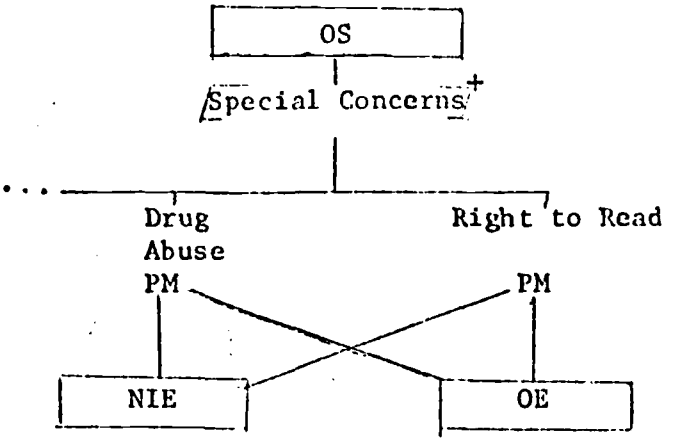
Figure 9

Program/Project Manager Coordinating Mechanisms

a. Assistant Secretary of Education



b. Program/Project Manager



anyone but the Secretary.)

- This structure simply recreates the existing OE organization at a higher level and with another layer of bureaucracy: i.e., the present Commissioner would become the "Assistant Secretary," and the NCERD Director would be the Director of NIE, etc.
- There would be confusion about the staff vs. line role and responsibility of an "Assistant Secretary for Education" similar to that with the AS/HSA.
- The Department's chain of command is weakened because the OS level program manager lacks ultimate control over the independent resources of the agency.
- There are staffing problems: a program manager's office can be costly if staff is added from outside the organization, and detailing of quality staff may be resisted by, and may weaken, participating agencies.

LEAD AGENCY

The lead agency concept involves assigning responsibility for coordinating related agency programs to a particular agency. That agency is then accountable for organizing, directing, and controlling the definition, development, and execution of a unified action. Contributing agencies assist in the process and are responsible for executing their assigned tasks in relation to overall objectives. Under this alternative, either NIE would be responsible for managing OE programs relevant to NIE objectives, or OE would control NIE (the present OE-NCERD system, and that proposed in the Senate version of NIE legislation).

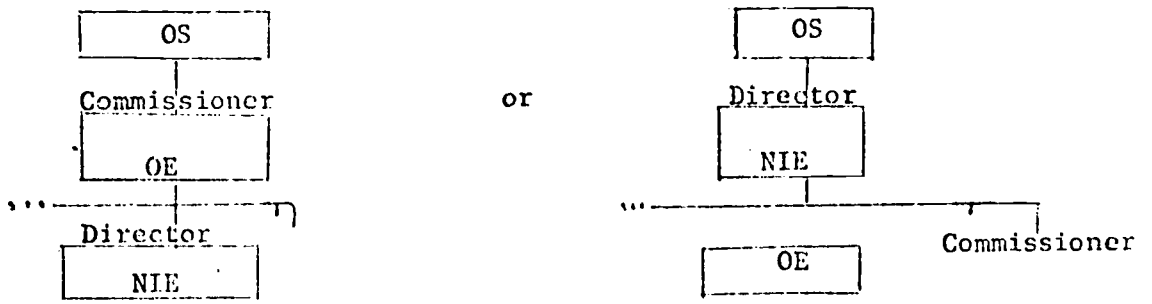
Advantages:

- A single agency can be held responsible for system or component program performance, making coordination and centralization of related programs more likely.
- Limited funds for coordination are conserved by utilizing existing capabilities and resources of an agency. The agency given the lead is more likely to shift resources from lower priority programs to the new effort because of vested interest in its success.

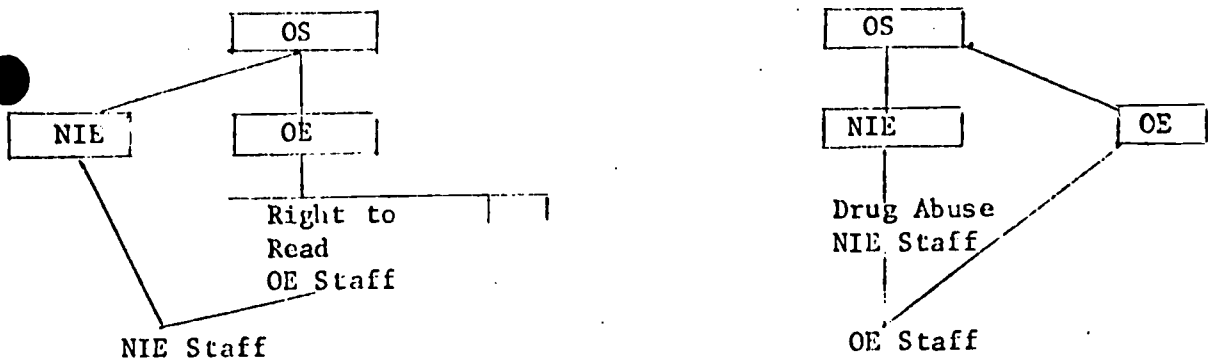
Figure: 10

Lead Agency Coordinating Mechanisms

a. Overall Structure



b. Special Projects



- Maximum use is made of existing agency personnel and expertise.
- Manipulation of the dominant image of the new effort can be accomplished by assigning the effort to a particular agency.

Disadvantages:

- Often, lead agencies lack the authority to demand compliance with their direction and resolve conflicts among participating agencies.
- Competition is aroused by selection of one agency over others as the lead, with a resulting reluctance to cooperate--e.g., the Head Start debate.
- Among nationally prominent leaders (agency heads) there may be reluctance to defer to others (lead agnecy heads).
- Flexibility in the selection of the best qualified staff may be limited since the lead agency may only be able to draw from its existing staff (particularly true if funds are limited). A basic objective of the creation of an NIE is to involve high quality researchers which OE has failed to attract. Use of only existing NCERD personnel as staff could sabotage NIE's performance from the start.
- "Image transfer" cuts both ways: if OE were made the lead agency, NIE could be seen as no more than a perpetuation of the old system.

INTERAGENCY COMMITTEES AND TASK FORCES

Committees would be relatively permanent mechanisms, usually at the OS level, designed to deal with chronic or long-standing policy or organizational issues and objectives. Standing committees may be given the authority to arbitrate conflicts and insure coordination among agencies. Their operation is by formal agenda, hearings and written reports. Members representing diverse interests are present and usually vote on problems of major significance. For example, an "OE-NIE Coordination Board" chaired by the AS/P or AS/AM could be set up in the OS to insure cooperation and avoid duplication of functions by OE and NIE.

Task Forces are usually short-range mechanisms designed to deal with

specific "one shot" high-priority issues requiring immediate action. Usually composed of representatives of diverse interests and talents, task forces tend to operate informally. OS offices--AS/P or AS/AM--could convene joint OE-NIE task forces to coordinate or arbitrate specific projects or problems.

Committees and task forces differ somewhat in their advantages and disadvantages.

Committee Advantages:

- Maximum flexibility may be achieved in the selection of committee members to represent the desired perspective of the Department.
- Committees can focus national attention on a particular program, issue, or objective by selecting as members nationally-known figures or known specialists in the field.
- Committees may build policy consensus among members representing diverse interests or having different priorities or objectives, breaking through the isolation of autonomous agency staffs.
- Committees can function to delay or defer premature decisions or actions.
- Committees can serve the Secretary as advisors less biased by agency interests, promoting more objective formulation of Department goals and policies.
- Committees can air and act on issues which might otherwise go unconfronted.

Committee Disadvantages:

- Committees (and their members) may lack the authority or access to top decisionmakers to compel agency response to their recommendations.
- Time-consuming delays may occur when rapid decisions are needed.
- Committees may discourage innovative ideas in favor of moderate consensus.
- Committees can be self-perpetuating and unaccountable, thereby

limiting their usefulness.

- Committees may be excessively costly. They consume time of top DHEW personnel and drain a limited budget for outside consultants.

Task Force Advantages:

- They provide rapid short-term problem solving or planning services.
- They also provide lattitude and flexibility in the selection of members to represent desired Departmental perspectives.
- Their maintenance costs are low.
- They do not work through a chain of command, so they have greater freedom from agency biases and can present a wider range of creative alternative recommendations.
- They are easily dissolved, so long term "self perpetuating" commitments to positions or personnel are not a problem.
- They can be used without publicity of their existence, of their proposals, or what is done about their recommendations. This allows high-risk strategy positions and room for innovative or radical thinking.

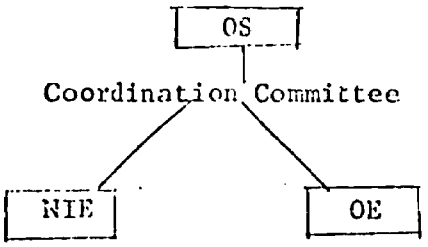
Task Force Disadvantages:

- The creation of a task force may be perceived as an indication that the regular organization cannot adequately respond.
- Recommendations may tend to be insufficiently evaluated ideas, due to lack of time for full analysis or sufficient staff for back-up evaluation.
- Members' time is taken away from normal responsibilities. This can weaken the existing organizations.
- There may be reluctance on the part of participating organizations to free good talent from their normal jobs, resulting in the selection of less able individuals to the task force.
- Members do not have the authority to commit their agencies to plans requiring agency support, so there is no assurance that a task force plan will be implemented.

Figure: 11

Committee/Task Force Coordinating Mechanisms

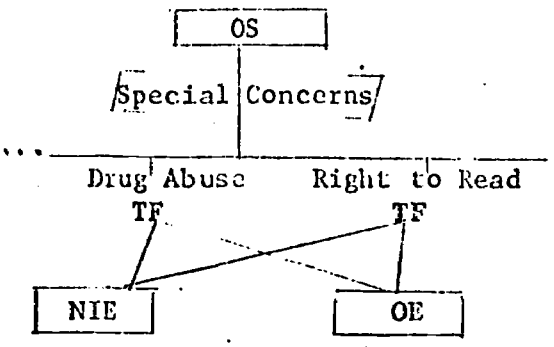
a. OE-NIE Coordination Committee



Membership:

OS (ASPE, ASAM representatives)
Director of NIE
Commissioner of Education
Staff

b. Task Force



Membership:

OS (ASPE, ASAM) representatives
NIE staff
OE staff

LIAISON

Liaison mechanisms require a group or individual, at any level, to serve as communicator between related activities. Liaisons do not supervise the actual work; they are responsible for integrating interdependent units which would not normally work together. The liaison exerts influence throughhis direct reporting relationship to an agency or overall supervisor responsible for a certain area of systems performance. For example, the information gathering and dissemination units in NIE (cf. Figure 1) could have full time liaison personnel whose role responsibility would be to maintain close contact with counterparts in NCES, OPPE and NCEC in the OE. The performance of agency units would depend to some extent on their utilization of outputs from their corresponding counterparts, so each would have an incentive to participate. Liaison personnel might also report to and be coordinated by an OS level liaison office (e.g., the "NIE-OE Coordinating Board" proposed under the Committee/Task Force alternative.)

Advantages:

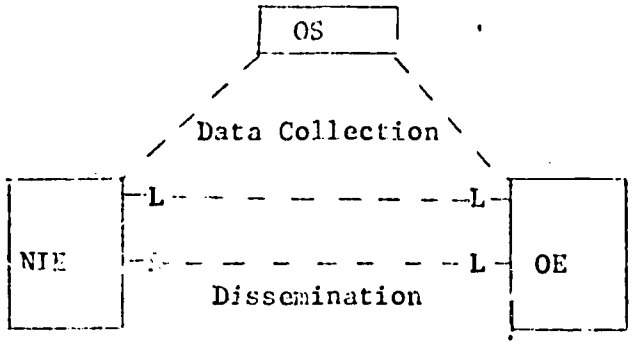
- This may be the simplest and least costly form of integration, since it may require only one individual whose coordinating responsibilities may be only part-time.
- Liaisons can hasten the resolution of conflict among dependent organizations by serving as a neutral arbiter, or by surfacing problems to the appropriate level for decisions.

Disadvantages:

- The liaison himself has no specific power to enforce decisions or insure that actual coordination occurs.
- Liaisons are often regarded as outside, unwelcome individuals who lack the specialized knowledge of the programs and operation.
- Sometimes there may develop a conflict of interests or priorities, particularly when an individual is both the liaison officer and a program chief or agency director.

Figure 12

Liaison Coordinating Mechanisms



L= Specifically designated liaison personnel

JOINT FUNDING AND/OR RESPONSIBILITY ARRANGEMENTS

Operating mechanisms such as joint funding and/or responsibility arrangements can be used to promote agency coordination. For example, funding for a priority program like Right to Read could be divided between NIE (for developmental research on reading programs) and OE (for dissemination and site support), with both agencies held responsible for the success or failure of the program.

Advantages:

- Each agency has greater operating autonomy--coordinating mechanisms are not specified by an outside power (OS). (The assumption is that agencies will evolve coordinating mechanisms as needed on a participatory basis, as mutual dependency gives them sufficient incentive to work together.)

Disadvantages:

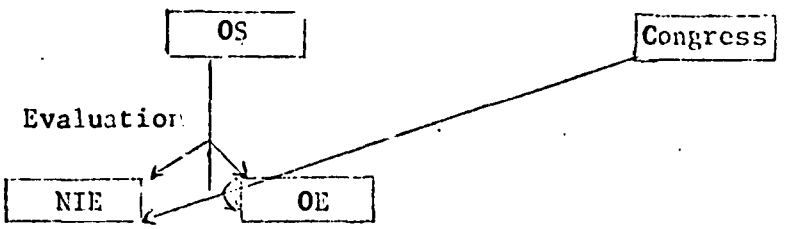
- Assignment of accountability is difficult even when line responsibility is clear; participating agencies may not cooperate and each may blame the other for program failure.
- Joint funding arrangements are hard to maintain--funds allocated

to agencies tend to become line-item "property" in future budgets, reducing the mutual dependence and coordinating power of the arrangements.

- Evaluation of agency responsibility will sooner or later necessitate the formation of one of the structural coordinating mechanisms discussed above.
- Joint funding arrangements do nothing to prevent duplication of effort.

Figure 13

Joint Funding or Shared Responsibilities



. Right to Read
. Drug Abuse
. Etc.

"FREE MARKET" ARRANGEMENTS

A final, laissez-faire coordinating mechanism may be established by "free market" contracting agreements between agencies. Widely utilized in decentralized industries (where autonomous departments are known as "profit" or "responsibility" centers), this mechanism could be used to coordinate the OE-NIE interface by prohibiting each agency from setting up duplicating functional divisions, but permitting them complete freedom to contract with one another--or outside providers--for necessary services. For example, NIE would not be permitted to duplicate OE's extension agent system (nor OE, NIE's research facilities), but NIE would have the funds and freedom to purchase dissemination assistance from OE--or from educational publishers, advertising agencies or any other source which offered the most effective service.

Advantages:

- o Each agency has maximum operating autonomy and full responsibility for performance.
- o Competition with outside service providers might improve internal agency management and efficiency.

Disadvantages:

- o There is a significant danger that despite attempts to prevent duplication, OE and NIE will spend funds developing similar in-house functional capacity.

CHOICE OF COORDINATING MECHANISMS FOR THE OE/NIE INTERFACE

The choice of one or more coordinating mechanisms to manage the OE/NIE interface will be dictated by the objectives and resource constraints of the overall innovation system legislated by Congress and adopted by DHEW, and by the level of government (federal, regional, state or local) at which functional coordination occurs.

Objectives for OS-NIE-OE system management have been discussed: structure and leadership capable of preventing duplication of effort, insuring integration of agency efforts while maintaining agency visibility, autonomy and accountability for functional performance. Constraints include legislative directions in the final NIE bill, and existing OE internal organization structures and interests. OS personnel and monitoring capacities represent both a resource and a constraint: ASPE or ASAM staff are in an excellent position to review OE and NIE activities, but are limited in number and lack a direct mandate to coordinate agency line operations. Criteria for choosing OS-NIE coordinating mechanisms thus include:

- o Permanancy: the coordinating mechanisms must be capable of ongoing effective supervision of OE-NIE activities.
- o Permitting maximum agency autonomy: the coordinating structure probably should not itself be so visible or directive that it detracts from agency indentity or flexibility.
- o Promoting maximum agency communication and integration of efforts: the coordinating mechanism should insure rapid communications response between agencies.
- o Accountability for systems performance: the coordinating

mechanism must be itself responsible for its function in insuring overall system effectiveness and efficiency, which means it must have sufficient "clout" to be able to influence inter-agency operations.

The coordinating mechanisms which best fit these criteria are the "committee," "liaison," "joint funding" and "free market" alternatives. Program/project manager mechanisms are ruled out because the "Assistant Secretary for Education" alternative will probably not be permitted in the Congressional legislation, and would subsume agency visibility and autonomy. Project directors for one or several special efforts would tend to fragment, not coordinate, agency activities and personnel. The "lead agency" mechanism is inappropriate because it simply perpetuates the existing system; it will probably be forbidden by Congress for this reason. The "Task Force" alternative does not provide the permenancy needed for ong ing agency coordination.

The best approach to overall systems coordination may prove to be a combination of the "liaison," "joint funding," and "free market" alternatives, supervised by an "OE-NIE Coordination Committee" at the OS level (Given the monitoring responsibili s of the OS staff, the evolution of some mechanisms of this kind is almost inevitable regardless of whether it is specifically mandated.) This coordination committee could include representatives of the top management of OE and NIE, but would be principally constituted of OS educational planning, management and evaluation staff.

COORDINATION ACROSS LEVELS OF GOVERNMENT

The above discussion dealt only with the problems of coordinating agencies at the federal DHEW level. A complete innovation system also requires integration of agency activities across the regional, state and local levels of government. The same mechanisms which may be used for federal level coordination may also be used for multi-level coordination - e.g., NIE can contract with a regional laboratory, or NIE research specialists might work with OE (NCEC) educational extension agents in a temporary task force set up to solve a specific local problem.

IV. ORGANIZING FOR INNOVATION

A critical task in building an educational R&D system is selecting a strategy for innovation.

Innovation is the complex of activities involved in linking R&D with the users of R&D. The activities usually employed include: dissemination, demonstration, training, and servicing, as well as some others. One prominent activity missing from this list of innovation activities is feeding information concerning user needs back to the R&D system, which many studies have shown to be a critical component of innovation systems.

The innovation activity can be partitioned in a number of ways as a taxonomy for thinking about innovation strategies. A review of these partitions will provide a framework for considering alternative designs for the NIE-OE-OS education system.

PARTITIONS FOR ORGANIZING EDUCATIONAL INNOVATION SYSTEMS

At least eight partitions of educational innovation activity can be identified in current theory and practice. Innovation can be divided by:

- *Product* -- knowledge, curricula, programs (Right-to-Read), equipment, methods, policies.
- *Subject* -- mathematics, language, hygiene, social science, personal development.
- *Student Group* -- handicapped, disadvantaged, gifted, primary, secondary, post-secondary, vocational.
- *User Group* -- students, parents, teachers, administrators, policymakers, researchers, developers.
- *Practice* -- teacher training, instruction, assessment, renewal, management.
- *Institution* -- schools, school districts, state departments of education, universities, laboratories, professional associations, unions, legislatures, agencies, foundations.
- *Geographical Area* -- national, regional, local, rural, urban.
- *Innovation Stage* -- awareness, interest, evaluation, trial, adoption.
- *Innovation Strategy* -- linear, problem-solving, social interaction, linkage.

The last two categories need further explanation.

Academic research has proposed that individuals, groups, or institutions proceed through a series of stages before adopting new ideas. These stages are called:

- o Awareness -- knowing that the new product or practice exists.
- o Interest -- seeking more information about that product.
- o Evaluation -- deciding whether or not to try the new products.
- o. Trial -- using the product on an experimental basis.
- o Adoption -- using the product on a regular basis.

Research has shown that individuals and groups vary widely in their willingness to try innovations. "Innovators" (the first 3% to adopt something new) are followed by "early adopters" (the next 10% to try and adopt), the "early majority" (the next 40%), the "late majority" (the next 40%), and finally the "laggards." Much study has been devoted to measuring the correlation between the times when these "sections" of the adopting population are reached and a variety of economic, resource, and innovation strategies. Different innovation strategies are appropriate to different stages of the adoption process and sections of the adopting population.

Academic research has also proposed four strategies for the innovation process:

- o The Linear Marketing Model: A "top-down" strategy, in which products are developed by a central organization and "sold" to consumers, who have relatively little say or participation in this process or in the product they receive, e.g., the text-book publisher in education.
- o The Problem-Solving Model: A "participatory" strategy, in which an organization's information or product providers meet consumers more or less as equals to work together on the consumer's problem. The result may be a unique solution involving modification of the organization's original product.
- o The Social Interaction Model: a "laissez faire" strategy, in which the organization simply makes its products available and tries to make consumers aware of them. The assumption is that if a "better mousetrap" is offered, people will beat a path to its door; and, consequently, over time the diffusion of innovation process will occur naturally as the new idea spreads through the existing social networks in a (consumer) population.

- The Linkage Model: a synthesis of the first three strategies, in which the organization provides "problem-solving" linkage agents who attempt to match consumer needs with definite organization products and resources (a "linear " flow) in the context of the consumer's network of social contacts and influences (a "social interactionist" perspective).

These classes of strategies will be used as a framework for presenting alternative mechanisms for innovation. An overall strategy would be compounded from these mechanisms depending on the R&D products, user groups, student groups, practices, subjects, institutions, and geographic areas involved.

OE's INNOVATION EFFORT

The problems and successes that OE has experienced in diffusing educational innovations provide lessons useful in designing an improved innovation strategy for education.

Functional Deficiencies

Lack of functional performance. Traditionally, each OE bureau or program has attempted its own innovation effort, usually through its "Office of Public Affairs" (frequently only one person). The result has been that innovation has been limited to dissemination, and that many of the functions necessary in a balanced R&D system are not performed at all, or, because of severely limited manpower and financial resources, are performed poorly. (An OE evaluation director compared the situation to "Campbell Soup having a separate marketing organization for each of its many varieties of soup, rather than a single marketing department for the entire soup product line.")

Lack of functional coordination. OE's current organizational design (by program, user group and institutions) results in fragmentation of functional efforts within or across program and bureau lines in OE, or between OE, and regional, state, or local efforts. For example, reading dissemination projects may be simultaneously underway in Title I, Right-to-Read, and NCERD without effective integration or even mutual awareness among these programs.

Lack of systematic approach. In managing innovation, OE should systematically consider all the decision-makers, influences and inputs required to bring about educational change.

Educational publishers have identified numerous actors in local educational systems who must be influenced simultaneously to promote trial of a new product: state certification committees, chief state school officers, local superintendents, curriculum adoption boards, principals, department heads, teachers, parents, special interest groups, students, and so forth. Sophisticated marketing procedures are designed to contact each group in terms of its own self interest, and in such a way that the message each actor in the system receives reinforces that received by each of the others. OE efforts divided into units with specific client group or institutional constituencies may miss crucial actors and links in the complex social and educational system at the local level. A second defect in OE innovation efforts has been what might be called a "single inputs" approach to innovation--the idea that just teacher training, just teacher-proof curricula materials, just revised administrative procedures (like community control) will make a difference. In fact, many inputs usually must be changed, each in a way that reinforces the change in all of the others, to effect change and bring about a new, integrated system.

Strategic Deficiencies

Limited capability beyond awareness and interest stages. Office of Management studies show that better than 80% of OE's dissemination resources are devoted to making potential consumers aware of educational innovations, and providing them with more information if they are interested. OE has not attempted any effective "outreach" services capable of encouraging and supporting users in the crucial trial and adoption stages of the innovation process. Research findings indicate that personal contact with a continuing source of information and support is very important in a user's decision to try a new idea. The result has been that the awareness → interest → trial → adoption progression is usually broken between the "interest" and the "trial" stages.

Most of OE's specific dissemination techniques appear to be classifiable under the social interaction (S-I) strategy--a strategy consistent with the ideas that the federal government should not intervene in local educational affairs, but one which has rarely been effective. Identifiable dissemination techniques (and their underlying strategies) used by OE include:

- o R&D centers -- a "social interactionists" (S-I) approach which assumes that new ideas will be picked up by nearby regional laboratories and practitioners.
- o Exemplary programs and demonstrations -- an S-I approach that assumes that visitors to demonstration sites will see new practices, which they will take back and institute at their own schools.
- o Advocacy -- an S-I approach which seeks to spread new ideas by organizing and supporting interest groupswho will diffuse innovations to advance their own objectives.
- o Information banks -- a linear and S-I approach which makes information, curriculum materials, etc. available to consumers via a computerized information system on the assumption that presence and availability will result in trial and adoption.
- o Personnel training -- an S-I approach which assumes that diffusion of new ideas is best achieved by training opinion leaders (researchers, teachers, administrators, etc.) and then seeding school systems with them, so that they might influence their colleagues in an expanding network of contacts. An example is the BEPD program. Directive teacher training programs, can, however, be Linear instead of S-I if teachers have little say in the training they receive.
- o Direct mail, traveling demonstrations, and professional conferences -- S-I approaches which try to stimulate consumer awareness of and interest in innovations.
- o Need assessment and planning support ("renewal sites") -- an S-I and Problem-Solving approach which encourages the formation of local committees to diagnose local problems, and then develop, implement, and control innovative methods which may help solve these problems. Examples are: project trend and current renewal-site planning.

- Information retrieval and educational extension agents -- an S-I Linear, Problem-Solving, or Linkage approach, depending on the agent's behavior. If directive, Linear; if passive, S-I; if participatory, Problem-Solving; and if a mixture of all three, Linkage. In each case, the assumption is that the agent support innovation by matching new ideas with client needs. NCEC is in the early planning stages of an extension agent system.
- Directive funding, regulations, or legislation -- a "Linear" approach in which the consumer is required to adopt an innovation to receive federal funding or comply with federal law. The civil rights rulings are an example.

The evidence on OE's success in using these techniques is mixed.

Evaluation research has shown that S-I approaches are rarely effective. For example, evaluations have indicated that not only do visitors to a demonstration site not adopt what they see, but the demonstration is usually dropped by the site itself as soon as federal funding is withdrawn. The Problem-Solving and Linear approaches are largely untried in education. The proposed "renewal site" and "extension agent" efforts will be the first real test of these strategies. A linear approach is effective in certain instances. The educational publishing industry is successful in using a linear marketing approach to sell textbooks, materials, and equipment with sophisticated sales forces. Whether these products are truly innovations and whether this approach can be effective in education is in doubt. The Linear approach has not worked well with such new curricula as the National Science Foundation's Physical Sciences Study Committee program. As a federal strategy for gaining compliance with civil rights laws, it is grudgingly successful, but useful only in extreme circumstances.

Lessons for NIE

The lessons of OE's experience for an OS-OE-NIE system are clear and have been suggested above:

- All functions in the product flow must be performed and coordinated effectively. Duplication (and its inevitable bureaucratic concomitants--jurisdictional jealousies, competition for funds, and lack of communication and cooperation) should be avoided.

- An OE-NIE-OS dissemination system must be capable of reaching all actors in the educational system, with all inputs required to effect change at the local level.
- The dissemination effort must "follow through" at all stages of the adoption process, from awareness through trial, and evaluation to adoption.

MECHANISMS FOR INNOVATION

In building a system for innovation, NIE-OE-OS will need to use a variety of innovation mechanisms. Depending on what R&D products are being produced, and what user groups, practices, institutions and geographic areas are involved an appropriate innovation mechanism will be employed. The purpose of this section is to describe and evaluate a number of innovation mechanisms that will be useful. Assembling these mechanisms into a system for innovation that will includ division of responsibility for innovation will be the subject of the next section of this paper.

The mechanisms will be presented in the framework of the four innovation strategies discussed earlier. The list of mechanisms that wil be presented is as follows:

Linear Strategies

Marketing with a Sales Force

Educational Information System

Social Interaction

Teacher Center

Traveling Seminar

Problem Solving

Innovation Team

Renewal Site

Linkage

Resource Personnel Workshop

Educational Extension Agent

Local R&D

A LINEAR MECHANISM FOR DISSEMINATION: LINEAR MARKETING MODEL

BASIC PREMISES

Dissemination of innovative educational products and practices is most effectively and efficiently accomplished by a "top-down" linear marketing process. The emphasis should be on a comprehensive managerial approach based on the following premises:

- Unilateral, rational product flows: Any innovative organization's design should be based on a rational sequence of activities which move new products and practices from basic research, through development, testing and packaging, to active presentation to potential consumers (see Figure 14). Careful planning, with specific behaviorial objectives, information systems and control procedures should be used to insure overall organizational efficiency.
- Functional Division of Labor: Organizational design and staffing should be divided by function, with attention to the personnel practices needed to recruit, train and place employees with competencies appropriate to the several stages in the innovation process, and to insure coordination and efficiency.
- Aggressive Marketing to Consumers: Potential consumers must be "sold" new ideas produced by R&D experts. Efficient dissemination depends on good "market research:" accurate identification of consumer groups, their information and product needs, the channels through which they traditionally receive products, and the best methods of reaching them with the products to "sell." (An example of this approach is given in Figure 15.)
- Performance Evaluation and Feedback: The linear marketing approach puts considerable emphasis on attempts to assess the performance of all of its functional divisions, validate the efficacy of the innovations it diffuses, and measure the success of its dissemination efforts. Quantifiable "sales" figures--the number of innovations actually purchased or adopted by consumers--are used in the evaluation of individual and organizational performance. Management information and control systems are designed to respond quickly to changes in environmental conditions.

Component / Function

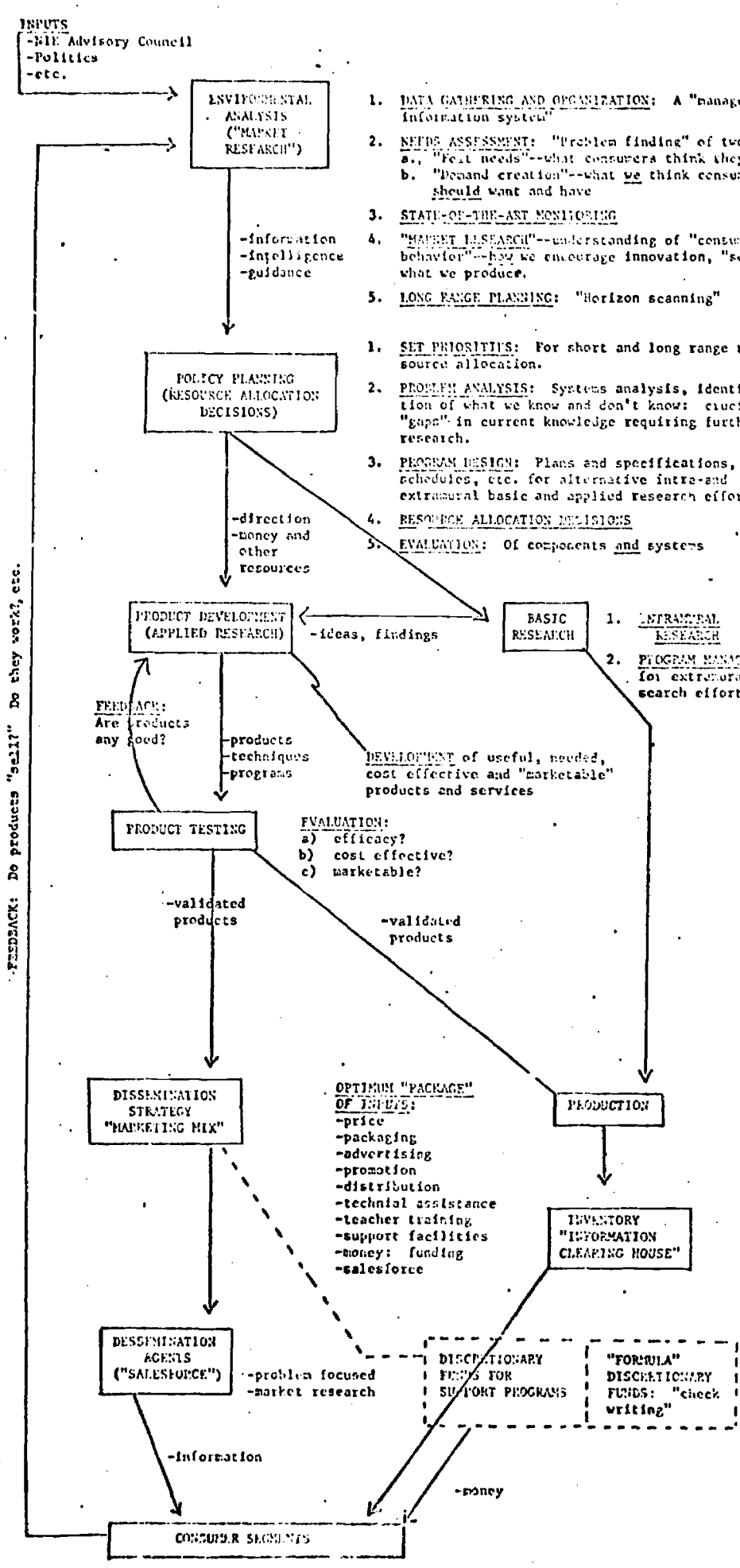


Figure 15

EDUCATIONAL MARKETING MATRIX

CONSUMER GROUP:	PRODUCT (INFORMATION NEEDS)	DISSEMINATION CHANNELS (Alternatives)	MARKETING PROCEDURES
ACADEMICIANS --Breakdown by (a) specialty area	1. Scholarly Articles (research findings, etc. 2. Policy Guidance - Research Priority (Needs assessment information) i.e., where to get MONEY: indications of which government foundations, etc., are interested in funding research, and how to get it.	1. Publication in established journals 2. "NIE Journal" (or several by speciality area)--also, newsletter 3. Professional conferences, seminars, lectures--e.g., "Social interaction" facilitation: "NIE Speakers Programs, conferences sponsored by NIE, etc. 4. ERIC files: data banks, retrieval	1. DIRECT MAIL (subscriber lists, membership lists from journals, professional groups, etc.) 2. EEAS 3. "Sampling"--by mail, through schools and libraries, at professional meetings
POLICY MAKERS/ POLITICIANS --unions --professional associations --SEA { politicians, legislators bureaucrats --LEAs (Supt. of Schools, Boards of Education)	1. Policy analyses: --problem definition & analyses --alternative responses (resource & constraint summaries, cost/benefit trade off data) --alternatives analyses - recommended course of action 2. Long range planning: "horizon scanning" 3. SOA reports 4. Evaluations of current programs --national effectiveness/achievements: trend analyses --OE (NIE/DCD/NFHE) effectiveness: of "products," organizational "system" (RDD&A)	1. Memos to appropriate decision-makers (regular "executive summaries" of important research findings, policy implications, implementation alternatives, etc. distributed to: --Congress --Press --Federal Agencies --SEAs --LEAs 2. Seminars (e.g., ESS) for policy makers 3. Opinion Leaders (e.g., speeches written for key NIE personnel, administration spokesmen)	1. Personal contact--OPA, NCEC staff cooperation for this? 2. "PR"

Figure 15
(continued)

PRACTITIONERS -Teachers --Administrators --TTIs --Alternative Education Delivery Outlets --Institutions (churches, etc.) --Employers/Industry --Home --Day care --Military --"Services Integration" community centers --Unions --voc. ed./rehab./manpower training programs --TV/media --Recreational facilities (camps, Boy & Girl Scouts, etc.) --Museums	1. "Awareness-Building" Materials: "popularized" summaries of findings, new ideas, materials, techniques 2. Technical "extension" assistance 3. "Packaged" course Mat'ls/techn. 4. In-service training for teachers, other personnel 5. Money--or information on where to get it	1. ERIC: information clearinghouses ("ISU'S) "PREP kit" materials 2. Extension Agents 3. "Psychology Today" - like newsletter 4. Demonstrations (also videotapes) 5. Training programs, seminars etc. -- Pre-service/In-service 6. Professional conferences 7. TV/media 8. "Road Show" Innovation "Menu" Presenations	"PUSH STRATEGIES" 1. Direct Mail (SEA lists) 2. EEAS 3. "Sampling" 4. Demonstrations 5. Support money specifically to adopt NIE/OE innovations
EDUCATIONAL PUBLISHERS	1. Market analyses: guidance on what should be produced, to whom to sell, and how long should production be maintained 2. OE/NIE Products Currently Available (by OE copyright) for commercial exploitation 3. Contacts and contracts information	1. Personal contact: NIE/NCEC "salesmen" NIE speakers at industry conventions, etc. 2. Specialized Publications: lists of contract announcements (e.g., Commerce Clearinghouse), products, market trend analyses 3. Advertising--in industry journals 4. Conferences	1. Personal contact 2. Direct mail

Figure 15
(continued)

PUBLIC-segments
--general
--minority and special interest groups
--parents
--students: in school
out of school

1. "Awareness" (demand creation, reassurance) Advertising about new materials, techniques, school organization alternatives

2. Needs Assessment/Evaluation help

3. "Change Agent" Assistance: community organization and action alternatives

4. Services available information location, cost, etc., of programs available: voc. education, drug counseling, R,R "storefronts," etc.

1. Mass Media--advertising or PR announcements
--TV
--popular magazines, newspapers
--posters

2. Information Booklets

"PULL STRATEGIES"

1. "PR": greatly expanded efforts to reach, explain, educational innovations to public--announcements, public service advertisements

2. Direct Mail

3. Media Advertising (esp. TV)

- o High Investment in Dissemination: The percentage of funds allocated to dissemination efforts should be very high by traditional standards for Federal programs. (The educational publishing industry, for example, spends 1 to 3% of total revenues for R&D and 25% for marketing, the corresponding ratio for the OE is approximately the reverse: $10 for R&D for every $1 for dissemination.)

PRIMARY MANAGEMENT EMPHASES

The focus and principle criteria of success for any marketing organization is "sales." In the case of education, this is the number of innovations produced by NIE actually adopted by practitioners and school systems. Production of excellent research which is not utilized is considered less desirable than production of practical improvements which move rapidly from laboratories into classrooms.

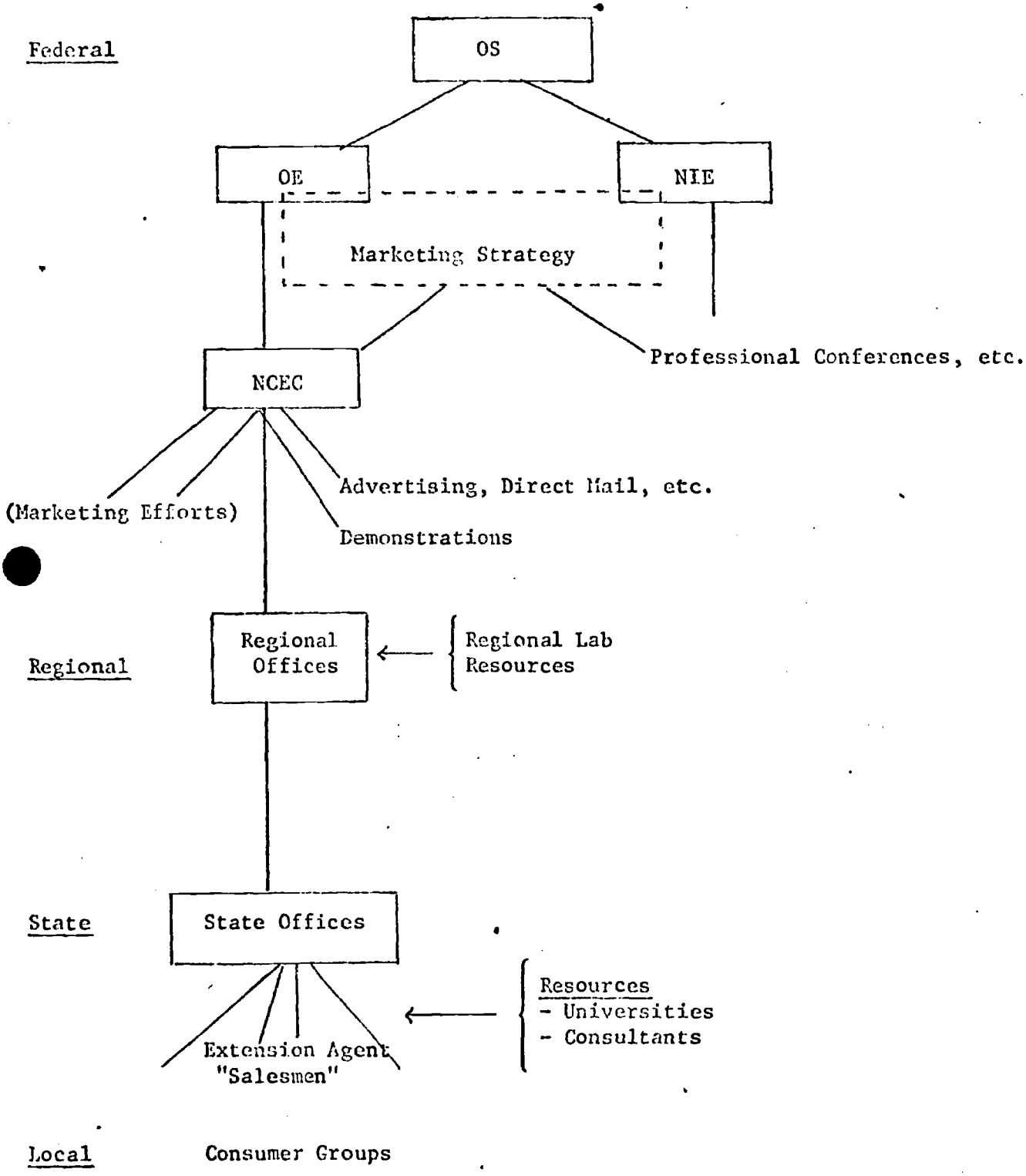
The linear marketing model emphasizes centralized, Federal performance of all the functions identified in the "product-flow" process, and especially the "marketing strategy" and "salesforce" functions. A major effort would be to design product "packages" incorporating all aspects of the "marketing mix" (price, packaging, advertising, promotion, distribution mechanisms, technical assistance and training, support and maintenance facilities, funding, sales contacts, etc.) needed to persuade consumers to adopt. Researchers would be responsible to disseminators for producing innovations that consumers want (or can be persuaded to want), can afford, will buy and will use.

ORGANIZATION

The linear marketing model requires integration of selling activities over all levels of government, from Federal offices to local consumers (see Figure 16).

Federal Level: OE and NIE would cooperate in developing a "marketing department" to coordinate the dissemination of NIE (and OE) product and practice innovations. One or more of the coordinating mechanisms discussed in Section III of this paper could be used: an "OE-NIE Dissemination Coordination Board," a "lead agency" mechanism in which OE (NCEC) takes onsibility for disseminating NIE products, or a "joint funding" or

Figure 16: Coordination in the Linear Marketing Model



"free market" system by which NIE works or contracts with OE (or others) for dissemination services. Planning for the "marketing strategy" would be performed by both agencies with execution for marketing plans (advertising, direct mail, salesforce contracts, etc.) managed primarily by NCEC. Marketing efforts, such as professional conferences, training seminars, etc. in which NIE has the relevant expertise, would be performed directly by NIE.) NCEC extension agency "salesmen" would have two functions (1) promotion of NIE products to consumers in the field, and (2) survey and transmission of consumer needs and R&D priorities (market research) back to NIE policy analysts and planners. NCEC would be responsible for effective marketing efforts. NIE and NCEC would share responsibility for marketing strategy formulation, and NIE would have responsibility for the efficacy and relevance of the product or practice improvement marketed. Each organization would evaluate its performance in the function assigned to it, and OS/ASPE staff would evaluate the performance of the overall systems effort.

Regional: DHEW Regional Offices would serve as "regional sales offices," providing support, supervision and evaluation of regional marketing and salesforce efforts. The managers of regional research laboratories would report directly to NIE research managers, and would not be directly involved in the dissemination effort, although extension agents may use the labs as a resource (e.g., as demonstration centers for new products) in persuading consumers to try a new practice.

State: State Education Agencies could be used as "State Sales Offices" in a role similar to that performed by DHEW Regional Offices. State officials would expect to have some control over Federal interventions, so involvement of State offices and personnel in a resource capacity (perhaps funded by the Federal government) is a probable prerequisite to effective systems performance.

Local: NCEC salesmen would oversee local territories, and be responsible for contacting schools in their areas, promoting the trial of NIE innovations, arranging for the delivery of Federal, regional, State and local resources (e.g., Federal funds, consulting help from local universities) as needed, and follow-up and evaluation services to insure that adopted innovations prove effective and are maintained.

ADVANTAGES

- A linear marketing system would provide the active dissemination capacity previously lacking in Federal education programs. Formally structured, permanent and nationwide in scope, this organization could rapidly develop great influence over all aspects of the currently fragmented educational efforts of the country.
- A marketing approach would permit specific accountability at every stage in the "product flow" process, increasing the responsiveness of the system to consumer and managerial requirements.

DISADVANTAGES

- National solutions imposed on local education practitioners could prove irrelevant or ineffective when applied to local conditions.
- A linear marketing approach would alomost certainly be resented by practitioners and administrators forced to rely on Federal agents motivated to sell finished R&D products, rather than on more locally controlled resources motivated to solve the particular problems occurring locally.

LINEAR MECHANISM FOR INNOVATION: An ERIC-Type Information System

BASIC PREMISE

Educational practitioners recognize their need for improved techniques and educational products, and are eager to implement practical results of educational R&D. Furthermore, useful results and products are available. The main problem is to bridge the gap between R&D results and awareness by practitioners.

OPERATION

Large, national information systems such as the Educational Resources Information Center (ERIC) aid educational reserachers and practitioners through the publication of indexes, abstracts, and reviews and the sale of microfiche and hard copy reproductions of documents. Clearinghouses of the system also produce bibliographies, research reviews, provide query response and personalized services for researchers and practitioners, and may even help translate research and practice results into guides for practitioners. Currently, ERIC is a decentralized system consisting of 19 clearinghouses, each run by a private contractor and specializing in the acquisition and processing of a particular subset of the educational literature. Alternative structural models are also possible.

LINKS TO OE

Information systems such as ERIC may be managed by OE's National Center for Educational Communication (NCEC) as is ERIC now.

LINKS TO NIE

NIE may routinely provide all research reports and data collected to the information system as well as aid in the selection of areas for review and evaluation, in the indexing of material, and in the preparation of Practitioner Guides which either help practitioners with program choices or show them how to implement a specific program.

ADVANTAGES

The greatest advantage of the information system mechanism for dissemination is that it least disturbs the research and practitioner communities, demanding no joint efforts, no participative decisionmaking, no additional institutional or manpower additions of great size, such as demanded by dispersed development facilities and extension agent programs, and no copyright problems in the dissemination of R&D results.

DISADVANTAGES

As outlined in the above premise, the information system mechanism requires practitioners to recognize their need for R&D results and search for available information by interrogating the information system. Also, the mechanism demands that useful R&D results be available and accessible in the information system. Recent research has shown that:

- Research results in education are often conflicting and irrelevant and almost never translated into practitioner terms.
- ERIC-type systems are very seldom utilized by practitioners, as they prefer to communicate personally with colleagues and others in a school system rather than rely on an information system.
- The visibility of R&D results and access to them provided by an ERIC-type system are limited by the format that must be used to handle the large volume of information available.

SOCIAL INTERACTION MECHANISM FOR INNOVATION:

A Teacher Center

BASIC PREMISE

Educational practitioners recognize their need for improved techniques and educational products, and are eager to implement the practical results of educational R&D. Furthermore, useful results and products are available. The main problem is to bridge the gap between R&D results and awareness by practitioners.

OPERATION

Possible purposes of Teacher Centers are to provide places where teachers can go for assistance with practical problems and where they can learn of new techniques and educational products which emerge from educational R&D. Current thought about the structure of these Centers suggests that (a) subject matter specialists may be either located at sites of Teacher Centers or available to them on a regular or request basis, (b) space and facilities for teacher training would be available, (c) curriculum materials and other educational products would be on display, and (d) educational extension agents might be based at Teacher Centers or available on a regular basis.

LINKS TO OE

Teacher Centers may be funded entirely by OE's National Center for Educational Renewal, jointly funded by OE and local school districts, or fully funded by local school district once development and initial operating problems are solved.

LINKS TO NIE

NIE may assume responsibility for making results of R&D known to personnel at the geographically dispersed Teacher Centers, or for making results known only to extension agents who in turn will bring the R&D results to the Teacher Centers.

ADVANTAGES

Teacher Centers provide high visibility and high accessibility as a dissemination mechanism. They make no demands on the location of R&D performance or on the decisionmaking processes for R&D management.

DISADVANTAGES

The Teacher Center concept relies heavily on inherent motivation of practitioners to seek information at the centers and of R&D performers to produce the products and techniques needed and demanded. Furthermore, unless two-way communication is established between practitioners and researchers through some other dissemination mechanism such as extension agents, there is no formal feedback met would the practitioners' needs and preferences to guide the R&D decisionmaking.

SOCIAL INTERACTION MECHANISM FOR INNOVATION:

A Traveling Seminar

BASIC PREMISES

- Educational R&D has produced and will produce many innovative products and methods potentially useful to practitioners in solving problems or improving the quality of their practice.
- Because of differences in the innovative characteristics of local school districts throughout the country, a small proportion of districts will implement new techniques and products as they are produced, while the great majority of districts will require significantly more demonstration, explanation, persuasion, and assistance if they are to adopt new practices suggested by the results of educational R&D.
- Rather than rely on the motivation of teachers, local administrators, and other educational practitioners to seek out innovations which they may find useful in their practice, personnel and innovations must be brought together through specific dissemination programs.
- Credibility and persuasiveness will be greatest not when potential innovators are brought to demonstration centers free from the constraints of normal school operations, but when they see the actual operation of an innovation within other school districts similar to their own, and talk with the practitioners involved in the innovation use.

PRIMARY MANAGEMENT EMPHASES

The primary emphasis in the traveling seminar approach does to bring groups of potential innovators to field operations where new products and techniques are being used and have been evaluated. Management of the seminar approach emphasizes:

- Disseminating information about proven educational innovations.

- Stimulating educators to try out and implement these innovations.
- Building credibility about the usefulness of these innovations by actually operating them on demonstration sites in school districts similar to those of potential innovators.
- Building credibility about the usefulness of these innovations by having respected educational leaders serve as tour guides for groups of potential innovators who visit the demonstration sites.

OPERATION

- Only those schools where significant innovations have been in operation for at least one year would be selected for site visits by the traveling seminars.
- Each seminar would visit several schools. Some of the schools would be demonstrating the same innovation, so that each seminar would see only a few different innovations.
- Each seminar would consist of approximately thirty educators.
- Each seminar would be led by a well-known and respected educator.
- Subjects to be investigated might include grouping, scheduling, school organization, curriculum and teaching methods, or other areas where innovation has occurred.
- Seminar participants would include local administrators, state department and teacher-training personnel representatives, supervisors, teachers, school board members, educational specialists, and community group representatives.

LINKS WITH THE OFFICE OF EDUCATION

The National Center for Educational Communication in OE would manage the traveling seminar program. The management tasks would be:

- Selecting school districts for site visitation.
- Selecting educational leaders to head the seminar.

- Organizing the groups of participants.
- Assisting the seminar leader in disseminating information about the demonstration sites.

LINKS WITH NIE

- NIE would either totally sponsor or share the costs of implementing innovations within school districts across the country selected by OE as candidate demonstration sites.
- NIE and OE would agree on which of these sites would be used as demonstration sites after they had operated for a period of time.

ADVANTAGES

The advantages of the traveling seminar approach to dissemination are that:

- The impact of the demonstration is high because potential users are brought to sites where innovations have actually been in operation for at least one year.
- The impact is high also because the demonstration sites are in schools similar to those in which the potential innovations are involved.
- Potential users may discuss the innovations with their professional peers at the site in addition to research or demonstration experts.
- Contacts are face-to-face.

DISADVANTAGES

- The traveling seminar approach does not encourage two-way flows of information between the R&D system and users. There is no direct channel by which problems arising in the use of a new technique or product can be transmitted back to the R&D system, nor is there a direct way by which new problems can be suggested as topics for work by the R&D system.

- The objective of the traveling seminar is dissemination of information, not assistance in the implementation of innovations. Participants in the traveling seminars must be sufficiently motivated during the demonstrations to overcome any obstacles encountered in attempting to adopt the innovation in their own practice.

SOCIAL INTERACTION MECHANISM FOR INNOVATION:

The Innovation Team

BASIC PREMISES

If teachers felt more responsibility for initiating change in their environment and more authority to make decisions about curriculum and instructional methods, innovation would be sustained at a much higher level in school systems. Progress toward these ends can be achieved by establishing an Innovation Team that works with teachers to make them aware of innovation and to help them solve problems encountered during the trial and adoption stages of innovation. These services are provided only when the teacher requests them.

- A variety of useful innovations and resources are assumed to be available in the school system and elsewhere in the form of training programs and instructional materials.
- The primary purpose of the Innovation Team is to help the teachers select their educational goals, assess the pupils needs, and apply the appropriate educational innovations. The entire range of classroom problems is considered.
- Teachers will feel more responsibility for succeeding in adopting an innovation and be more likely to seek consultative advice if the Innovation Team is composed largely of fellow teachers from the schools being assisted.
- The Innovation Team should be relatively free of pressures from school administration.
- The Innovation Team should function permanently but be restaffed periodically to institutionalize innovation as a mode of operation in the schools.
- To maximize the propects for successful innovation the Team should have access to people and material resources outside normal school system channels.

PRIMARY MANAGEMENT EMPHASES

- The Innovation Team would be composed of teachers specially

trained in the innovations available for adoption.

- The chairman of the Team would be a consultant, expert in the management of innovation support services.
- The Innovation Team would plan and perform the innovation support program as a full-time responsibility.
- The Innovation Team would provide assistance only in response to requests by teachers, and except for announcing the availability of services, would never attempt to "sell" teachers its services.
- Innovation Team costs would be paid for five years by grants from the Federal government and matched by the State government. Beyond five years, costs would be paid from local sources.

ORGANIZATION

The governmental structure for managing an Innovation Team program would be minimal, in keeping with the objective of maximizing teacher responsibility. The principal government agencies would be an office in NCEC to issue formula-determined amounts of funds to the states and an office at the state level (or the State Extension Service, if one exists) that would allocate the formula funds to selected projects, using a peer-review system. To further reinforce the responsibility of teachers for innovation, most of the peer review panel would be former members of Innovation Teams. No technical support would be provided for the Innovation Team.

The Innovation Team would consist of ten to fifteen members chosen initially by a school official. Most Team members would be from the schools to be serviced by the Innovation Team, and would have achieved considerable success, with at least one of the innovations available for adoption. Team members would be appointed for two year terms. To help insulate the Innovation Team from administrative pressures, replacements would be selected by the remaining team members. Each Team member would receive full teaching salary and be relieved of all teaching duties. The Innovation Team would

be broken into semi-independent subgroups of two or three, with each subgroup assigned to one school.

RUDIMENTS OF OPERATION

In operation the Innovation Team would operate according to the following outline:

- The Team would be free to evolve its own operations, approaches, and strategies.
- Planning would be done during a summer session in which subject matter priorities and target teacher populations would be determined.
- Most Teams would elect to establish offices away from the schools being served.
- During the academic year the primary functions of the Team members would be planning and conducting workshops for teachers, direct classroom aid, and procurement of supplies and expertise. Extensive use would be made of consultants and experts from outside the school system.
- The weekly schedule of Team members would be four days of assistance and one day of meeting as a group to dicuss problems and programs.
- As the Team matured, part-time effort could be devoted to special purpose curriculum projects.

LINKS TO THE OFFICE OF EDUCATION

- Links to OE would be indirect and few, if any.

LINKS TO NIE

- The expert in managing innovation support efforts could well be based in a division of a regional laboratory that specializes in teacher training and implementation of programs in schools. The regional laboratory could be supported by NIE.

ADVANTAGES

The advantages of Innovation Teams are that:

- A means for bringing external resources more directly to teachers in the classroom is provided.
- The Innovation Team deals with each teacher on an individual basis, by making it possible to tailor services directly to his or her needs.
- Assistance is provided only on request, making its use more likely.

DISADVANTAGES

The disadvantages of Innovation Teams are that:

- No explicit means for relaying needs and problems back to R&D are provided.
- No external management control is exerted on the Innovation Team as a check on quality of performance.

PROBLEM-SOLVING MECHANISM FOR INNOVATION: Renewal Site

BASIC PREMISES

Local schools have the resources to support problem-solving activities, but social, political, and managerial factors are preventing this activity from occurring. There are four principal difficulties: (1) a lack of knowledge in the local educational community (students, parents, teachers, and administrators) about how to accomplish problem-solving, (2) a lack of appreciation for the importance of deliberate problem-solving activity as a key to reform, (3) a lack of consensus among the diverse elements of the local educational community about the identity and importance of problems, and (4) a lack of awareness about existing solutions to problems. An effective way to oversome these deficiencies is to assign responsibility for planning and implementing a program of reform to a representative council of citizens and education professionals.

- Consensus will be possible, and probably even more likely in the long run, if people from all elements of the local school community are involved in the problem-solving effort.
- The Council's jurisdiction would be limited to from one to a few schools rather than extended over a large number of schools, to minimize the difficulty of achieving consensus and getting a sizable percentage of participation in council efforts.
- The cluster of schools involved would be called a Renewal Site.
- The Renewal Site would have license to consider any problem in the schools under its juridiction, and be subject to the School Board's but not the Superintendent's authority.
- Local communities will not start a Renewal Site unless the financial cost to the school system is near zero.
- After experiencing the benefits that result from Renewal Site effort, the local school community would be willing to pay all Renewal Site costs.

ORGANIZATION

Three organizational entities would be required in managing a program of Renewal Sites: A National Center for Education Renewal in OE, the State Departments of Education, and the local school board.

- The National Center would have two responsibilities:
  - (1) Evaluating and approving applications for Renewal Site grants.
  - (2) Directing Renewal Site councils to experts who would help define or solve educational problems.
- The State Departments of Education would have two responsibilities:
  - (1) Stimulating Renewal Site applications
  - (2) Directing Renewal Site councils to experts who would help define or solve problems.
- OE would award funds for Renewal Sites to local school boards. With the encouragement of OE and the State Departments of Education, the school boards would delegate authority for managing these funds to the Renewal Site Council, and retain only an overseer role.

The Renewal Site Council would have ten members representing the school board, superintendent's office, principals, teachers, parents, students, and citizens.

- Members would serve for three year terms to maintain continuity in the planning activity.
- Members would be appointed by the school board.
- The Council would be a working team and not a management board.
- OE support to a Renewal Site would last only five years. Renewal Sites would be encouraged to continue their work indefinitely with support from local funds.

OPERATION

- The first phase of Council operations would be assessing problems within the Renewal Site. This activity could take many months, as all elements of the Renewal Site community would need to be contacted.
- The next phase of operations would be planning an action program to solve or alleviate the problem.

- The final phase would be evaluating success and restarting the assessment process.
- The Council would have funds to hire outside expertise.
- Typical issues which a Renewal Site might address are: parent-school relationships, installing modular scheduling, and, as an example of a special problem, smoothing the transition between a conservative group of elementary schools and a very innovative high school.
- Experimentation has shown that the work of problem-solving teams like Renewal Site Councils can be considerably improved if the team receives training from expert problem-solving specialists in human relations, application of problem-solving models, and the handling of survey data.
- As the Council matures, part of its work should be training others in the local community to be change agents.
- As the Council matures, other functions could be added: a subordinate Research and Development Council, a mechanism for detecting successful innovations in nearby schools, a mechanism for continuous assessment of needs, a mechanism for training change agents, a Teacher Center, and a Parent Center.

ADVANTAGES

- The members of the Renewal Site Council are socially linked to and familiar with the community's problems.
- The Renewal Site can be a permanent structure for facilitating innovation.

DISADVANTAGES

- There are no direct channels for feeding back needs to the R&D community except to the extent that members of the latter are brought in as consultants.
- The Renewal Site Council has initially very little familiarity with problem-solving methods and sources of information.
- Renewal Site Councils are parallel to normal administrative channels and sometimes doubt their own authority to act.

LINKAGE MECHANISMS FOR INNOVATION:

Resource Personnel Workshop

BASIC PREMISE

Educational development cannot be separated from innovation which happens when developed products are simply released to the educational marketplace. The difficulties with this approach are (1) that teachers and administrators are not innovation oriented and, hence, are not looking for innovations to solve their problems; (2) that local constraints and resources seldom match the requirements of a curriculum produced for a national market; and (3) that publishing houses tend to "brutalize" a curriculum in the drive to sell materials. A solution to these difficulties is the Resource Personnel Workshop concept, where the developers of a curriculum are engaged to run workshops that train resource people who will then work with schools in modifying and adopting a new curriculum.

- Since a major problem in adopting a new curriculum is adapting the curriculum to local constraints and resources, the resource people should be school personnel familiar with problems in the schools where the curriculum will be installed.
- Because of variations among localities, separate workshops must be run for different regions of the country.
- The spirit and intent of a development, which is usually the fundamental innovation, is more likely to be replicated in practice if someone heavily involved in the original development is the Workshop leader.

PRIMARY MANAGEMENT EMPHASES

- The objective in running Resource Personnel Workshops is to train and assist people who will help practitioners modify and use a new educational development.
- The Workshop leader should be someone who was involved in the original development effort.

- A number of schools in the area served by a Workshop should be at least interested in adopting the new curriculum before the Workshop starts, but one responsibility of the Workshop teams would be promoting the adoption of the new curriculum.
- The Workshop participants should meet periodically over one year's time to resolve difficulties encountered in working with practitioners.
- Workshop participants should be chosen by the Workshop leader, preferably from the schools interested in adopting the new curriculum.
- The Workshop participants should be supported to continue their work in additional schools after the Workshop formally ends.

ORGANIZATION

Resource Personnel Workshops (RPW's) could be administered by a variety of arrangements. One would be to consider RPW's as an integral part of an NIE development project. Another arrangement would be to assign responsibility for managing RPW's to the Office of Education. Especially for regional development projects, RPW's could be managed by the regional laboratory or the State Department of Education.

The administrative tasks that need to be performed are:

- Finding a group of schools interested in adopting the new curriculum.
- Interesting a member of the development team to submit a project proposal for an RPW.
- Evaluating solicited and unsolicited proposals.
- Selecting which projects to fund.
- Monitoring and supporting ongoing projects.

Each Workshop would consist of approximately thirty participants divided into teams of two or three. Typically, a team consists of a subject matter specialist and two teachers, or a principal and two teachers. All would have experience in schools similar to and nearby

the schools to be reached with the new curriculum.

- The training portion of a Workshop project would be conducted during the summer.
- A principal objective would be transmitting sufficient understanding of the fundamental innovation to the participants, so that, when faced with classroom realities, they would be able to recommend a practice that faithfully reproduced the intent and effect of the curriculum design.
- During the academic year the Workshop teams would be working with teachers in an assigned area. Activities could include stimulating their interest in the new curriculum, and assisting them in adapting it to their classroom needs and goals.
- The Workshop could reconvene periodically to work out mutual problems and exchange insights.
- The Workshop leader would also make periodic visits to the Workshop teams and the teachers being aided, as a counseling and evaluative mechanism.

ADVANTAGES

- The Workshop is a reciprocal mechanism because it provides a way for developers to see the practical difficulties involved in using their products.
- The Workshop is an innovation mechanism in which all contacts are face-to-face.
- The Workshop teams are from the same school environment of practitioners being served.
- The Workshop format is easily adapted to working with institutions other than schools.

DISADVANTAGES

- The relationship between practitioners and R&D is temporary, and limited to a small portion of the whole program of a school

- The "fan-out" ratio of Workshops is low because one developer trains on the average ten Workshop teams per year, who train maybe fifty teachers over the average team's lifetime.

LINKAGE MECHANISM FOR INNOVATION: The Educational Extension Agent

BASIC PREMISES

- Educational R&D has and will produce many innovative products and methods potentially useful to practitioners in solving problems or improving the quality of their practice.
- For a variety of reasons, most practitioners do not naturally engage in enough problem solving activity to cause them to search out innovations that could be employed.
- The most effective way to induce sufficient problem-solving behavior in practitioners is to establish permanent personal relationships between them and the Extension Agents who are responsible for stimulating problem-solving behavior and mobilizing resources.
- These extension agents must have ready access to R&D products and knowledge relevant to the problems they encounter, if they are to be successful in the long run.
- Extension agents will be more responsive to the practitioners' needs, and more often used, if practitioners pay at least part of the cost of supporting the Extension Agent system.

PRIMARY MANAGEMENT EMPHASES

The primary emphases in the extension agent approach to managing innovation are:

- provide practitioners and others with the personal services of an Extension Agent, who permanently associates and works with these practitioners and others in diagnosing educational problems and finding the resources to solve them.
- Have each agent reside in and take responsiblity for school district-sized areas of the county.
- Link extension agents strongly to a regional research and development facility that provides them with relevant information.

- Have the practitioners and others using the agents' services pay part of the agents' support costs.
- Once the practitioners' confidence is gained, use the extension system programmatically for diffusing important R&D results into practice.

ORGANIZATION

The organizational arrangement for delivering extension services is a decentralized structure containing the National Center for Educational Communications (in the Office of Education) and a number of Regional Educational Extension Services.

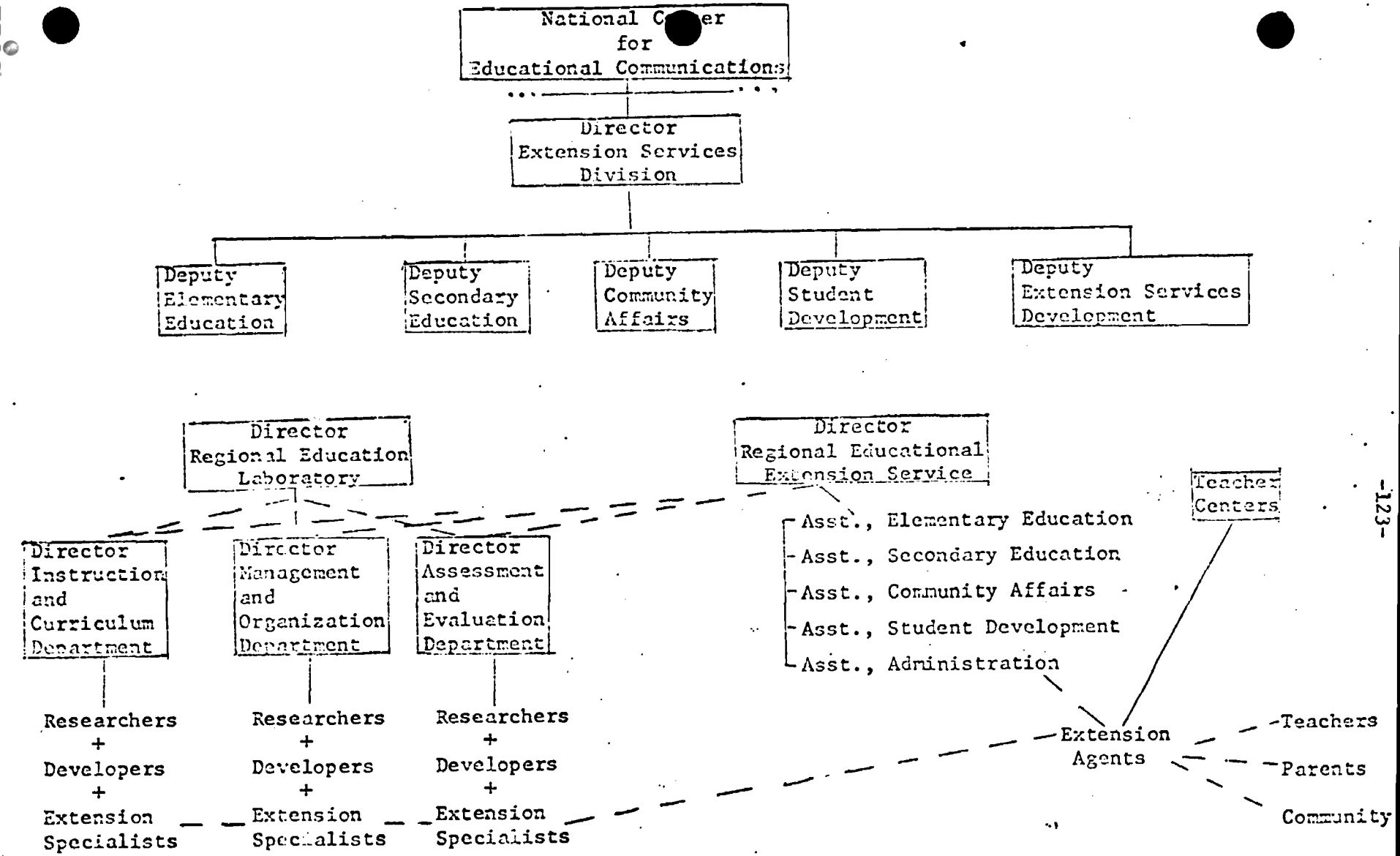
National Center for Educational Communications

The National Center for Educational Communications would have three primary responsibilities: (1) evaluating the performance of the Regional Educational Extension Services, (2) developing, testing, and implementing new extension practices, and (3) organizing programmatic efforts to diffuse nationally important R&D results through the extension network. The National Center might also manage other innovation programs, such as a computerized abstract service or Teacher Centers.

The National Center would be organized into five divisions: four subject-oriented divisions and one responsible for extension service development. The subject-oriented divisions would have responsiblity for evaluating the performance of the Regional Extension Services and organizing the programmatic efforts.

Regional Extension Services

Adjacent to each Regional Laboratory maintained by the NIE would be a Regional Educational Extension Service headed by a Director of Regional Educational Extension. The Director would have five assistants, one in each of the subject areas defined by the National Center and one for administration. Each Assistant would have sufficient managerial and technical staff to fulfill four responsibilities: (1) tend to the administrative needs of extension agents, (2) participate in the planning and management


National Center for Educational Communications
Director Extension Services Division
Deputy Elementary Education
Deputy Secondary Education
Deputy Community Affairs
Deputy Student Development
Deputy Extension Services Development
Director Regional Education Laboratory
Director Regional Educational Extension Service
Teacher Centers
Director Instruction and Curriculum Department
Director Management and Organization Department
Director Assessment and Evaluation Department
Asst., Elementary Education
Asst., Secondary Education
Asst., Community Affairs
Asst., Student Development
Asst., Administration
Researchers + Developers + Extension Specialists
Researchers + Developers + Extension Specialists
Researchers + Developers + Extension Specialists
Extension Agents
Teachers
Parents
Community

of national diffusion initiatives, (3) plan and execute regional diffusion initiatives, and (4) hire and develop the corps of Extension Agents.

The Regional Extension Service would be supported by funds from two sources: a formula grant from the National Center, and matching shares from the participating school districts.

Extension Agents

Extension Agents would be assigned responsibility for a geographic area encompassing one or more school districts. The xtension gent would establish working relationships with head teachers, influential administrators, citizens, and others by working with them (1) to diagnose and solve their problems, and (2) to recognize opportunities. The extension agent could be assisted by whatever additional staff is necessary.

The extension agent could locate his office in a Teacher Center, should one be available, as an ideal way to establish and maintain contacts in the educational community.

In solving problems the Extension Agents would have many demands for information, products, and direct assistance from R&D. The Extension Agent would direct these requests to the appropriate Extension Specialist working in the nearest Regional Education Laboratory.

Extension Specialists

Each Regional Education Laboratory would have several Extension Specialists on its staff. Each Extension Specialist would be responsible for knowing all the research and development results in an assigned subject area and responding to assistance requests from Extension Agents.

The Extension Specialists would be considered staff members of the individual departments in the Regional Education Laboratory, since they would be hired and managed by the department directors and located with the rest of the department staff. Many of the Specialists would do R&D on a part-time basis.

To coordinate the activities and performance of Extension Specialists with the needs of Extension Agents, each department head in the Laboratory would report to the Director of the Regional Extension Service in addition to the Director of the Regional Education Laboratory. The Regional Extension Service would give the department head an annual budget for Extension Specialist services.

LINKS WITH THE OFFICE OF EDUCATION

- The National Center for Educational Communications in OE would manage the extension network, creating a natural linkage.

LINKS WITH NIE

- R&D inputs would flow "horizontally" from regionally located researchers and developers supported by NIE through the Extension Specialists to Extension Agents and practitioners.
- R&D needs would be transmitted back to NIE through several mechanisms:
  - (1) Extension Specialists would influence researchers and developers in the Regional Laboratories in their choice of problems
  - (2) the Regional Extension Service Director could influence the Directors of the Regional Education Laboratory, and
  - (3) the National Center could request assistance from NIE through its linkages with NIE.

ADVANTAGES

The advantages of the extension agent concept are:

- The system is reciprocal in that the same linkages used for diffusing R&D results into practice are channels for influencing the direction of R&D activity.
- Because the system is formally structured and permanent, practitioners know where to find assistance and have less difficulty communicating needs.

- Contacts are all face-to-face.
- Contacts are all locally convenient to practitioners.

DISADVANTAGES

- The Extension Agent builds a network of social relationships and commitments not easily changed.
- The Extension Agent's services are vulnerable to capture by segments of the educational community.

LINKAGE MECHANISM FOR INNOVATION: Local R&D

BASIC PREMISE

A school district will be more likely to use R&D results if the district itself conducts R&D.

- The district's R&D personnel will associate with professional peers outside the school district, providing natural linkages between R&D and the local school district.
- When performed locally, R&D can be very responsive to a particular classroom practice or managerial decision, which makes it very useful to the local district. This usefulness should increase the demand for R&D by local users. Administrators and practitioners will more likely accept R&D results if they are produced by their own organization than if they are produced by external agencies.
- School districts will not pay for R&D with their own resources until its usefulness to them is clearly demonstrated.

PRIMARY MANAGEMENT EMPHASES

- School districts would receive a block grant of funds from the state for a five year period to pay for R&D.
- School districts would decide how to spend this R&D money.
- The State Department of Education would provide assistance in establishing the R&D capability to each participating school district.
- The district would be encouraged to continue the R&D program on its own funds after five years.

ORGANIZATION

The organizational arrangement for local R&D would consist of agencies at two levels: a Division of Local R&D Assistance at the federal level, and R&D Advisory Services in each of the State Departments of Education.

Division of Local R&D Assistance

The Division of Local R&D Assistance would be part of the National Center for Educational Communications in OE or part of NIE. The Division would have four responsibilities: (1) making formula grants of funds to State Departments of Education for award to local school districts, (2) developing improved policies for conducting local R&D, (3) providing technical assistance to the states in developing and managing their Local R&D Assistance Funds, and (4) evaluating local R&D efforts. The staff of this division would be expert in techniques for developing R&D capability at the local level.

State R&D Advisory Service

Each State R&D Advisory Service would award a number of local school districts funds to be spent on R&D over a five year period. The state staff would have three responsibilities: (1) stimulating and evaluating applications for R&D awards, (2) conducting R&D on the best strategies for conducting R&D, and (3) providing assistance to local districts in designing their program, acquiring staff, linking the local effort to regional R&D institutions, and securing long-term financial support.

School Districts

Each school district would establish an Office of Research and Development to manage and/or conduct R&D, with a Director reporting to the Superintendent of Schools. The Office would consist of two or three R&D professionals and a number of research aides, such as teachers on part-time assignment. The Office could be designed to serve school decision-makers (such as the Board of Education) or instructional purposes, depending on district needs and opportunities.

LINKS WITH THE OFFICE OF EDUCATION

The principal contacts with OE would be visits by professional staff from the Division of Local R&D Assistance (if it was located in OE) near the beginning and near the end of a district's five year grant. The result of these visits would be an evaluation report jointly approved by the Office of Research and Development Director and the Division Staff. These reports would be a principal means of developing improved policies for conducting local R&D for recommendation to the States. The Division would not attempt to evaluate every local effort but only a sample of the total.

LINKS WITH NIE

Most local Offices of Research and Development would be linked with an adjacent R&D facility. Many of these facilities would be associated with NIE.

ADVANTAGES

The advantages of local R&D are several:

- Decision making and/or instruction would be improved at the local level through the results of R&D addressed specifically to local problems.
- As producers of R&D, the districts would more likely become consumers of R&D produced elsewhere.
- Local districts would develop a working relationship with a regional R&D institution.

DISADVANTAGES

Several disadvantages of local R&D are also apparent:

- Qualified staff for conducting and/or managing R&D locally is extremely scarce, and would be hard to keep in a small, remote unit such as a school R&D staff.
- Qualified staff for the State Advisory Service is crucial to development of competent local R&D, but like qualified staff for the local offices, it is in very short supply.

- The local office could be subjected to extreme political pressures that would be a burden on the staff's time and might compromise the objectivity of the R&D effort.
- A difficult decision would have to be made to favor grants to local districts where resources and competency are high or to local districts where resources and competency are low.