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ABSTRACT This publication is intended to serve as a guide to nine elementary teacher education models financed by the U. S. Office of Education in 1968. The authors of the models, gathered at a 2-day conference in April, 1969, wrote the nine summaries of their models which appear in this guide. Each summary is similarly organized (except one not written at the conference) and presents information about model goals; selection procedures, preservice, professional, academic, and inservice components; faculty; evaluation; and management. An index at the end of the guide cross references similar concepts in the model summaries, such as behavioral objectives, individualized instruction, behavioral specifications, and a systems approach to teacher education. The guide also includes a transcript of a discussion among the writers about certification, institutional change, inservice programs, and other concerns of teacher educators. Related documents (including the nine models from Florida State University; Michigan State University; Northwest Regional Educational Laboratory; Syracuse University; Teachers College, Columbia University; and the Universities of Georgia, Massachusetts, Pittsburgh, and Toledo) are Ed's: 018 677, 025 456-7, 024 490, 025 491-2, 025 495, 026 301-2, 026 305-31, 027 268, 027 275, 027 283, 027 284, 027 285-7, 029 813, 030 631, 031 460. (LP)

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A READER'S GUIDE TO THE COMPREHENSIVE MODELS FOR PREPARING ELEMENTARY TEACHERS

Edited by Joel L. Burdin
and Kaliopee Lanzillotti
ERIC Clearinghouse on Teacher Education

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FOREWORD

The American Association of Colleges for Teacher Education is proud to be associated with the National Commission on Teacher Education and Professional Standards and the Association for Student Teaching as co-sponsors of the ERIC Clearinghouse on Teacher Education. This Guide represents a tangible way in which the resources of the sponsoring groups can contribute to the Clearinghouse through the dissemination of information and professional materials.

When it became evident that interest in the Comprehensive Elementary Teacher Education Models justified an extensive distribution of this Guide--beyond the capabilities of the Clearinghouse itself--the AACTE agreed to print several thousand copies to stimulate study of the models in order for them to be adapted to local situations when desirable and feasible. This interest in spreading new ideas for restructuring programs for the preparation of school personnel is in keeping with the AACTE's continuous efforts to improve education. The Association is pleased that this publication will stimulate widespread study of the Models.

The AACTE solicits the active support of the ERIC Clearinghouse on Teacher Education by all who are interested in the preparation of educational personnel. The partnership of the education community, professional associations, and other groups and individuals is essential for attaining the Clearinghouse's potentialities. The processing of available ideas and information and the generation of new materials--such as this Guide--are important keys to opening the doors to improve education for America's citizens-in-process.

Edward C. Pomeroy
Executive Secretary,
American Association of Colleges
for Teacher Education

December 1969

INTRODUCTION

On October 16, 1967, the U.S. Office of Education issued a request for the development of proposals on educational specifications for comprehensive undergraduate and inservice teacher education programs for elementary teachers. (The term elementary teacher included preschool teachers and teachers through grade 8.)

These proposals were for the design phase (phase I) of an intended three-phase project. By January 1, 1968, 80 proposals had been received. On March 1, 1968, the Bureau of Research awarded nine contracts to design conceptual models for programs for the training of prekindergarten and elementary school teachers, for the preservice as well as inservice components. These models were completed October 31, 1968.

Reports on phase I have been made under the following titles: A Model for the Preparation of Elementary School Teachers (Florida State University), G. Wesley Sowards, project manager; Behavioral Science Elementary Teacher Education Program (Michigan State University), W. Robert Houston, project director; A Competency-Based, Field-Centered Systems Approach to Elementary Education (Northwest Regional Educational Laboratory), H. Del Schalock and James R. Hale, editors; Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers (Syracuse University), William Benjamin and others, authors; The Teacher-Innovator: A Program To Prepare Teachers (Teachers College, Columbia University), Bruce R. Joyce, principal author.

Also, Georgia Educational Model Specifications for the Preparation of Elementary Teachers (The University of Georgia), Charles E. Johnson, Gilbert F. Shearron, and A. John Stauffer, directors; Educational Specifications for a Comprehensive Elementary Teacher Education Program (The University of Toledo), George E. Dickson, director; A Model of Teacher Training for the Individualization of Instruction (University of Pittsburgh), Horton C. Southworth, director; and Model Elementary Teacher Education Program (University of Massachusetts), Dwight Allen, principal investigator, and James M. Cooper, project director.

In phase II, several institutions are studying the feasibility of developing, implementing, and operating a model program based upon specifications in phase I. In the third phase, the U.S. Office of Education hopes to be able to support implementation of some of the model proposals for restructuring teacher education.

Since the models cover almost 6,000 pages devoted to detailed specifications of behavioral objectives, materials, treatments, evaluation of specific elements of the programs, and the like, the ERIC Clearinghouse on Teacher Education, on April 15-16, 1969, sponsored in collaboration with the American Association of Colleges for Teacher Education (AACTE) which acts as its fiscal agent, a writers' conference in which key personnel involved in developing the models wrote guides to their specific programs.

A second-day of verbal interaction followed, at which time the writers discussed their personal reactions to all of the models and past, present, and future implications for teacher education. The panelists wanted to make it clear that in their discussion the models were being described at but one point on a continuum. They called the models catalytic agents which have generated a great deal of discussion, interaction, and continuing change. At this conference they said it was important for them to explore the range of alternative interpretations of issues such as, "What are behavioral objectives? What is a model? What does it mean to personalize? To individualize?" They said that some kind of projection needed to be made about what remains to be done--either by resolving issues, or if they are resolved, to act upon them. This whole exercise [the writers' conference] will have made a major contribution to teacher education if it focuses on the issues at the center of this whole models effort and helps to extend the models, they said.

This guide to the models should assist those who are interested in learning about or implementing them. The entire collection of models is available from the ERIC system in either hard copy or microfiche and from the Government Printing Office (GPO) in a honeycomb binding. The ERIC ordering address is: EDRS, The National Cash Register Co., 4936 Fairmont Avenue, Bethesda, Md. 20014. The GPO address is: The Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

The reports must be ordered by number. Any request without order numbers will be returned. Some of the reports listed do not have ERIC order numbers. These reports may not be ordered until the listing appears in Research in Education, the monthly abstract journal of ERIC.

The reports are available at the following prices:

Report By:	GPO Reprint Order No.	Price	ED No.	ERIC Hard Copy	Micro-fiche
Syracuse Univ.	FS 5.258:58016	$4.50	--- ---	------	-----
Volume I	----------	----	026 301	$14.85	$1.25
Volume II	----------	----	026 302	13.55	1.25
Univ. of Pittsburgh	FS 5.258:58017	2.50	025 495	10.60	1.00
Florida State Univ.	----------	----	--- ---	-----	----
Volume I	FS 5.258:58018	2.00	027 283	8.70	.75
Volume II	Not available	----	030 631	7.40	.75
Univ. of Georgia	FS 5.258:58019	3.50	025 491	14.85	1.25
Summary	----------	----	025 492	1.50	.25
Northwest Regional Educational Laboratory	FS 5.258:58020	6.50	--- ---	----	----
Overview and Specifications			026 305	7.65	.75

Report By:	Order No. Price	ED No.	ERIC Hard Copy	Micro-fiche
Appendix A:	Taxonomy of Learner Outcome	026 306	.55	.25
B:	Conceptual Model for Teaching Elementary Math	026 307	1.70	.25
C:	Content Model for Teaching Elementary Math	026 308	1.70	.25
D:	Sample Task Analysis and Behavioral Objectives	026 309	.70	.25
E:	General Adaptive Strategies	026 310	1.25	.25
F:	Interpersonal Competencies	026 311	.40	.25
G:	Basic Training Model for ComField Practicum	026 312	.45	.25
H:	Sample Task Analysis: Behavioral Objectives for ComField Laboratory	026 313	.65	.25
I:	Experimental Model for Preparing To Develop Behavioral Objectives	026 314	4.50	.50
J:	Experimental Model To Enable Instructional Managers To Demonstrate Interaction Competency	026 315	1.40	.25
K:	Trial Form of an Instrument for Evaluating Instructional Managers in the Practicum	026 316	.45	.25
L:	A Sequence for the Practicum	026 317	.60	.25
M:	Research Utilization and Problem Solving	026 318	3.20	.50
N:	Implementation of Rups System in a Total School District	026 319	2.20	.25
O:	The Human Relations School	026 320	1.05	.25
P:	Categorical Breakdown of Interpersonal Area	026 321	.30	.25
Q:	Educational Leaders Laboratory	026 322	.30	.25
R:	A Basic Communication Skill for Improving Interpersonal Relationships	026 323	.75	.25
S:	Broad Curricular Planning for the ComField Model Teacher Education Program	026 324	.85	.25
T:	Personalizing Teacher Education	026 325	.55	.25
U:	Self-Concept and Teaching	026 326	.70	.25
V:	Charting the Decision Making Structure of an Organization	026 327	.70	.25
W:	Cost Analysis in Teacher Education Programs	026 328	.80	.25

Report By:	GPO Reprint Order No.	Price	ED No.	ERIC Hard Copy	Micro-fiche
X: ComField Information Management System			026 329	.80	.25
Y: The Integrated Communications Experiment (ICE) Summary			026 330	.75	.25
Z: Classes of Measures Used in Behavioral Sciences, Nature of Data That Derive from Them, and Comments as to the Advantages and Disadvantages of Each			026 331	.40	.25
Teachers College, Columbia Univ.	FS 5.258:58021	4.50	027 284	26.95	2.00
Univ. of Massachusetts	FS 5.258:58022	4.50	025 490	26.25	2.25
Univ. of Toledo	FS 5.258:58023	7.00	--- ---	-----	----
Volume I	----------	----	025 457	12.80	1.00
Volume II	----------	----	025 456	34.85	3.00
Michigan State Univ.	----------	----	--- ---	-----	----
Volume I	FS 5.258:58024	5.00	027 285	31.35	2.50
Volume II	FS 5.258:58024	5.50	027 286	37.95	3.00
Volume III	FS 5.258:58024	5.00	027 287	29.65	2.25

Also available (or to be available soon) are the following related reports: 1. Nine Proposals for Elementary Teacher Education, A Description of Plans To Design Exemplary Training Programs by Nicholas A. Fattu of Indiana University. This document is a summary of the nine originally proposed programs which were funded in phase I of the project for preparing elementary teachers. Available through ERIC: ED 018 677, Price: $6.55 for hard copy; $0.75 for microfiche. 2. Analysis and Evaluation of Plans for Comprehensive Elementary Teacher Education Models by William E. Engbretson of Governors State University. This document is an analysis of the 71 proposed, but unfunded models of phase I. Available through ERIC: ED 027 [illegible]58, Price: $12.60, hard copy; $1.00, microfiche.

3. A self-initiated critique of the Syracuse University model program, Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers. ED 027 27[illegible], Price: $7.20 for hard copy; $0.75 for microfiche. 4. Some Comments on Nine Elementary Teacher Education Models by the System Development Corporation. This paper is adapted from remarks made at an American Educational Research Association conference in November 1968. Available through ERIC: ED 029 813, Price $0.75 for hard copy; $0.25 for microfiche. 5. Twenty-page summaries of the nine reports are available, free of charge, from: Elementary Teacher Education Project, Division of Elementary and Secondary Research, National Center for Educational Research and Development, U.S. Office of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

6. A Bibliography of References Used in the Preparation of Nine Model Teacher Education Programs by James F. Schaefer Jr. (Washington, D.C.: ERIC Clearinghouse on Teacher Education and the Bureau of

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Research, U.S. Office of Education, 1969). ED 031 460, Price: $4.95, hard copy; $0.50, microfiche. 7. Analytic Summaries of Specifications for Model Teacher Education Programs, 8. A Short Summary of 10 Model Teacher Education Programs, and 9. Techniques for Developing an Elementary Teacher Education Model are three publications which were issued by the System Development Corporation in July 1969.

It is appropriate to express appreciation to the Clearinghouse staff for its dedication and hard work in completing this manuscript: Dr. Joost Yff, assistant director, and Mrs. Dorothy Mueller, program associate, whose advice and guidance were invaluable; Mrs. Lorraine Poliakoff and Mrs. Suzanne Martin, information analysts, who provided the index to this volume; and to the clerical staff of the Clearinghouse, especially Mrs. Vera Juarez, whose steady assistance made this publication possible. Appreciation also should be expressed to AACTE for its role in the conference and in this Guide, and, of course, to the writers of the guides for their full cooperation both during and after the conference.

The ERIC Clearinghouse on Teacher Education is pleased to present this guide to the nine models in the hope that it will stimulate extensive study of ways to improve school personnel preparation and thereby the educational opportunities for America's children and youth.

Kaliopee Lanzillotti, Publications Coordinator

Joel Burdin, Director

December 1969

HOW TO USE THIS GUIDE

This publication has three main sections--guides to each of the nine models, a section on the second-day interaction, and an index which provides cross-references.

The guides all have this general outline: overview, program goals and rationale, selection procedures, professional preservice component, relationship of professional component to academic component, inservice component, faculty requirements and staff utilization, evaluation component, program management, and summary. The Teachers College guide, which was not written at the conference, is the only one with a different outline.

In the Government Printing Office (GPO) edition of the models, some of the pages were numbered differently from the original reports which were processed into the ERIC system. For the readers' convenience, the footnotes to the guides include the page references to both the GPO and ED (ERIC) editions. If the page references in the footnotes were the same for both editions, only one set of page numbers is given.

"ED" or order numbers for the models appear along with the prices and other information in the introduction. Ordering information about other references in the ERIC collection would appear in the bibliography to each guide.

ABOUT ERIC

The Educational Resources Information Center (ERIC) forms a nationwide information system established by the U.S. Office of Education, designed to serve and advance American education. Its basic objective is to provide ideas and information on significant current documents (e.g., research reports, articles, theoretical papers, program descriptions, published or unpublished conference papers, newsletters, and curriculum guides or studies) and to publicize the availability of such documents. Central ERIC is the term given to the function of the U.S. Office of Education, which provides policy, coordination, training, funds, and general services to the 19 clearinghouses in the information system. Each clearinghouse focuses its activities on a separate subject-matter area; acquires, evaluates, abstracts, and indexes documents; processes many significant documents into the ERIC system; and publicizes available ideas and information to the education community through its own publications, those of Central ERIC, and other educational media.

Teacher Education and ERIC

The ERIC Clearinghouse on Teacher Education, established June 20, 1968, is sponsored by three professional groups--the American Association of Colleges for Teacher Education (fiscal agent); the National Commission on Teacher Education and Professional Standards of the National Education Association (NEA); and the Association for Student Teaching, a national affiliate of NEA. It is located at One Dupont Circle, Washington, D.C. 20036.

Scope of Clearinghouse Activities

Users of this guide are encouraged to send to the ERIC Clearinghouse on Teacher Education documents related to its scope, a statement of which follows:

> *The Clearinghouse is responsible for research reports, curriculum descriptions, theoretical papers, addresses, and other materials relative to the preparation of school personnel (nursery, elementary, secondary, and supporting school personnel); the preparation and development of teacher educators; and the profession of teaching. The scope includes recruitment, selection, lifelong personal and professional development, and teacher placement as well as the profession of teaching. While the major interest of the Clearinghouse is professional preparation and practice in America, it also is interested in international aspects of the field.*

The scope also guides the Clearinghouse's Advisory and Policy Council and staff in decisionmaking relative to the commissioning of monographs, bibliographies, and directories. The scope is a flexible guide in the idea and information needs of those concerned with the pre- and inservice preparation of school personnel and the profession of teaching.

GUIDES TO THE MODELS

FLORIDA STATE UNIVERSITY

A Guide
to

A MODEL FOR THE PREPARATION OF ELEMENTARY SCHOOL TEACHERS

by

Norman R. Dodl

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FLORIDA STATE UNIVERSITY

OVERVIEW

The Elementary Teacher Education Project of the Bureau of Research is clearly designed to make significant changes in the ways in which elementary teachers are prepared in the future.

Two facets of any such venture come readily to mind. One has to do with the learning problem itself which lies at the very heart of professional training. How does one best develop competence with the set of practices and procedures which are the sine qua non of a profession and an understanding of the theory on which they rest? The other has to do with changing teacher education as a function of change in education itself, this being, in turn, a concomitant to social, political, and economic change in the United States.

Put simply, teacher education must change when we know better ways to assist trainees with their learning; it must change as the purposes and content of education itself changes. The Florida State University (FSU) model recognizes both of these realities and deals with them accordingly.

Dealing with Social Change in Teacher Education

Persons concerned about the elementary school and about the preparation of elementary teachers are continuously sensitive to the need to guard against the operation of a school program that is out of touch with social, political, and economic realities and their attendant requirements for education and for teacher education. The task force group at FSU which developed specifications for this teacher preparation model was especially concerned with this problem, and the results of its deliberations are contained in a chapter of the model report entitled "Predictions for the Decade Ahead."[1] This chapter concludes that there will be continued and accelerated social change generally and a revised an intensified set of demands placed on education accordingly. Further, and in great part in response to these changes, the chapter anticipates a radically different elementary school, one transformed in both program and organization, by 1978. The model training program, as developed, reflects implications apparent in these analyses for the preparation of the elementary school teacher who will serve in this transformed elementary school.

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[1] G. Wesley Sowards, A Model for the Preparation of Elementary School Teachers, Final Report, Vol. I (Washington, D.C.: Government Printing Office, 1969), pp. 15-30.

Dealing with the Learning Problem in Teacher Education

At the same time the model program reflects an awareness of certain "breakthrough" developments between 1960-68 in the design of training protocols that can and must be marshaled to improve the effectiveness of preparing elementary school teachers. Particularly, the model shows a growing understanding of the psychological dimensions of learning problems involved in preparing people to teach. The model also shows the successful efforts in recent years to analyze more systematically teaching as an act. The yield of these efforts is used directly as a source of data for shaping and forming training specifications. Certain unique and distinguishing characteristics in the FSU model have resulted because of these developments:

1. Preparation for teaching is viewed as undergoing experiences designed to enable trainees to meet stated performance criteria. The usual course format is abandoned as being inappropriate for making such experiences available to trainees.
2. Trainees will move from one experience or set of experiences to the next as a function of their demonstrated ability to meet performance criteria. Thus, progress rates are individualized, not group-paced.
3. Provision is made throughout the model for applying the immediately theoretical ideas about teaching to the act of teaching itself.
4. A significant part of teaching is viewed as a definable and describable set of technical skills in which candidates are trained.
5. The final phase of so-called preservice preparation is systematically extended into and becomes a part of the initial years of teaching.
6. A computerized management control system is utilized to monitor individual trainees' progress and to provide information to trainees and staff as it is required for various purposes.
7. Faculty roles and responsibilities are redefined to be consistent with the model requirements, and a faculty inservice development program is provided.
8. Admission criteria, consistent with stated performance goals, are to be utilized, and a selection procedure is structured accordingly.
9. The emergence of specialization and differentiation in staff utilization is recognized and dealt with in the model, and trainees are expected to make certain choices accordingly as they move through their teaching preparation.

Overall Program Design

Overall, the FSU model program is divided into three distinct phases: (1) an underclass phase, (2) a preservice phase, and (3) an inservice phase. Each of these phases makes a particular contribution to the whole model. The purpose of each can be seen in figure 1. The phases are discussed in depth in the final model report.[2] Most students will require

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[2] Ibid., pp. 44-125.

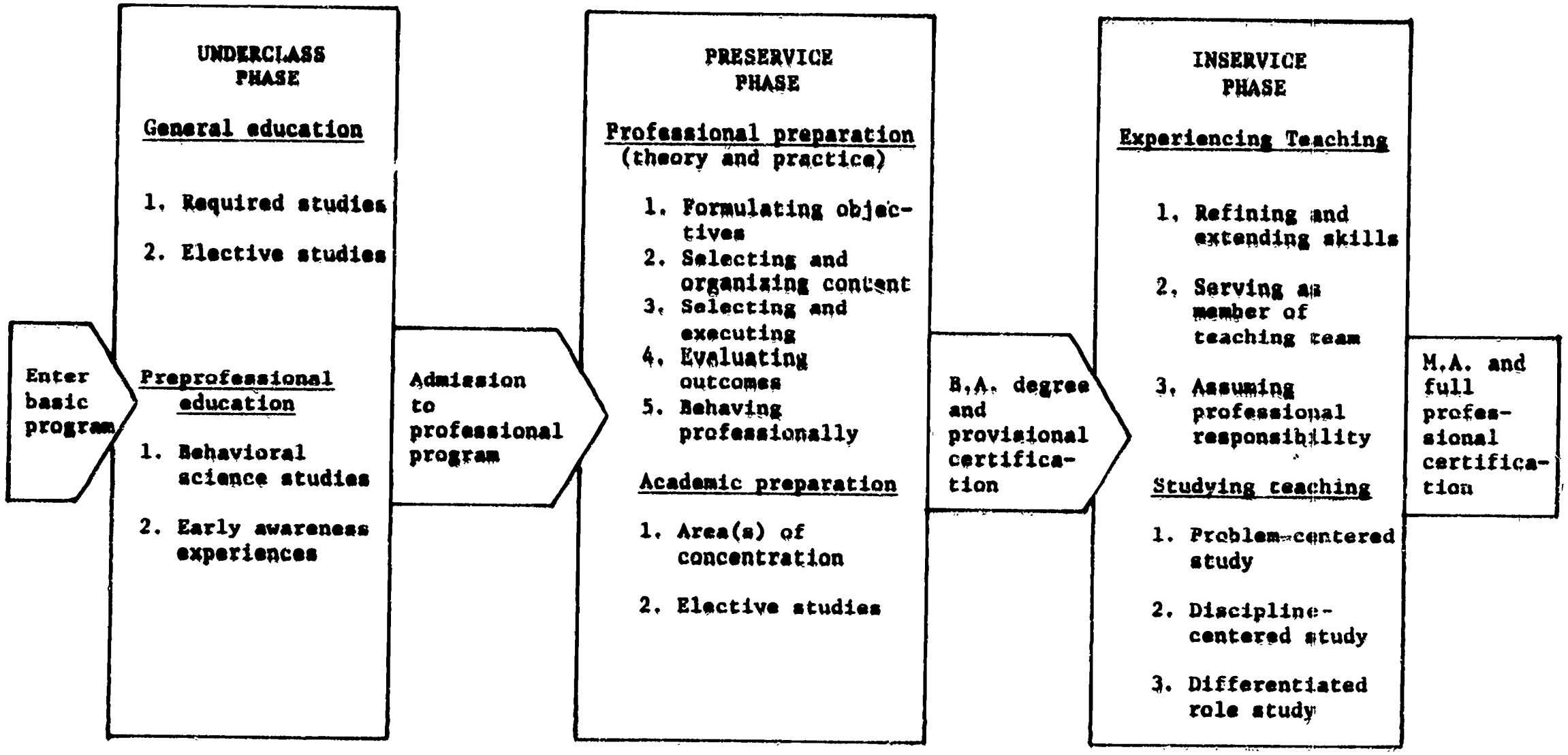

FIGURE 1

A THREE-PHASE PLAN FOR
PREPARING ELEMENTARY TEACHERS

six years beyond high school to complete their preparation, but there is sufficient flexibility in the program's requirements to enable a student to take less or more time.

Three additional and essential components are described for facilitation of the preparation programs.[3] An admission component has been designed. Its purpose is selecting candidates qualified for and committed to remaining in teaching. The component is diagnostic of the entrance skills and knowledges which the candidates possess as they enter a training program.

A computerized management control system is described as a second facilitating component. The complex problems of program logistics demand the creation of such a system. The final facilitating component outlines a faculty redevelopment program and is suggestive of the type of staff utilization patterns which must be generated if a model is to be implemented.

The Appendix Document

Volume I of the FSU model is a self-contained document which details the specifications for a model teacher education program. Volume II is a separate set of appendices which, in addition to identifying participating personnel and the history of model development, spells out in additional detail several key aspects of the model program. An early awareness-involvement experience is described as a part of the underclass phase of the model program. An experience key is provided which explains a coding system found in the preservice phase of volume I of the model. In addition, selected prototypic programs are described from various content areas such as science or music education. Additional detail on evaluation objectives, instruments recommended for admission and screening, a suggested organizational plan for admissions, prototypic entry skills and knowledges, and suggestions for a college staff development program complete the entries in the appendix volume.

PROGRAM GOALS AND RATIONALE

Basic direction and guidance for the development of the FSU model program came from a task analysis of teaching as forecast for 1978.[4] This undertaking resulted in the identification of four essential teacher behaviors:

1. The teacher will plan for instruction by formulating objectives in terms of behavior which is observable and measurable.
2. The teacher will select an organized content to be learned in a manner consistent with the logic of the content itself and the psychological demands of the learner.

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[3] Ibid., pp. 126-61.

[4] Ibid., pp. 31-43.

3. The teacher will employ appropriate strategies for the attainment of desired behavioral objectives.
4. The teacher will evaluate instructional outcomes in terms of behavioral changes.

These are clearly interdependent and directly concerned with instructional-curricula functions. The task analysis did yield a fifth category of teacher behavior, but of a somewhat different order than the above:

5. The teacher will demonstrate the competence and willingness to accept professional responsibilities and to serve as a professional leader.

The development of these five behaviors becomes a broad and inclusive goal of the FSU Model program. These behaviors, stated in this abstract form, are essential to teaching of any kind, whether it is seen as that of an indirect facilitator of pupil learning activities, as a diagnostician of pupil needs and prescriber of pupil learning experiences, or as a direct transmitter of information to pupils via lectures. It seems likely that any approach to influencing the learning of others will demand competent performance in all five behavior categories. These five behaviors are at once inclusive of the total model program goals and in their specific details are described later as the basic content for instructional program of the model. The chapter provides the most succinct rationale for the particular goals of this model program. This chapter also lays out in detail the overall design of the basic model program.

Readers of the FSU model program document would do well to page ahead, particularly into chapter 5, the preservice phase of the model program, and into sections of the appendix volume to see the structuring relationship between the previously stated program goals and the total model program. It should also be noted that the FSU model conceptualizes no single teacher role as an adequate descriptor of the elementary teacher of the next decade. A projection upon which this model is based suggests that the elementary teacher of the decade ahead may well perform tasks ranging from those of a traditional information dispensing nature to those inherent in the responding teacher role to a host of tasks, many of which are not yet in current usage.

SELECTION PROCEDURES

Selection procedures are dealt with formally in the facilitating component on admissions and screening.[5] It should also be noted that the underclass phase of the model program is directly and indirectly involved in the process of trainee selection.[6] The FSU model bases its selection

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[5] Ibid., pp. 126-34.

[6] Ibid., pp. 44-47.

procedures on an assumption that an improved training program will not in itself be sufficient to produce the quality of professional teachers needed by our society today. It is important that persons of high intellectual and academic ability, strong and lasting commitment, and good physical and mental health be encouraged to pursue careers in elementary school teaching. Only by attracting the most able of young persons to the teaching ranks and in providing them with highly effective training can we expect to retain them in teaching service.

The FSU model provides for selection of trainees through two major procedures. In the underclass phase of the model program, students interested in pursuing careers as elementary school teachers have an opportunity to participate in a preprofessional training experience which involves special academic work in the behavioral sciences and an early awareness-involvement experience which is designed to bring freshman and sophomore level students into direct contact with children, schools, communities, and professional educators who are responsible for training tomorrow's teachers. The entire underclass phase of the model program is geared so that it may be implemented in a junior college and/or a four-year institution. The preprofessional aspect of the underclass phase of the program serves selection procedures in two ways:

1. First-hand data about teaching are made available to interested students. On the basis of the data, students can make reasoned and informed decisions on the desirability of a personal career in elementary school teaching.
2. Those institutionally responsible for selecting trainees can gather, over an extended period of time, formal and informal data on the extent to which an interested student meets admissions criteria to the model program.

Formal measurement procedures are suggested in the chapters referred to earlier as an initial step in creating a basis for a computerized data bank on trainees admitted to the program. It is expected that careful analysis of the trainee profile which accumulates over the years of program implementation will yield valuable insights into the revision and even possible total modification of selection procedures. Such procedures may remain useful in providing the elementary education field with the quality of teacher which our projections suggested will be needed in the decades ahead.

At this point the reader's attention might well be redirected to the prediction chapter, particularly the sections on educational projections and implications for teacher education.[7] It is on the basis of these projections that the FSU model is designed. These projections comprise the rationale for a strong position on selecting highly qualified aspirants for careers in elementary school teaching.

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[7] Ibid., pp. 21-29.

PROFESSIONAL PRESERVICE COMPONENT

The basic preservice professional experience of a trainee involved in this program takes place during what is equivalent to upper division undergraduate work or the junior and senior years prior to the baccalaureate degree.[8] This program phase is designed to prepare the trainees to assume responsibilities of a beginning teacher. It is not designed to render him highly skillful in all aspects of teaching and must be followed by experiences of the inservice education phase if the carefully structured foundation for a professional teaching career is to be complete.

There are five major features of the preservice program: self-paced experiences rather than courses; criterion-referenced performance evaluation rather than standard grading; sequenced theory-practice contiguity; progressive synthesis experiences; and a computerized management control system with feedback capabilities. Organizationally, the heart of the preservice phase of the model program is contained in an operational description of these features.[9] These features of the model program contribute significantly to making the preservice phase of the training phase of the program a very different experience from traditional programs.

The disappearance of formal courses in professional education, the provision of stimulated or real teaching practice immediately contiguous to trainee learning experiences, the absence of formal grading as a means of evaluating trainee success, and the elimination from the preservice programs of a traditional student teaching or internship experience are characteristic indices of program structure.

It is these features which demand a computerized management control system to overcome the logistical problems created by this type of instructional organization.[10] These same program features require that extensive consideration be given to retraining the faculty that prepares elementary school teachers.[11]

Volume I details the enabling objectives, prototypic behavioral outcomes, and types of training required under each of the five major program objectives.[12] It should be noted here that for purposes of presenting logically ordered material, the enabling objectives are generally sequenced from knowledge to application. Actual instructional sequencing of the training program for an individual trainee will depend upon the basic instructional strategy adopted by an implementing institution.

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[8] Ibid., pp. 48-113.

[9] Ibid., pp. 50-53.

[10] Ibid., pp. 135-52.

[11] Ibid., pp. 153-61.

[12] Ibid., pp. 53-113.

Although mentioned only ambiguously in the final document, a series of task assignment milestones is under consideration at FSU. The series would serve as an instructional strategy and diagnostic vehicle for the derivation of individual sequencing for training activities. Task assignments demand of each individual trainee actual teaching performances of an increasing complex nature in both the initial and final steps of major blocks of training activities. Sequencing of training activities for individual trainees will be based on a diagnosis of initial performance of such tasks. The trainee, with the assistance of his faculty adviser, would have a major role in decisions affecting training sequences.

As found in volume I, the enabling objectives under each of the five major teaching behaviors are general in nature and applicable to teaching regardless of specific content. The application of these behaviors within such traditional content areas as science education, math education, and others is dealt with in a prototypic way in the appendix volume.[13] The reader also will be quick to notice that major development activities in terms of specific program content, resource materials, and the details of instructional procedures remain to be accomplished.

RELATIONSHIP OF PROFESSIONAL COMPONENT TO ACADEMIC COMPONENT

Academic or general education as different from professional education, although pursued to some degree in all phases of the model program, comprises the major portion of a trainee's endeavors during the underclass phase of his program. Approximately two-thirds of his time is devoted to this pursuit. The varying nature of such studies dictates that they be allocated to appropriate divisions of a university other than a school or college of education. This is particularly necessary in systems such as that in the state of Florida where increasingly large numbers of students enroll for their first two posthigh school years in community junior college.

Trainees are expected to pursue the same basic studies as do all university students and are also expected to attain depth in at least one academic field. Such study is projected to prepare better the teacher for an instructional or instruction-related specialization. Time flexibility, provided by the preservice individualization of the program, will allow some trainees to pursue a heavy academic concentration prior to receipt of their baccalaureate degree. For others who move more slowly through professional training, some of the needed academic depth must be provided postbaccalaureate while in the continuing phases of the total model program.

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[13] C. Wesley Sowards, A Model for the Preparation of Elementary School Teacher, Final Report, Vol. II (Washington, D.C.: Government Printing Office, 1969), pp. 19-23.

For most trainees, pursuit of academic courses to complete basic studies and/or an academic concentration will take approximately one-third of their available worktime in the preservice phase of the program. Time spent during the inservice phase of the program will vary greatly depending upon the work completed prior to the baccalaureate and in a particular specialization pursuit.

Entrance Skills and Knowledges

A word is in order here concerning a requirement for diagnosis of entry skills and knowledges expected to be obtained by trainees prior to pursuing preservice training sequences.[14] As soon as the trainee is admitted to the model training program, he will be assessed on the extent to which he has attained prerequisite entrance skills using a battery of locally designed diagnostic instruments. This diagnosis will make possible: (1) the best placement for the trainee in the training sequence for which he is ready, (2) the provision of remedial work designed to upgrade entrance skills, and (3) the establishment of initial time estimates for pacing the trainee's program. It is anticipated that the development of such a battery of locally designed diagnostic instruments will provide the stimuli needed for close collaboration by academic and professional faculty responsible for the total educational program of the elementary school teacher-to-be. Because of these entry level assessments, any specification of academic course work can be left largely to faculty concerned with academic or basic studies.

INSERVICE COMPONENT

A basic assumption of the FSU model program is that programs for training elementary school teachers can no longer remain institution-bound either in terms of location of studies or in terms of the staffing patterns.[15] As with the involvement suggested earlier of the junior colleges, certain public schools should become partners with the university in training elementary school teachers.

The inservice phase of the total program begins when the primary location for training shifts from the campus context to a public school and a community. Although the program is a continuing one and a trainee is not expected yet to have full professional certification, it is anticipated that a trainee would have satisfied institutional requirements for a bachelor's degree prior to shifting locations and will be eligible for full-pay employment by the school district into which he moves for continued training. This on-the-job training is to be spent during the school year in a "portal school," a school in a public school district which has responsibilities as a training institution for new teachers as well as responsibilities to the community for the education of its children.

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[14] Sowards, Vol. I, p. 131; Vol. II, Appendix J, pp. 119-31.

[15] Sowards, Vol. I, pp. 114-25; Vol. II, pp. 114-23.

Although the nature of portal schools will vary among school systems, they will have some common characteristics. First, the principals and other status leaders of these schools must be favorably inclined towards innovation. Second, they will use new curricula that have been developed in areas such as mathematics, science, or social studies. Third, they will be employing organizational arrangements that include the utilization of paraprofessionals and teacher aides, some differentiation of roles among teachers, and modular schedules. Fourth, these schools will make considerable use of new teaching media. Portal schools will serve the total model program in a number of ways: (1) They will insure an easy transition for trainees from a shielded position in the university preservice phase to a fully responsible teacher position in the schools in the inservice phase. (2) They will make it possible for the inservice phase to operate out in local communities in ways which reflect goals of both the model program and the local school district. (3) They will be useful in providing feedback to determine further needed changes in the pre- and inservice phases of the model program.

Major changes in the broad range of graduate level inservice training for teachers now in certified teaching positions are implied, although not clearly delineated, in the Final Report of the FSU model. Because of the close involvement of the university and the public schools in the training venture, training benefits are likely to accrue for public school and university personnel as they interact in planning and implementing the training venture. If flexibility is maintained as a key provision, it should be possible for frequent grouping and regrouping of personnel for joint study of problems related to the training of teachers as well as to matters pertaining directly to curriculum and instruction within the elementary school setting. This change in the focus of graduate professional education is long overdue.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

A major characteristic of the model program is its design for staffing. Many of the roles required in this program are new to professional teacher education. Therefore, the retraining of faculty becomes a major problem. In addition to the staff development problem, institutions must direct themselves to new staff requirements, organization, and utilization arrangements.[16]

A variety of new roles will emerge within a college of education as traditional courses are abandoned and experiences oriented to performance criteria replace them. Three major types of assignments have been identified for faculty in the professional component: administration-student personnel, teaching-counseling, and selecting and producing materials.

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[16]Sowards, Vol. I, pp. 153-61; Vol. II, Appendix K, pp. 136-41.

It is also clear that new roles will emerge within cooperating junior colleges and within those public school systems which play a major role in the teacher training venture. Preprofessional work at the junior college level, at least within the state of Florida, is a departure and consequently will require either retraining the existing staff or hiring new staff members. A staff associate role for training staff members who are jointly on the faculties of a public school district and a college of education first must evolve. Developing a program to train such personnel would follow.

No dimension of the total model program places more demands on institutions than does the staffing component. Since publication of the Final Report, work at FSU on dimensions of the model program has served to highlight certain time skill and development realities which will follow a decision to implement part or all of this model. Faculty time utilization alone calls for complete reorientation of faculty activity patterns on the part of teacher education faculty members. For example, 30 minutes per week per trainee of individual diagnosis, counseling, prescription, and assessment will yield 50 hours of faculty contact time per 100 trainees. Divided among whatever number of faculty seems appropriate, this still is an astonishing amount of faculty time committed when viewed together with group instruction, administrative activity, materials development, independent writing, graduate student direction, and a myriad of other activities engaged in by competent professional staff members today. The new skills demanded of faculty members far exceeds those now held by a large majority of competent teacher educators in our training colleges. Skills demanded to produce the kinds of resource materials needed for a highly individualized program of instruction are evidence of the gap which now exists between the need and the resources. For example, providing the content direction alone for a single concept film-loop is a task never encountered by a large majority of today's teacher educators. Realities such as these suggest a high priority on faculty retraining activities as a starting point for efforts to implement the model program.

EVALUATION COMPONENT

There is no chapter or separate evaluation component in the FSU model devoted to program evaluation. The omission, however, is one of functional written presentation of a model rather than an omission in fact. The basic design for the entire program emanates from a regenerative concept with constant feedback being used for program modification. Basic training sequences, regardless of their nature, are designed to elicit responses to every training input followed by immediate feedback to the trainee of the extent to which his responses approximate the criterion expectancy. Since the entire program is performance-based, evaluation would at all times be an assessment of whether a trainee needs specified performance criteria. Performance tasks are designed to be increasingly complex in nature and successful completion of each higher level task assignment indicates a maintenance of desired performance levels already achieved and at the same time is an indication of an increasing willingness to perform functionally as a fully qualified professional elementary school teacher.

Because the program follows a trainee into his first two years of teaching, early followup studies of his teaching performance is automatically provided.

PROGRAM MANAGEMENT

An entire facilitating component has been devoted to program management in the FSU model.[17] It should be clear by now that the sheer logistics of operating the program described in the FSU model is beyond the management of a typical staff operating without the assistance of computerization. For this reason, a comprehensive computer management control system is described which is to serve three major purposes:

1. Each individual trainee's progress will be monitored, and data relative to his progress and to the probability of his completing the program successfully will be made available to the trainee and to his counseling professor as needed.
2. Summary data on the progress of all trainees will be made available to the project manager on a regular basis. This information will include projections of the points to which trainees will have progressed by a specified date in order that the manager can anticipate necessary personnel space and material resource needs.
3. The system will be used to provide analysis of data needed for program evaluation and modification.

The final document calls for real time management system utilizing a very large network and a batch-mode retrieval system for longitudinal program analysis. Subsequent to publication of the final document, a need for two additional management techniques has become apparent. The techniques are now under development. The first of these is a computerized simulation model designed to interrelate all elements of the program in such a way that changing conditions in any one element or component of the model will automatically bring about adjustments in every element within the system. Second, both development and implementation of such a program demand special cost projections and cost accounting procedures. For this purpose, a planning program budgeting system (PPBS) is being developed.

It may be possible to implement the FSU model program for smaller numbers of trainees than anticipated by the presenting institution (i.e., 800-1,000 trainees per year) without developing or acquiring the computer capabilities implied by the specifications in this model. Such a possibility has not, however, been considered by FSU since access to outside agencies who provide such computer services is fast becoming universally available. At this stage in developing the program, it would appear that

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[17] Sowards, Vol. I, pp. 135-52.

the human time factor in administering such a program without computer assistance would be prohibitive beyond the cost factor of a computerized management control system.

SUMMARY

In summary, the FSU model is flexible. The model recognizes that teacher education must change when we know better ways to assist trainees with their learning, and it must change as the purposes and content of education itself changes. The specifications for the model reflect these realities, therefore making the model adaptable to the needs of the future.

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MICHIGAN STATE UNIVERSITY

A Guide
to

BEHAVIORAL SCIENCE ELEMENTARY TEACHER EDUCATION PROGRAM

by

W. Robert Houston

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MICHIGAN STATE UNIVERSITY

OVERVIEW

Radical improvements are needed in teacher education to meet the demands generated by accelerating changes in society. The young, rapidly developing behavioral sciences provide systems of knowledge and inquiry which are directly relevant to teacher preparation programs. The model briefly outlined herein, the Behavioral Science Teacher Education Program (BSTEP) developed at Michigan State University, is a comprehensive program based on the constructs and concepts of the behavioral sciences.

This model emphasizes developmental experiences for prospective teachers beginning in the freshman year and continuing through a full year of internship. Major areas of the program are: (1) general-liberal education, (2) scholarly modes of knowledge, (3) professional use of knowledge, (4) human learning, and (5) clinical study.

Undergraduate teacher preparation is emphasized, but inservice preparation programs for beginning teachers, auxiliary personnel, and professional instructional leaders also are examined. Program evaluation and various aspects of management are given detailed attention.

Special Features

The model incorporates features as broad and varied as modern technology, advanced concepts for understanding human behavior, general-liberal education, and professional translations of behavioral principles and teaching strategies within a wide variety of environments. The comprehensiveness of the plan becomes evident as the reader studies the detailed specifications in the model report.[1] Several special features are worth noting:

1. The teacher education program is comprehensive. Improvement of one phase of a teacher education program, such as professional education, without concurrent attention to the total supporting knowledge-inquiry framework, could only result in a patchwork job, no matter how well engineered the patch might be. The broad leap in teacher education envisioned in BSTEP requires articulation of general-liberal education experiences, extended content specifically related to the curriculum of elementary schools with professional education. Such articulation is explicitly described as it has been developed by scholars in the relevant fields.

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[1]Michigan State University, Behavioral Science Teacher Education Program, Final Report, Vols. I, II, III (Washington, D. C.: Government Printing Office, 1969.)

2. The total undergraduate program recognizes the major objective--elementary teacher preparation with emphasis upon the clinical approach to the analysis of teacher behavior. Teams including more than 150 scholars designed the undergraduate program so that the perspective and special competencies of the various disciplines could be represented. In general-liberal education, for example, one criterion in selecting specific works of literature was, "Would it improve a future teacher's understanding of human behavior?"
3. BSTEP focuses the skills and knowledges of behavioral sciences on educational problems. The study of human behavior undergirds all teaching. Increased technology in schools is not diminishing the role of the teacher, rather it is accenting the search for teachers who are responsive to the needs of the individual pupils. The theories, knowledges, and strategies of behavioral scientists provide a basis for such a responsiveness.
4. Cross-cultural studies are woven into the fabric of the program. Cultural biases cloud most minds. Such biases become particularly evident in ghetto schools when middle class teachers cannot comprehend ghetto children's value systems. To sensitize prospective and inservice teachers to unfamiliar cultures and to enable them to recognize and appreciate the varying postures assumed by people of other cultures, specific experiences have been planned. In the humanities, for example, special attention is given to the study of African, Southeast Asian, and Indian cultures. Actual and simulated experiences with children in varied social-economic American cultures are described. Particular emphasis is placed on understanding inner-city cultural patterns.
5. Evaluation is integral to BSTEP. Continual appraisal of selected experiences and of the total program permeates the enterprise. The evaluation is designed to provide information necessary for program development. No program could be the final answer to the educational needs of today, much less to those of tomorrow. This model provides specific evaluation and development phases which are necessary catalysts in an ever-improving program.
6. The program provides techniques which facilitate the use of new strategies. The research tools of behavioral scientists are expanding so rapidly at the present time that the next few decades are likely to see a surge of input, knowledge, theories, and strategies in the behavioral sciences similar to that which has already occurred in the natural sciences. Teacher education programs must implement these new knowledges as rapidly as possible, eliminating the painful timelag usually associated with man's social development.
7. The program is described in single purpose experiences or modules. At its most explicit level, BSTEP is described in short, discrete single purpose experiences or modules. An illustrative module can be found in the Final Report.[2] Each module is designed to help meet a specific behavioral objective. Modules can be sequenced into individualized instructional programs for preparing elementary teachers.

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[2] Ibid., Vol I, Section 2, p. 32.

8. The resources of an educational network are garnered to improve teacher education. School districts and the university cooperatively contribute to a resource pool designed for improved teacher education. Elementary schools provide the setting for (1) observation and practice by trainees and teachers and (2) substantive episodes and data for teacher education and its improvement. The university contributes its varied and specialized competencies to the development of the total instructional staff of the schools.
9. An information retrieval system modified from the basic information retrieval system and designed especially for this model, is described. A teacher education program as complex as BSTEP requires an extensive information storage system. Data are included on student personnel characteristics, student progress, modular experiences within the program, management procedures, evaluative techniques, clinic school settings, and relevant research in teacher education. Cross-analysis of different phases of the curriculum are possible through an indexing system.
10. Programs are differentiated for teachers of preschool children, primary grade children, and middle school children as well as for varied subject specializations such as science, social science, language arts, reading, art, music, and general classroom teaching.

PROGRAM GOALS AND RATIONALE[3]

The Behavioral Science Elementary Teacher Education Program, with its detailed educational specifications and implementations, is designed to achieve these objectives:

1. To provide the future teacher with a broad experience in general education including the disciplines of the humanities, science, and social science.
2. To introduce, on a systematic basis, research and clinical experience into the decisionmaking process which serves as the means for continued educational improvement.
3. To utilize a new kind of laboratory and clinical base as the foundation for pre- and inservice teacher education programs.
4. To prepare a new kind of teacher for the nation's schools--one who:
   a. Engages in teaching as a clinical practice.
   b. Understands human learning, its capacity, and its environmental characteristics.
   c. Assumes the role of a responsible agent in social change.

The BSTEP model uses the term behavioral science to mean those systems of inquiry which constitute reliable and valid sources of information about human behavior. In this context, "science" is accepted as the process of orderly inquiry and systematic organization of tested knowledge about natural

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[3] Ibid., Vol I, Section 2, pp. 1-29; Section 3, pp. 1-57.

phenomena. Behavioral science applies this process to the study of man in three spheres: the nature of man's self-awareness, the nature of man's interaction with man and his social systems, and the nature of man's interaction with his physical environment.

A key concept of the BSTEP model is clinical behavior style. The major function of this concept is to regularize the behavior of teachers. Clinical behavior style denotes those particular and stylized sets of activities and mental processes which a practitioner possesses. Such a practitioner of education will be specifically trained to utilize his client-related experience as the basis for continuous learning and improvement of his skills as a teacher. The clinical behavior style which is appropriate for a professional teacher consists of six phases: describing, analyzing, hypothesizing, prescribing, treating, and observing consequences. The last phase, observing consequences of the treatment administered, leads in turn to the first by a process of recycling in order to describe the changed situation.

The professional foundations of the program are centered on the behavioral sciences for two reasons: (1) The dominate task of all educational activity is to develop pupil behavior within various settings. The behavioral sciences provide the systems of knowledge and inquiry most relatable to this task. (2) A distinctive feature of empirical science as a way of acquiring knowledge is that it is self-corrective.

Systematic reappraisal of both output (organized knowledge) and methods used to produce that output (methodology) is followed by revision according to the findings of the reappraisal. Because of these two basic characteristics, the behavioral sciences suggest the development of a clinical behavior style of teaching which enables teachers to base their current practice on available knowledge, to produce new information relevant to practice, and to revise practice on the basis of new information as it becomes available.

Teams of behavioral scientists representing various disciplines recently have begun to examine major social problems. As systematic interrelationships are explored in more detail, the possibilities for a more comprehensive theory of behavior are enhanced. As theories of behavior become more comprehensive, as it becomes possible to explain and predict behavioral outcomes in situations with many biological, psychological, and cultural variables operating simultaneously, then behavioral theories become still more useful to the educational practitioner.

SELECTION PROCEDURES

Research results have tended to emphasize the lack of empirical evidence on teaching effectiveness. Research by Barr and his associates over three decades, the monumental work of David Ryans, and other efforts in this area have produced vague and sometimes conflicting findings. All too often the research was limited in scope so that only one or a few of the potential contributing factors were considered. Personal characteristics, teacher

preparation program components, and the teaching environment all contribute to "effectiveness."[4] The relationship among these factors is potentially important.

Rather than attempt to list restrictive criteria for program admission, the model team chose to monitor students' progress and effectiveness and to develop entrance requirements based on evolving standards. The position was taken that students who are admissible to the university and to elementary education would initially be admissible to BSTEP. To assure base-line data, a series of instruments for initially assessing student input characteristics is suggested.[5] Student input characteristics, success in various program elements, and practice during internship would become parts of an evaluation cycle leading to more selective student inputs. This stance is consistent with the clinical style which permeates the entire program.

PROFESSIONAL PRESERVICE COMPONENT

BSTEP emphasizes developmental professional experiences which begin a prospective teacher's first year of college and continue throughout the preservice education into the initial years of teaching. The undergraduate program of each student includes: (1) a broad, basic core of general-liberal education, (2) a review of the fields of knowledge in terms of their structure and content, with emphasis on the methods of inquiry and learning which characterize scholarly endeavor in different disciplines, (3) a study of human learning based upon behavioral science concepts and research, (4) an analytical study of the teaching act in different types of educational environments, and (5) a year of intern teaching in a school district as part of an instructional team recruited from the university and the local district.

The undergraduate program will be described in two sections. In this section the professional aspects of the program will be described while in the following section of this report, the supporting general-liberal education components will be described.

Professional Use of Knowledge

In professional use of knowledge, the prospective teacher learns how to translate knowledge into educational action in classrooms and communities. Building upon a structured general-liberal education and the study of human learning, this area focuses upon the study of instructional strategies with particular emphasis upon the specific content included in the elementary school. Simulated and live contact with elementary school-age children is planned.

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[4] The term "effectiveness" is relative and often defined in restricted or ambiguous terms, thus adding to the confusion.

[5] Michigan State University, op. cit., Vol. III, Section 9, pp. 40-41.

Experiences in the area of reading, language arts, social studies, science, and mathematics are summarized in the following paragraphs, and detailed specifications are included in the Final Report.[6]

Reading. A major portion of this component is devoted to competencies related to teaching developmental reading. Optional experiences focus on teaching reading in the content areas and recreational reading. The program is designed to develop knowledge, comprehension, application, and analysis of the techniques used in teaching reading while also building a value system which would guide the teacher trainee's use of the accumulated cognitive learnings about reading instruction.

Language Arts. The language arts component focuses on the skills involved in listening, speaking, writing, and the supportive tool skills of spelling and handwriting. The strategy for studying these skills includes an examination of the objectives, instructional procedures, and evaluation techniques for each of the language arts through analysis of representative programs in existing elementary schools. This examination is filtered through the study of affecting variables such as sociocultural, environmental and personal-professional influences to permit the examination of language arts to be both analytically descriptive and prescriptive.

Social Studies. Responsible, informed decisionmaking is the dominant theme pervading the social studies component. This theme is developed in two ways: by sensitizing undergraduate students to the range of decisions they are likely to encounter as teachers of the social studies and by giving them actual experiences in making these decisions. A wide variety of instructional settings provide the foci for studying decisionmaking. These include actual and simulated experiences in elementary classrooms, microteaching, self-study projects, clinical experiences, and many different kinds of laboratory and field experiences.

Science. Prospective teachers of elementary science embark upon a series of experiences designed to implement the concepts previously studied and to develop meaningful patterns of classroom activity. By means of autotutorial and small and large group instruction, students are involved in a multidimensional study of elementary science philosophy, curricula, methods, skills, materials selection, media utilization, and evaluation techniques. The professional appraisal of procedures of scientific inquiry, attitudinal change, and experimental design necessarily reflects societal as well as technological issues and problems.

Mathematics. The study of mathematics gives the preparatory elementary teacher an opportunity to translate the mathematics previously learned into mathematical concepts and skills for elementary pupils. The teacher becomes aware of the instructional dimensions to be considered in planning for related clinical activities.

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[6] Ibid., Vol. II, Section 6.

Human Learning. Specific study of human learning occurs twice in the undergraduate program. Exploring human capacity for learning, understanding environmental systems, and inquiring into cognitive development are the three basic behavioral areas which planned educational experience must bring into interaction. The first contact with systematic study of human learning occurs early in the prospective teacher's undergraduate program. Various approaches to the problems of learning and human development are explored. The issues in learning theory and research are examined as a means of explaining the impact of environmental systems on a teacher's decisionmaking processes. This first experience thus provides a basis for further professional growth.

The second experience in the study of human learning is concurrent with internship. At this time the intern studies the environmental systems which influence the growth of the human being and with which the educational process must be concerned. It is assumed that an elementary pupil lives in a series of environmental systems: his own internal environment, the environment created by the family, the environment created by the school, the environment created by the community, and the larger cultural environment consisting of elements and forces from the national and international arenas. The more skill and perceptivity that can be developed in analyzing positive and negative elements within these several environments, the more sophisticated response the educational worker can make in diagnosing and developing the behavioral competencies of the pupil.

The general purposes of this second area of human learning study are to enable the teacher-intern:

1. To perceive the school as a social institution with present and future relationships to other major institutions of our culture and of selected cultures.
2. To utilize such basic concepts as stratification, role, status, and prestige as tools of analysis for clearer understanding of classroom, faculty, institutional, and societal situations.
3. To understand the potential and actual contributions of nonschool agencies to curricular experiences of young people.
4. To formulate a meaningful relationship among the many factors which influence the pupil's development.

With increasing urbanization in American society and a changing cultural orientation, tools of inquiry in analyzing societal forces and experience in using the tools of inquiry in actual situations are important assets to teachers. As one experience toward mastering the use of the methods, concepts, and principles of environmental investigation, students make an analytical study of their teaching community during internship. Specifications for this and other experiences in human learning study are included in the Final Report.[7]

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[7] Ibid.

Clinical and Field Experiences

Clinical experiences:

1. Are client-related.
2. Include manipulation of instructional variables.
3. Include the element of feedback so that improved instruction occurs.

These three elements interact to give clinical a connotation which is greater than the sum of its parts. In the context of professional training, clincial connotes the behavior style (or gaining of behavior style) appropriate to professional service. To develop and expand a prospective teacher's facility in employing a clinical behavior style in teaching, progressive intensity of a preprofessional contact with children and schools is built into the preparatory program. Clinical procedures are analyzed and practiced through both simulated and actual situations. Four sets of clinical and field experiences are described herein with detailed specifications presented in the Final Report.[8]

Tutorial. Early experience with children in a teacher education program is deemed important for reality testing purposes. During the first two years of college, the student works in one or more child-related roles. During this period he might work with children as an assistant elementary teacher, at the local YMCA, in a children's hospital, in Head Start and other preschool programs, in a settlement house, summer camp, or with scouting programs. Purposes of this experience include: (1) role identification, (2) self-screening, (3) reality testing of children-models, and (4) general awareness of people--their hopes, dreams, and ways of acting.

Career-Decision Seminar. The general purpose of this seminar is to aid prospective teachers to make adequate decisions concerning four questions:

1. Should I prepare to become a teacher?
2. If so, with what general age children am I most likely to be effective?
3. Do I prefer the activities and role of a general classroom teacher or should I specialize in a subject area?
4. If I choose to be a subject specialist, which area is most suitable?

Since many facets of the curriculum are tailored according to the particular interest of teacher-trainees, an early decision supports a more precisely focused program. This decision seminar is designed for students in the early phase of their preparation program. While decisions made at this time are not binding, change at a later time would require some restructuring and redesigning of a student's program. Following the seminar, some students may transfer to the associate teacher curriculum or to another program in the university. The flow of the four questions to which a student responds during the decision seminar is represented in figure 1. In addition to assisting the student to answer questions about his career, the first formal clinical experience is designed to:

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[8] Ibid., Vol. I, Section 3.

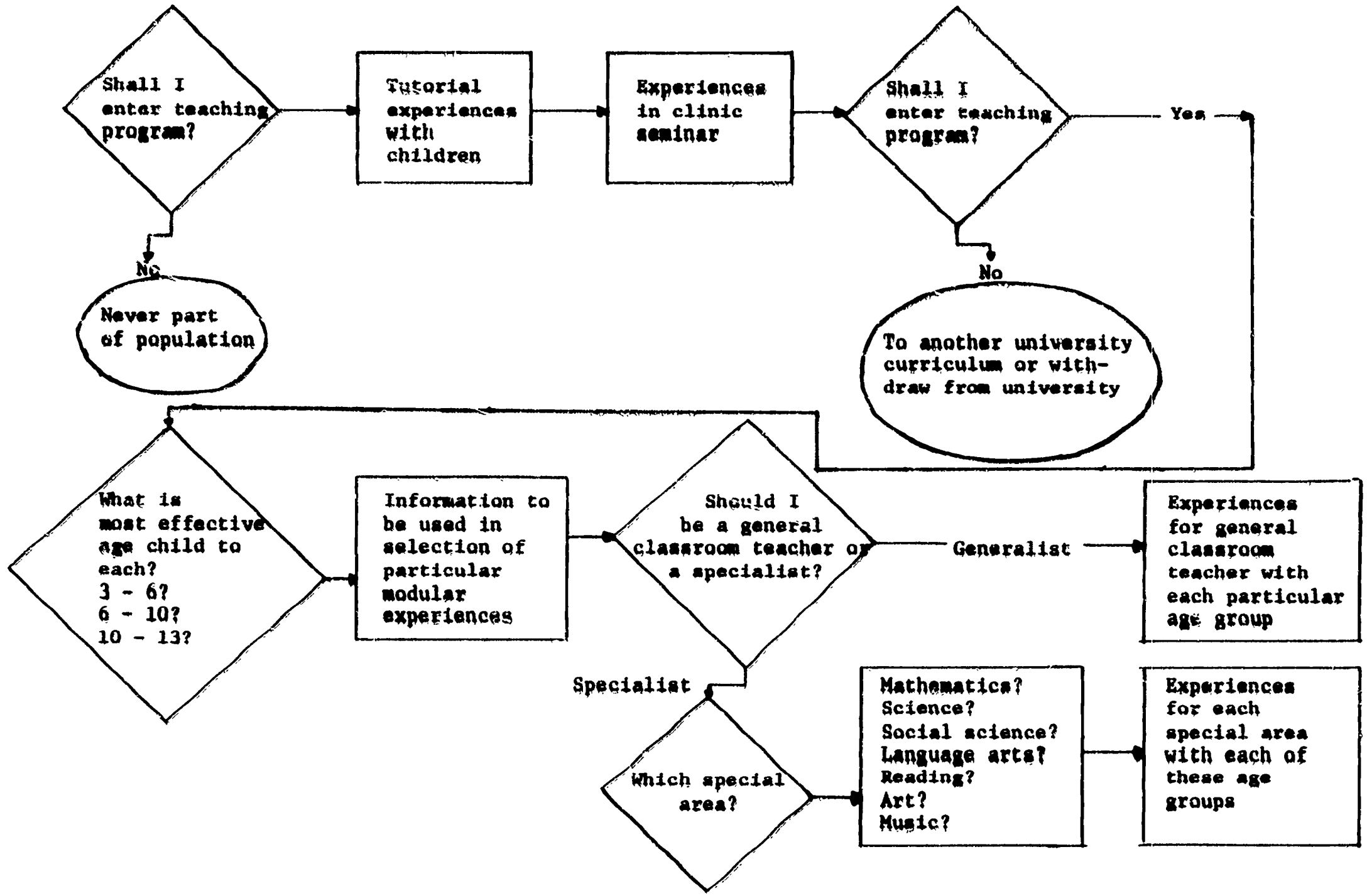

FIGURE 1

FLOW OF QUESTIONS TO WHICH A STUDENT RESPONDS
DURING THE DECISION SEMINAR

1. Collect actuarial and personal data on students as base-line information for study programs.
2. Followup tutorial experiences of students who have worked with children in a settlement house, boys camp, YMCA, playground supervision, or as an assistant teacher.
3. Introduce the role and functions of an elementary teacher.
4. Provide simulated classroom experiences for reality testing purposes
5. Provide the first evaluation checkpoint for candidates.

Teacher Analysis. This set of experiences provides various opportunities to test teaching skills in simulated or real classroom situations. Three types of experiences illustrate possible activities appropriate at this point in the training program. First, each student analyzes sets of visually recorded classroom scenes or vignettes. What occurred? What relevant conditions existed? What decisions did the teacher make? What were the consequences? What suggestions would improve the learning? Second, each student participates in simulated classroom episodes. This permits him to make his first translation of ideas from analysis into practice. Third, each student works with three to five pupils in microteaching experiences. These episodes can be video taped so the student can review and evaluate his teaching performance as he works on various aspects of the teaching act.

Teaching is a complex operation involving analysis of many variables and selection from a galaxy of potential decisions. Controlling the introduction of these variables in the initial phases of teacher education permits an orderly and systematic initiation into teaching.

Internship. Students are assigned full-time to an elementary classroom for an academic year under the guidance of an intern consultant.[9] Autonomy and responsibility for classroom activities, with significant assistance from university and school district resources, characterize this phase of the undergraduate program.

Internship provides the opportunity to translate, as a beginning teacher, the study of human behavior into strategies of instruction. The intern consultant provides assistance and supervision during this period.

Teacher Specialization

While the preceding descriptions of the five major curricular areas suggest the general nature of the teacher preparation program, they do not provide the detail which reveals its scope and sequence nor do they indicate alternate routes that students may follow.

To date most elementary teacher education programs have been designed for a general classroom teacher. The need for such teachers and for a training program for them is expected to continue in the foreseeable future. Preschool

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[9] The intern consultant is a highly skilled experienced teacher selected from an elementary school to work full-time with five or six intern teachers. This role has been developed during the past eight years at Michigan State University in the Elementary Intern Program.

and primary grades may continue to rely upon a person of general subject-centered skills, and many schools are likely to retain self-contained classrooms in the upper grades for many years. There is emerging, however, a second teacher role in the elementary school--that of the subject-matter specialist. Two separate organizational approaches, the development of the middle school and team teaching, require teachers with strong subject-matter competency. Further, experimental curriculum movements in mathematics, science, social science, and language demand increased expertise on the part of the teacher. The expanding need in the future is likely to be for teachers who have specialized in subject areas such as mathematics, science, language arts, social science, reading, art, and music.

Differences in the ages of children also require differences in the backgrounds of teachers. Professional translation of human study is focused upon the unique needs of each group of children. Program branching, therefore, is provided those students planning to teach preschool, primary school, and middle school children. Preschool includes children ages 3 through 6 or nursery school and kindergarten. Primary school is defined for our purposes as grades 1 through 4 in a grade school or ages 6-10. Middle school includes children from 10-13 or until entry into the high school program. Thus program differentiation and specialization occurs along two dimensions:

1. The amount and area of subject-matter specialization.
2. The age of pupils to be taught.

The choices possible along these two dimensions generate at least 24 program modifications as illustrated in table 1.

TABLE I
PROGRAM MODIFICATIONS

Teacher specialization	Elementary school		
	Pre-school	Primary school	Middle school
General classroom teacher	x	x	x
Mathematics teacher	x	x	x
Science teacher	x	x	x
Social science teacher	x	x	x
Language arts teacher	x	x	x
Reading teacher	x	x	x
Art teacher	x	x	x
Music teacher	x	x	x

RELATIONSHIP OF PROFESSIONAL COMPONENT TO ACADEMIC COMPONENT

Integral to the total teacher education program are the discipline-centered aspects. Two broad areas are directly relevant to the program's goals: general-liberal education and scholarly modes of knowledge.

General-liberal education provides a broad basic core for the program. Students learn to understand the role language plays in a society, to comprehend the physical and biological aspects of the world, to understand differing cultures, to become more sensitive to their own role in modern society, to grasp relationships as expressed in mathematics, and to conceptualize man's potentialities.

Scholarly modes of knowledge differs from general-liberal education in two essential ways: (1) the content in scholarly modes of knowledge is more directly applicable to teaching in the elementary school and (2) the modes or styles of inquiry of scholars are stressed.

General-Liberal Education

A broad, basic core of general-liberal education, designed to foster individual fulfillment and to prepare citizens for participation in our society, is necessary in teacher preparation.

The encompassing and overriding objective of general-liberal education is to relate the student's knowledge to the study of human behavior. Rather than providing a series of survey courses, this model proposes a basic core of general-liberal education experiences which emphasize the contributions the various disciplines of liberal arts and sciences make to an understanding of man, his behavior, his ideas, his society, and his world. The intent is to help prospective teachers develop the basic analytical skills which are prerequisites for making intelligent decisions about current societal problems. Provision is made for students to become active participants in formulating relevant educational structures which bridge personal experience and curriculum content.

The general-liberal education area is divided into three components: humanities, social science, and natural science, each of which is briefly described in the following paragraphs.

Humanities. The principle characteristic of the humanities is the involvement of the student in questions of value such as "What is man?" "What is the good, the true, and the beautiful?" and "What should man live for?" The selection of content, the exercise in basic skills, and the module organization are designed to promote an understanding of human behavior in humanistic terms. The student begins his study of humanities with a workshop laboratory experience in the disciplines of literature, art, and music. After exposure to the way in which a writer writes, an artist designs, and a musician composes, the student is ready for an integrated study of the humanities.

In a subsequent series of experiences the student explores the basic issues of western man, classics of the West, and the American quest. Each part includes some materials required of all students and a series of alternative assignments and experiences from which a student may choose portions of his program. These alternatives are not offered as random options, but are designed to give depth of experience in equally relevant materials.

Exposure to the thoughts, institutions, and arts of the nonwestern world expand the student's view by sensitizing him to cultural biases. While the cultures of Africa, India, and Southeast Asia are envisioned as relevant to the program, only the Africa sequence is included in this model and is intended to serve as a paradigm for this phase of the program.

Social Science. The social science component introduces the student to the nature of the social science disciplines including geography, anthropology, sociology, political science, and economics. These fields are represented as systems. Geography, for example, is represented as a fundamental ecological system, anthropology as a cultural system, sociology as a social system. Through a carefully structured sequence of experiences, the decisionmaking strategies of social scientists are explored, and students are provided an opportunity to employ these decisionmaking processes in real and simulated situations. Experiences are designed to sensitize the student to the possibilities that lie in the use of these skills. The student becomes aware of the interactions among social forces and their impact on education.

Natural Science. The natural sciences and mathematics have contributed greatly to man's understanding of his universe and his relationship to other organisms and objects he perceives as existing. Western thought, in particular, has been influenced by the development of logic and mathematical proof and by the accumulated data from which science induces the evidence for a law. The central theme of this component is the effect upon our culture by the natural sciences and mathematics.

Scholarly Modes of Knowledge

While general-liberal education provides the foundation for a life-long search for meaning and values, the study of the scholarly modes of knowledge opens the door to disciplined inquiry into those areas related to the elementary school curriculum. The component parts of this area are linguistics, communication, literature for children, fine arts, social science, natural science, and mathematics. A detailed set of instructional specifications for each are included in the Final Report;[10] a brief description of each follows.

Linguistics. The basic goals of the linguistics component are: (1) to explore the nature of language as it has been determined by linguistic research, (2) to distinguish facts from emotionally based or culturally determined views about language, and (3) to investigate those results of contemporary research on the grammar of English which are directly relevant

[10] Michigan State University, op. cit., Vol. II, Section 5.

to the student's future role as an elementary school teacher. The component includes five sections: basic concepts; the phonological system of English; English morphology, semantics, and the lexicon; English syntax; and regional and social dialects of American English.

For each section, in addition to lectures and group discussions, the student is involved in independent work concerning the relationship of the theoretical material to the stages in children's acquisition of language and to the teaching of reading, spelling, and grammar in the elementary school.

Communication. Emphasis is placed on verbal and nonverbal communication patterns. Simulated experience with cross-cultural contacts aids the student to better understand himself and his feelings toward others. As he increases his understanding of self and others, he is expected to analyze his encoding and decoding of messages and his choice of channels. These experiences are not simply "speech" or the sending aspects of communication, but involve message reception and decoding as well. The affective domain is tapped as students explore their own reactions to simulated episodes. A key behavior sought is the ability of the prospective teacher to analyze communication events and patterns and to relate these to his work as a teacher.

Literature for Children. The study of literature for children combines the literary arts and the graphic arts. Emphasis is placed on the characteristics of the genres of literature and on the media and styles of art used by artists to illustrate children's books. Considerable attention is given to the study of the techniques and materials that the teacher can use to create an environment in which children can grow to enjoy and appreciate excellent literature. Students also explore many other uses of literature by children and the probable effects of literature upon children.

Fine Arts. The fine arts component is considered in three aspects: art, music, and dance and drama. Emphasis is on the respective mode of perception and creativity of each area: visual, aural, and motor. Teaching art values, concepts, and productive behavior in children forms a basic concern. The tangible objects of art are subjects of aesthetic evaluation as well as the end products of a disciplined process. The student manipulates materials from which works of art are constructed.

The aural mode of perception is encouraged through music. Experience in listening to both familiar and unfamiliar musical forms assists students in developing a tolerance toward all forms of musical expression.

Dance and drama provide an opportunity to respond aesthetically through the use of the whole person. The bodily form of expression and communication in dance and drama provide the future teacher with experience in objectifying in motion inner-feelings and thoughts. Such experiences are designed to make him more aware of the symbolic character of physical motion, and awareness which can increase his sensitivity to children and their play.

Social Science. The social science component is devoted to social science theory and research. Emphasis is placed on the interaction that takes place between personality and basic social systems. How, for example, does an

individual effect the society of which he is a part? What role does society play in the life of the individual? A theme followed throughout this study is the nature of conflict involved in these interactions and the resultant decision-making process.

Natural Science. Natural science experiences are designed to develop the prospective elementary teacher's competency in the use of ideas and materials appropriate to elementary school science. Examples are taken from geological, biological, and physical sciences. Though certain modules are required of all students, optional experiences are also available.

Much of the component can be handled through directed independent study using an autotutorial approach. The laboratory then becomes integral to a variety of independent activities.

Mathematics. The need of a basic background for teaching elementary school mathematics directs the choice of content and the method of approach in this component. The foundations of arithmetic, algebra, and geometry form the basic core. Experiences in mathematics within scholarly modes of knowledge are interrelated with those in professional use of knowledge and in the clinical components. Thus, as the student learns mathematical content through lectures or directed independent study, he can practice the concept immediately in a mathematics laboratory, consider the implications for professional use, and employ his knowledge in a field setting.

INSERVICE COMPONENT

The completion of preservice teacher education requirements is only the beginning of a professional teacher's development. Joint responsibility by schools and universities for the inservice education of all professional and ancillary personnel is a necessity today. Previously the university tacitly accepted almost complete responsibility for preservice education and graduate study (often in isolation from the real world of teaching) while the elementary schools sometimes designed inservice experiences for their staff. Such lack of articulation in teacher education can no longer be tolerated!

BSTEP is predicated upon joint responsibility by several educational agencies for the continuing education of teaching staff. A clinic-school network is established to promote continual feedback and development of the program. A college or university works with one or more school systems.

Elementary schools become the clinic setting for preservice teacher development. They furnish the basis for material upon which the undergraduate program is built, and they become the testing ground for teacher education theories. Prospective teachers observe pupils there and analyze teacher-behavior patterns. Interns teach there. University staff work there in developing appropriate materials for undergraduate instruction.

In a similar manner the university and the elementary school cooperate to promote the continuing education of practicing teachers. Through joint school district-university arrangements, seminars are developed. University

scholars become sources of assistance in specific school studies concerned with improving instruction. Human and material resources from both the local school system and the teacher education institution assist beginning teachers. Building upon intern experiences, skill in utilizing inquiry modes is further extended through a variety of learning situations.

Such a program must, of necessity, be flexible. Differences within a teaching staff in personal characteristics, fields of specialization, and skills in analyzing human potential, for example, preclude formalization. In the present model some core experiences are described which are relevant to the continuing study of human nature, but this work is only a beginning in the needed comprehensive program. Analytic tools to assess the extensiveness of the clinical approach used by a teacher in a functioning classroom must be designed, tested, and modified before inservice education can be effective in improving the clinical stance.

Advanced study in the behavioral sciences for practicing teachers is directed toward a more sophisticated understanding of the variety of environments within which children develop, and the creation and utilization of the diagnostic, prescriptive, and evaluative tools for working with them in the school-community situation.

The teacher preparation model provides for a small proportion of post-MA teachers with highly developed clinical skills, leadership ability, and demonstrated success in teaching to be selected for extensive training in professional leadership. Such personnel would become catalyzers for further development and refinement of the clinical stance in teacher education. They would work with undergraduates, serve as team leaders in instructional team-teaching situations, be intern consultants, develop elementary school and university curriculum materials, be elementary school principals, and assist with elementary pupils having unusual or difficult learning problems.

While each instructional leader's preparation program would be tailored to individual job descriptions, it would include special seminars in research, educational technology, clinical practice, and educational strategies. Part of his time might be spent in writing curriculum materials, trying out and evaluating recent innovations, and studying in exemplary schools.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

Integral to the continued development of BSTEP is a dynamic faculty who understand and practice clinical procedures in its own instruction and research. To develop this posture and to provide for program and faculty currency, two procedures are recommended: program development-trial-evaluation cycles, and specialized consultation services.

When possible, rotation between persons engaged in writing instructional modules, delivering such modules, and directing clinical experiences has been encouraged. With those instructors from human learning and professional use of knowledge components, this is particularly significant for they must maintain constant feedback from field experiences to optimize the content and scope

of their work with students. To provide the feedback data-base for development of the experiences for which they are responsible, professors must have the opportunity to followup their instruction with reality-testing in the field. As a result of this kind of testing, materials and experience modules would likely be modified or redesigned. Further, as the staff redesigns the curriculum and tests its own ideas, its understanding of salient curriculum aspects would be enhanced.

Thus as each professor utilizes the approach identified as clinical style, he becomes a model for the practitioner and the prospective teacher to observe a given modus operandi. Further, as the consequences of the program are acted on by the trainee, the field environment provides myriad inputs which provide the base for more refined and sophisticated outputs in the instructional setting. Thus the instructor and program developer (the same persons at different points in time) become integral partners in assessing and contributing the most significant inputs from the field into the mainstream of program development. From these experiences come the collection and refinement of simulated episodes, written vignettes, filmed and taped records, and other experiences which provide problemsolving settings for teacher trainees.

The second needed aspect of faculty development comes from researchers and scholars in all fields of endeavor. Rapid development of new knowledge, methods of gathering data, and procedures for solving problems make it imperative that the program elements be as current as possible and that the professional staff have access to the most recent findings in their field. This is not only true for the academic areas related to general-liberal education and scholarly modes of knowledge, but also to the professional areas which draw from the behavioral sciences. Consultants, who are working on the frontiers of man's knowledge in various disciplines, periodically would work with the program development team to assure an adequate current data base.

EVALUATION COMPONENT

A viable teacher education program requires a carefully designed, extensive and workable evaluation system which in turn supports program development. Cognitive, affective, and psychomotor domains must be included in such assessments. In the past, evaluations have been hampered by lack of information vis-a-vis the student and teacher personal characteristics, specific program components, and the social milieu in which the teacher is functioning. In a sense, evaluation permeates the entire program. It is a necessary and fundamental aspect of the clinical style; it forms the basis for program modification and development; and it is inherent in instructional strategies. While the model report describes the evaluation system in some detail, this summary is limited to one facilitating phase--an information retrieval system.

Information Retrieval System

To describe, sort, and utilize the instructional recommendations included in the program, more than 2,700 short, explicit single-purpose experiences or modules were written and included in the BSTEP report. These have been keypunched and loaded onto a Computer Data Corporation 3600 System at Michigan State University. Figure 2 represents an illustrative module.

Line number (digits 6-8)

Unique module number (digits 1-5)

*OBJECTIVES	LEARNER DIAGNOSES FUNCTIONAL READING OF ONE PUPIL AND TEACHES ONE FUNCTIONAL READING SKILL BASED ON DIAGNOSIS.	00669016
*PREREQUISITE	SUCCESSFUL COMPLETION OF PREVIOUS MODULES IN SECTION VIII AND OF SECTIONS I-VI.	00669017
*EXPERIENCE	WORKING IN A TUTORIAL SETTING LEARNER DIAGNOSIS FUNCTIONAL READING SKILLS OF ONE PUPIL AND USES THAT DIAGNOSIS TO TEACH THE CHILD ONE FUNCTIONAL READING SKILL. LESSON IS VIDEO-TAPED AND LEARNER EVALUATES HIS WORK WITH HELP OF INSTRUCTOR.	00669018 00669019 00669011 00669012 00669013 00669014
*SETTING	OTHER (SPECIFY) TUTORIAL, COLLEGE	00669015
*MATERIALS	VIDEO-TAPING EQUIPMENT.	00669010
*LEVEL	GRADES 3-4 GRADES 5-8	00669005
*GENERAL	ALL CANDIDATES	00669008
*HOURS	2	00669007
*EVALUATION	LEARNER CORRECTLY DIAGNOSIS FUNCTIONAL READING SKILLS OF ONE PUPIL AND APPLIES APPROPRIATE TECHNIQUES AND MATERIALS IN TEACHING THE PUPIL ONE FUNCTIONAL READING SKILL.	00669006 00669020 00669021 00669022
*FILE	FUNCTIONAL READING INSTRUCTIONAL PRACTICE CLINICAL	00669023 00669009

Level--For preschool teachers; grades 1-4; grades 5-8; all candidates
General--General classroom teacher, Subject specialist or both
Hours--Approximate time for student to complete experience
File--Index terms under which this module filed

FIGURE 2

ILLUSTRATIVE KEY-PUNCHED MODULE

To adequately store and process these data, a custom-designed storage and information retrieval (IR) system was designed. This IR system was built upon the basic index and retrieval system (acronym BIRS) which was developed by Professor John Vinsonhaler and his colleagues at MSU.[11]

This system is capable of handling alphanumeric data and to process it at a rapid rate. The system is capable of examining natural language and conducting categorical and/or logical searches among the documents or searching for main ideas within a given document. Similarities in kinds of ideas, experiences, objectives, evaluative devices, and materials can be examined from among the many parts of the educational program.

Use of the modular approach assures great flexibility in implementation by teacher education institutions and yet provides explicit detail of program components. It provides a solid basis for program evaluation and cost analysis.

In the individualized, behaviorally oriented system advocated in BSTEP, an elaborate record system is necessary to encompass the pattern of experiences, successes, and failures which would characterize each student's participation in the project. The information processing power of the computer could be utilized to establish a student record system, to trace progress in the program, and to provide basic data for program evaluation.

Each modular experience can potentially be tested for its contribution to a teacher's development, and test results can be compared with those of alternative experiences. The sequence of modular experiences can be assessed for continuity. Student assessment during the process, information retrieval built-in check points, professor evaluation, and student performance during internship are some avenues for testing modules. These same procedures are useful in examining the effectiveness of module clusters in the total program.

The teacher education program is designed for constant evaluation and feedback. With a clinic-school network to serve as a laboratory in many settings (rural, suburban, and inner-city), varied forms of program assessment are possible. Periodic sampling of previously mastered performances with different segments of the population could be useful in ascertaining the extent of concept maintenance and inquiry skills.

Evaluation leads to constructive program development. A highly refined feedback system contributes to both. Some experienced teachers from clinic schools return to college to work with undergraduates. Some of these teachers would contribute through program development, refining teacher behavior analyses, simulation, and microteaching while other teachers would focus primarily on educational research. Upper classmen work with freshmen in the career-decision seminar. And, as noted earlier, professional faculty are assigned to cycles

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[11]The reader is referred to the following discussions of the capabilities of the system:

John F. Vinsonhaler, "Improving the Accessibility of Educational Materials," USOE Project No. 5-1144, October 1967.

John F. Vinsonhaler, Technical Manual, Basic Indexing and Retrieval System, (BIRS 2.5) (East Lansing: Learning Systems Institute, Michigan State University, 1968.)

including teaching, working with interns and teachers, and program development. Through designed experiences with educators from various levels of preparation, trainees more readily move from student-oriented to profession-oriented behavior.

Such regeneration through recycling is integral to the clinical approach emphasized in this model. Not only is the program designed to develop a clinical behavior style in graduates, it also utilizes a clinical approach in its own instruction of students and provides for continued renewal through analysis of the program itself.

PROGRAM MANAGEMENT

An extensive, viable, and flexible management system is necessary to support and be responsive to the needs of a complex enterprise as that described previously. The organizational plan includes five subsystems: information retrieval, program development, clinical experiences, evaluation, and management planning.

The information retrieval subsystem carries responsibility for providing the necessary retrieval facilities for the project. Student records, research data, and clinic-school information are readily handled in the IR system. The information storage and retrieval system is described in detail in the Final Report.[12] In the proposed information retrieval system, modular experiences can be added or modified, thus readily updating the program description.

The program development subsystem is responsible for developing and ultimately delivering the nonclinical experiences to students. Program development is accomplished by several means: revision of current modular experiences, input of new ideas or modes of inquiry from scholars in various content areas, the addition of new program tracts, and revision in the clustering and sequencing of instructional modules. Drawing upon data from the evaluation subsystem and direct feedback from instructor-curriculum writers, materials and experience modules are modified and expanded or deleted.

The clinical experience subsystem is responsible for developing clinical experiences for teacher trainees in actual or simulated settings. This subsystem is responsible for permeating clinical experiences and clinical behavior styles throughout the program. While not all clinical experiences occur in elementary school settings, the clinic-school network has been recommended to promote continual feedback and development of the program.

The evaluation subsystem assesses the viability of the program and its various components. It consults with program development personnel in precisely stating objectives; it mobilizes the instruments and analytical techniques of the behavioral sciences to observe, measure, and assess the overt actions of individuals and groups; and it suggests research designs to study program effectiveness.

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[12] Michigan State University, op. cit., Vol. III, Section 10; and in Section 11, pp. 28-36.

The management planning subsystem assists the other subsystems in the areas of systems planning, systems development, and systems analysis. Expertise in the use of PERT, PERT-COST, PPBS, and other management-planning tools are located in the subsystem. Efficiency of operation coupled with adaptability are its objectives.

The management aspects of operating such a network and a prototype clinic-center network now in operation are discussed in the Final Report.[13] The implications of the clinic-school network for continued professional study also are outlined.[14]

SUMMARY

The development of a teacher education program model such as BSTEP required the resources of an extensive professional team. Theoretical constructs must be translated into working models and explicit instructional packages and patterns. More than 150 professional people contributed their time, effort, and expertise to the development of this model. Their names, project roles, and institutional affiliations are listed in the Final Report.[15]

Those whose primary professional concern is teacher education were extremely gratified by the interest and enthusiasm exhibited by academicians and scholars from other fields. Teams of educationists and scholars in natural science, social science, and humanities worked closely together to create the program. While the product of their work is extremely important in that it represents a beginning point for accelerated improvement of teacher education, the dialogue established between professional educationists and academic disciplinarians is more significant. Interest far beyond that required by the formal committments was exhibited by team members through their work. Since the completion of the BSTEP model, a number of academic departments within the university have taken steps on their own to implement aspects of the recommendations.

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[13] Ibid., Vol. III, Section 9.

[14] Ibid., Vol. III, Section 8.

[15] Ibid., Vol. I, Section 1.

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NORTHWEST REGIONAL EDUCATIONAL LABORATORY

A Guide
to

A COMPETENCY-BASED, FIELD-CENTERED SYSTEMS APPROACH TO ELEMENTARY TEACHER EDUCATION

by

H. Del Schalock

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NORTHWEST REGIONAL EDUCATIONAL LABORATORY

OVERVIEW

The ComField (competency-based, field-centered) model of an elementary teacher education program derives from the primary assumption that prospective teachers should be able to demonstrate prior to certification the functions that they are expected to be able to perform after certification, e.g., bringing about given learning outcomes with children or bringing about some specified parental involvement in program development. As such, a model based program requires (1) that the functions to be performed by teachers in given settings be specified,(2) that the behaviors or products of behavior that are acceptable as evidence of the ability of prospective teachers to perform those functions be specified, and(3) that the teacher education program in fact leads to the ability of prospective teachers to perform the functions specified in (1) as measured by the indicators specified in (2).

Four additional assumptions underlie the model:

1. That prospective teachers should be able to demonstrate prior to certification that they are independent, self-directed learners and that they can adapt to new situations that demand new patterns of behavior.
2. That a teacher education program must be relevant personally to those going through it, that is, it must accommodate individual differences in learning rates, styles, objectives, etc.
3. That a teacher education program must be responsive to the needs of a pluralistic society by preparing prospective teachers to function within a wide range of social contexts.
4. That if a teacher education program is to be genuinely responsive to the needs of a pluralistic society, that is, if it is to prepare teachers to be able to function within a broad range of local educational programs, it must provide for community participation in its own definition and operation.

Finally, the model rests upon a commitment to the methodology of systems design. Generally speaking, the application of systems design principles means that each of the functional parts within the model, as well as the model as a whole, assumes three characteristics: (1) it is designed to bring about a specified and measurable outcome, (2) it is designed so that evidence as to the effectiveness with which it brings about its intended outcome is continuously available, and(3) it is designed to be adaptive or corrective in light of that evidence. This is the case whether the part in question is a segment of instruction within the program, a segment of the procedure developed to personalize the program, or the personalization procedure as a whole. As such the model represents a process or way of proceeding. It is goal-oriented, characterized by corrective feedback

loops, etc. In short, it is a process that requires its user to know what it is that he wants to accomplish, order events in such a way that he has some probability of accomplishing it, assess whether the specified events do in fact accomplish that which they are intended to accomplish, and if they do not, modify them until they do. This process is represented schematically in figure 1.

Given its defining characteristics, ComField can best be described as a model of an elementary teacher education program that is systematically designed, personalized, competency-based and field-centered.

Four kinds of products have evolved from work on the model:

1. General specifications for the model.
2. Specifications for the application of the model to specific teacher education programs.
3. Statements of rationale in support of both sets of specifications.
4. Exemplars that illustrate how various elements within an operational teacher education program might look if they were designed according to the specifications.

These are summarized in volumes I, II and III of the Final Report. In reviewing these products the reader should keep in mind the interpretations by the ComField planners of the meaning of the concept "specifications." Broadly speaking, specifications refer to a set of statements that designate what is to be included in or excluded from a process or thing. This is complicated by the fact that the nature of the product or process to be developed sets constraints upon the nature of the specifications that are to be drawn up for it. If a product is a specific dam, for example, at a specific location on a specific river, and the dam has a specific set of functions to perform, specifications have to be written to take all of these factors into account. If, on the other hand, the product is to be a model of a dam that can be built under a variety of conditions to serve a variety of functions, then specifications are of quite a different nature. In the opinion of the ComField planners, specifications for the ComField model were to resemble specifications for the model of a dam. The charge was to develop specifications for a model of a teacher education program that could be applied in a variety of specific situations rather than to develop a situation-specific, operational, "model" teacher education program. Given this interpretation, two levels of model have been developed: (1) those defining the general features of the model, and(2) those defining its application to situation-specific programs. The former set constraints upon the latter, and the latter set constraints upon the developers of a specific, operational program, but they do not dictate the specifics within those constraints. The specifics of any program must be the prerogative of those immediately responsible for its development.

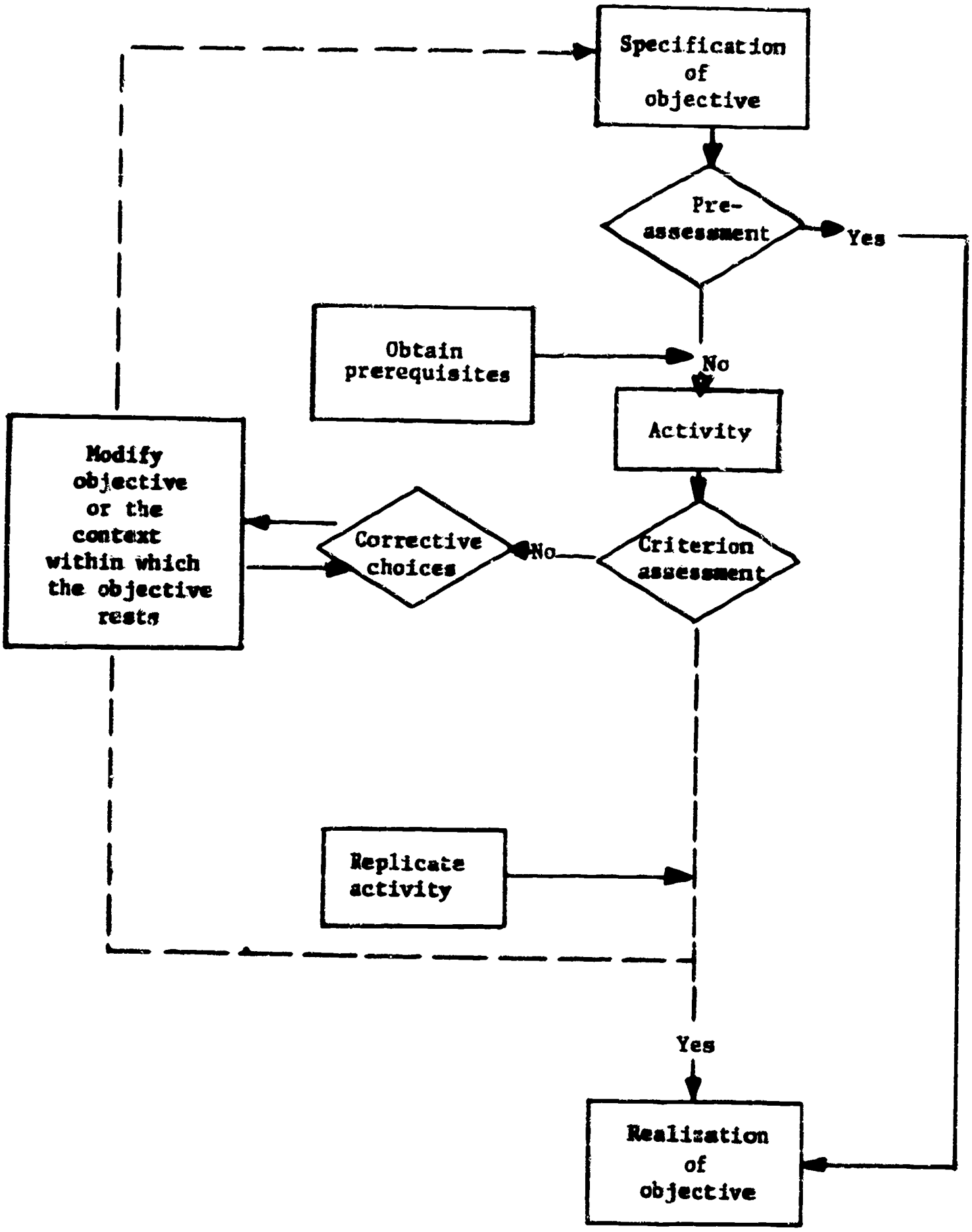

FIGURE 1

A SCHEMATIC REPRESENTATION OF THE ADAPTIVE PROCESS REFLECTED THROUGHOUT THE COMFIELD MODEL

The basic concepts involved in and the operations dictated by the ComField model are summarized in the paragraphs which follow.

The Development of Program Objectives

As indicated, the goal of the ComField model is to prepare teachers to be able to perform the various functions required of them in the elementary schools of the 1970's and '80's. Three steps are needed to translate this goal into operational program objectives:

1. Specify what elementary education will be like in the 1970's and 80's.
2. Specify the functions to be performed within such an educational context, for example, managing instruction, contributing to instructional systems development and evaluation, etc.
3. Specify the tasks to be performed within each function in order to carry it out. As used in the ComField model, tasks that teachers are to perform are defined in terms of the outcomes to be realizedin the school setting.

Such a conception of teaching tasks represents a major departure from most analyses of objectives that accompany teacher education programs and is critical to the operation of the ComField model. Thus, the designer of a teacher education program is forced to specify the objective of the educational enterprise at the elementary school level as a basis for the development of his teacher education program. This includes the classes of pupil outcomes to be derived from the educational program and the outcomes to be achieved through working with parents or with peers in curriculum development and evaluation, etc. Although it represents an extremely rigorous requirement in program development, it is a necessary one if the major assumption on which the model program rests is to be met with candor and if education and teacher education are ever to move away from the position that the performance of certain classes of activity on the part of teachers (for example, asking questions, administering tests, giving information through exposition, and guiding reading in a workbook) are sufficient in and of themselves to bring about learning in children or are sufficient in and of themselves as evidence of a prospective teacher's ability to bring about learning in children.

One consequence of this requirement is the burden of responsibility it places upon those in the teacher education program to develop reasonable and valid task specifications. This is particularly critical with respect to the classes of pupil outcomes that are to derive from an elementary education program, for the welfare of children, the community, and nation are at stake. Because of this critical issue, the ComField model specifies that a mechanism (an educational objectives commission?) be established at the state level with strong representation from local communities, schools, and colleges to work toward the development of a taxonomy of outcomes appropriate to the function of elementary education in 1970's and 80's. In addition, the model specifies that all decisions as to such outcomes must be reflected

against (1) what is known about human development and behavior, (2) what is known about the present social and cultural context, and (3) what is known about the nature of alternative future social and cultural contexts. The basic assumption underlying the development of such a mechanism is that by hitting the issue head on, by doing so with broad representation within a state or a region, and by reflecting the deliberations of such a group against that which is known in the social, behavioral, and biological sciences, the best set of objectives will be derived, and they will have the best chance of being accepted by parents, local school districts, departments of education, etc. While such a taxonomy would of necessity be subject to continuous change, both as a consequence of changing demands of the social system and changing knowledge of human development and behavior, it represents a place to begin. Without such a beginning, a ComField-type teacher education program cannot function.

The Development of the Means To Assess the Realization of Program Objectives

The program must become serious in its effort to obtain evidence of the ability of prospective teachers to perform the tasks prior to certification that they will need after certification. Operationally, this requires that prospective teachers be able to demonstrate that they effect changes in the behavior of pupils that reflect desired educational outcomes before they assume responsibility for guiding the learning of children. The same rationale holds with respect to demonstrating the ability to perform noninstructional tasks, for example, the ability to bring about desired outcomes in conferences with parents or to bring about desired outcomes in curriculum development efforts with peers. Evidence as to the ability of prospective teachers to perform these tasks rests, respectively, with changes in the attitudes, feelings, or behavior of parents and with revised, extended, or newly created curricula.

After having specified the tasks, three steps are involved in developing procedures which will permit the assessment of competence in the performance of those tasks:

1. Specify the behaviors or products of behavior in the target population, i.e., in children or parents or curriculum, that are acceptable as evidence of competence in the performance of a given task.
2. Specify the procedures by which reliable observations of (1) can be obtained.
3. Develop the measures specified in (2) to the point where there is evidence that they do in fact provide reliable observations of (1).

The concept of competence in a ComField-type teacher education program is extremely complex and has far-reaching implications for assessment. When applied to the development of learning outcomes in children, the demonstration of competence means, operationally, that a prospective teacher is able to bring about a given learning outcome for a given pupil or set of pupils who have given characteristics in a given instructional setting. Four sets of variables are always interacting in any demonstration of competence as a teacher of children: (1) the pupil outcome desired, (2) the characteristics

of the pupils which interact with instructional conditions to effect outcome,(3) the characteristics of the instructional setting which interact with both pupil characteristics and instructional conditions to effect outcome, and(4) the nature of the instructional act per se. In ComField, the term instructional act always includes reference to the content of and the strategy represented by an instructional behavior. Much the same set of operations are involved when referring to competence in the performance of noninstructional tasks: to demonstrate competence in parent conferences, for example, a prospective teacher must be able to demonstrate that he can bring about a given outcome for a given parent within a given context.

Since the demonstration of competence with a ComField-type program requires an appropriate mix of teacher behavior in relation to outcome, characteristics of the target population, and characteristics of the setting, competence is always situation specific. It can be judged only in terms of a specific mix of such variables. As a consequence, competence cannot be thought of in an abstract or generic sense; competence in instruction must always be thought of in terms of the ability to bring about a specific outcome for a specific child or set of children who have specific characteristics and who are operating in a specific instructional setting. Competence is getting a 6-year-old child in a class of 10 who is bright, but visually handicapped, to discriminate between all letters of the alphabet, or in getting a 13-year-old boy of average ability in a class of 30, with little exposure to cultures other than that reflected in his own relatively isolated mountain community, to place value in cultures other than his own.

Such an approach to the meaning of competence has major implications for assessment for the number of specific situations within which competencies can be demonstrated are essentially without end. Operationally, this requires that the strategy of assessment involve the demonstration of competence in situations which appropriately sample classes of outcomes for classes of target population within classes of educational settings. A basic assumption underlying the program is that each prospective teacher will be able to negotiate the specific situations in which he is to demonstrate competence, and that these will reflect the type of situations that he will be encountering in the setting within which he chooses to teach.

The Development of Learning Experiences Which Assure the Realization of Program Objectives

Having specified the acceptable tasks and behaviors or products of behavior in the target populations that are evidence of the ability to perform those tasks, the systematic development of a competency-based teacher education program then requires:

1. The identification of the necessary conditions to bring about the successful performance of a task, i.e., to bring about the outcomes expected in the educational setting.
2. The specification of the knowledge, skills, and sensitivities that are needed by teachers to provide the conditions outlined in (1).

3. The specification of the conditions by which the knowledge, skills, and sensitivities needed by teachers to perform their various school tasks can be developed.

Once (3) is known it then becomes possible to design and develop the learning experiences that constitute the teacher education program. The sequence of steps involved in the systematic design of a ComField-type program is illustrated in figure 2.[1]

Caution should be introduced at this point. While the logic of the steps outlined in carrying out the systematic design of a teacher education program is clear, the information base that exists in the fields of education and psychology on which the design of such a program depends is extremely limited. With few exceptions, there simply are no tested, empirically based instructional principles that speak to the conditions that give rise to specific classes of pupil outcomes for specific kinds of children within specific instructional settings. It is still not possible, for example, to identify explicitly and with confidence the instructional conditions which permit concepts to be mastered, attitudes to be modified, or chronic anxiety to be reduced for various kinds of children in various settings. It is even less possible to specify the conditions for bringing about such outcomes as trust or considerateness or self-understanding. As a consequence, it is not possible to go very far in specifying the knowledge, skills, and sensitivities that prospective teachers need in order to bring about such conditions. The same lack of empirically tested instructional principles exists at the level of teacher education. As a consequence of such a limited knowledge base, the design of the teacher education program must be built as much on the collective wisdom of those who are helping shape it as on firm empirical evidence. To minimize the limitations inherent in such an approach, the model specifies that the methodology of instructional systems design and development should be brought to the task. This is a methodology which permits, through iterative cycling and empirically based feedback procedures, the development of an instructional program which brings about specified outcomes with known degrees of reliability. The concepts of instructional systems design and development are elaborated in the paragraphs which follow.

Designing Instructional Experiences That Have a High Probability of Giving Rise to the Knowledge, Skills, and Sensitivities That Prospective Teachers Need To Perform the Tasks Required of Them for Certification. Because the ComField model is data-based, persons adopting it as a guide to the development of their teacher education program are in the unique position of being able to insist that known kinds and amounts of learning

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[1] The reference in figure 2 is limited to pupil outcomes and the instructional tasks of teachers. As indicated throughout the paper, teachers are required to perform other tasks, and it needs to be noted that the paradigm outlined in figure 2 is as applicable to the design of a program to prepare teachers to perform such noninstructional tasks as it is to prepare them to perform their instructional tasks.

Step 1	Step 2	Step 3	Step 4
Pupil outcomes that are desired	Conditions that bring about the outcomes that are desired in pupils	The knowledge, skill, and sensitivities needed by teachers to provide the conditions that bring about the outcomes that are desired in pupils	Conditions that bring about the competencies needed by teachers to provide the conditions that bring about the pupil outcomes that are desired in pupils
The goals of education	The instructional program within the schools	The goals of teacher education	The teacher education program

FIGURE 2

SEQUENCE OF STEPS IN THE SYSTEMATIC DESIGN
OF A COMFIELD-BASED PROGRAM

take place as a consequence of instruction within their teacher education program. Towards this end and toward the end to making the energy that goes into the development of a ComField-type program maximally useful to the profession, the model specifies that instruction should make use of what has come to be known as instructional systems.

As used in the present context, an instructional system is an empirically developed set of learning experiences designed to bring about a given outcome for given kinds of prospective teachers with a given degree of reliability. The design of an instructional system involves the systematic analysis of that which is to be learned, a systematic structuring of it from the learner's point of view, and the specification of a set of learning experiences which have a high probability of leading the user of the system to a mastery of that which is to be learned. Within the context of teacher education, instructional systems may involve learning experiences which include lectures, small group discussions, reading, observation of films or real life settings, laboratory simulation, microteaching experiences, etc., of explicit performance outcomes that relate to explicit tasks that the prospective teacher is likely to have to perform. Also, no matter what the learning experiences may be, they are always designed with multiple entry points and paths to pursue, permitting students to enter at levels commensurate with their background and progress through them at a speed and in ways commensurate with their learning style.

The design of instructional systems within the context of teacher education requires that one specify both the content and strategy of instruction (learning events) that have the greatest likelihood of bringing about the specified outcome for a given kind of learner (prospective teacher) in a given instructional setting. Such specifications require the matching of the content of a message and the strategy used in presenting it with learner characteristics, learning settings, and outcome. Ideally, as indicated earlier, such specifications should draw upon instructional principles, i.e., empirically established relationships between these sets of variables, but since these do not exist in abundance at present, most such specifications will have to be drawn from wisdom, hunch, and hope.

Developing the Instructional Experiences That Have Been Specified by the Design Function Outlined Previously, Determining Whether They in Fact Achieve That Which They Have Been Designed To Achieve, and If They Do Not, Recycling Their Design, Implementation, and Testing Until They Do. Once an instructional system has been designed it must still be developed and tested for its effectiveness. The developmental process is cyclical and empirical: instructional materials are prepared, piece by piece or unit by unit, tested for their effectiveness, and modified as needed until individually and collectively they bring about the learning outcome for which they are intended. As systems are developed, tested and used data is accumulated as to their effectiveness with given kinds of learners. Ultimately, each instructional system is available in a form that permits it to be marketed and thereby used throughout the profession.

The Development of Personalizing Strategies Which Assure the Relevance of the Program to Those Who Are in It[2]

Individual differences in the learning patterns, capabilities, and preferences of students in a teacher education program must be more than recognized. They must be taken into account fully in the design of such a program. At the time the ComField model was first described, concern for individual differences focused primarily on the design of instructional systems with multiple entry points and critical paths along which students could move, multiple media forms so that information processing preferences could be pursued, rate of progress through a system or through the full contingent of systems being under the control of the student, opportunity to develop an idiosyncratic teaching style, etc. Further work with the model has suggested that the personalization of a teacher education program requires a number of elements. These include an opportunity for students, within established limits, to:

1. Contribute meaningfully to the design and development of the program.
2. Negotiate that which they wish to take from the program.
3. Negotiate the settings within which the competencies negotiated in (2) are to be demonstrated.
4. Negotiate the criteria by which judgment is to be made about competence.
5. Continuously assess the relevance of the objectives that have been negotiated, and the relevance of the educational experiences being pursued in relation to those objectives.
6. Develop a minimal level of self-understanding as a basis against which to make such judgments.
7. Develop an overall "style" of teaching that is in concert with one's self-understanding.

Each step in the personalization process is elaborated in the following paragraphs.

An Opportunity for Students To Contribute Meaningfully to the Design and Development of the Program. A basic assumption underlying the development of a ComField-type program is that the program's parameters are to be determined jointly by faculty from the colleges and schools, students in teacher education, and representatives from the broader community where appropriate. By pursuing such a strategy, it is assumed not only that the parameters and the criteria for judging their success will be more acceptable to all, but that the quality and relevance of the program for those within it will be maximized.

An Opportunity for Students To Negotiate That Which They Wish To Take from the Program. Within the overall program, each student needs to be

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[2]This aspect of the model has been extended significantly by the Oregon group.

able to negotiate an individual program that is maximally relevant to him. Operationally, this means that the content of each program will vary by interest, specialization, background of knowledge and skill, personal learning styles, etc. It also means that students and staff must arrive at a program of work that is mutually satisfying, given the information and range of choices available at any given point in time. It is anticipated that both short- and long-term contracts will evolve from negotiations, and that both will be subject to modification at any time through further negotiation. At this point, there are no guidelines that indicate how many functions or tasks prospective teachers must be able to perform, but it is generally assumed that some representative sample of tasks within all functions will be established as a minimum base against which to negotiate.

Two further requirements must be met if a personalized program is to be effective: (1) vast amounts of information on interests, performance history, etc., must be available to students and staff upon call so that informed decisionmaking can be pursued, and(2) staff must have the sensitivities and capabilities that permit meaningful negotiation. Hopefully, the first can be accomplished by a computer-based information management system and the second by staff selection and training.

An Opportunity for Students To Negotiate the Settings Within Which Competence Is To Be Demonstrated and To Negotiate the Criteria by Which Judgment About Competence Is To Be Made. Once a prospective teacher has identified the broad classes of tasks on which he wishes to demonstrate competence, he then must negotiate the conditions or setting within which he will demonstrate his competence. This requires that he specify clearly the nature of the objective he is attempting to realize in the demonstration situation, the kind of learner or learners to be involved in the situation, and the physical characteristics of the setting in which he will work. The prospective teacher is also responsible for negotiating the behaviors or products that can be looked to in the situation as evidence of his success in bringing about his objective. Once this level of detail has been made explicit and agreed to, the task of the prospective teacher and the person responsible for assessing his performance becomes manageable and relatively straightforward. The same strategy is followed in meeting prerequisite skills, knowledges, and sensitivities. It is to be recognized, however, that certification is linked only to the demonstration of terminal competencies; prerequisite knowledge and skills are seen only as means to an end and are attended to primarily for diagnostic or guidance purposes.

An Opportunity for Students To Assess Continuously the Relevance of the Objectives That Have Been Negotiated and the Relevance of the Educational Experiences Being Pursued in Relation to Those Objectives. In order to insure maximum relevance of both the ends being pursued in the program and the means used to obtain those ends, all instructional systems are to contain an element which forces the prospective teacher to assess the meaning of that being pursued, his commitment to it, and its implications for the development of an evolving teaching style. This is

the case whether the student is successful or unsuccessful in demonstrating the criterion performance toward which the instructional system aims. The procedure by which this is accomplished is a corrective decision loop that is attached to all instructional systems. Operationally, the corrective decision loop is brought into play whenever there is reason to believe that that which is being pursued is without meaning or there is failure in the demonstration of criterion performance. When this is the case, the student is channeled into the corrective decision loop where he is able to explore through conference the relevance or meaning of either the ends or the means to the ends that he is pursuing. Oftentimes the difficulty in finding meaning in an experience is a matter of not having understood that which needs to be understood. When this is the case, the student is cycled through an enabling subsystem or recycled through the learning experience just attempted. The critical point is that a mechanism to facilitate the personalization process is a part of every instructional experience, and when the relevance of instruction is unclear or unsuccessful, it is always brought into play.

An Opportunity for Students To Develop a Minimal Level of Self-Understanding as a Basis Against Which To Make Such Judgments. A basic assumption underlying the entire personalization effort in the ComField model is that the wisdom of decisions made in a program of this kind is directly related to the degree to which one has a clear understanding of his own goals, commitments, preferences, etc. Toward this end, the primary point of departure in the program and a continuing thread throughout it is the systematic effort to bring about self-understanding.

An Opportunity for Students To Develop an Overall "Style" of Teaching That Is in Concert with Their Self-Understanding. Not only do prospective teachers learn differently, but they learn different things and put similar things together in different ways. In bringing about pupil outcome A, for example, one teacher may use instructional behaviors x, y, and z; another teacher may use behaviors v, w, and x--yet both teachers may be equally successful in bringing about the desired outcome. To be ultimately effective a teacher education program must allow for and in fact nurture such differences. The proposed model teacher education program does so by insisting that each prospective teacher provide evidence of an integrated, idiosyncratic teaching style. This requires that the prospective teacher be able to explicate his style, be able to provide a rationale in support of it, and be able to demonstrate it consistently under simulated and actual teaching conditions.

The Development of Field Relationships Which Assure the Relevance of the Program to Those Who Are Its Ultimate Consumers

By insisting that prospective teachers be able to demonstrate that they can perform specified tasks under field conditions prior to certification, personnel in public schools must of necessity become full partners in the teacher education program. Operationally, it requires both their representation in all decisionmaking that affects program operation and participation in the instructional program per se. As it presently

stands, the model specifies that prospective teachers demonstrate competence under two conditions: (1) under laboratory or simulated conditions prior to entry into the ongoing classroom situation, and(2) under ongoing classroom conditions. As used in the ComField model, simulated conditions refer to any instructional context that is less complex than that encountered in the ordinary classroom. As the model now stands, it specifies that instruction in the knowledge, skills, and sensitivities needed to perform the required tasks, and the demonstration of competency in their performance under simulated conditions is, primarily, the responsibility of the college or university. Once criterion performance has been demonstrated under laboratory or simulated conditons, the prospective teacher is then free to enter the practicum. Here he stays until he is able to demonstrate competence within the context of the ongoing instructional environment. Generally speaking, school personnel are responsible for the practicum phase of the training.

The rationale underlying the division of responsibility between colleges and the schools in the teacher education program is straightforward: The college is probably better suited than the school to assume responsibility for the development of the knowledge, skills, and sensitivities needed to demonstrate competence in the performance of teaching tasks in the laboratory, and the school is probably better equipped to handle both instruction and assessment relative to the demonstration of competence in the performance of teaching tasks under ongoing classroom conditions.

Two assumptions underlie the requirement of competence demonstration under laboratory or simulated conditions prior to assuming responsibility for guiding the learning of pupils in the classroom: (1) there should be opportunity to perform the required tasks initially under circumstances where the complexity of the teaching-learning situation is somewhat simplified, and(2) there should be evidence that prospective teachers are able to work profitably and constructively with children in a minimal risk situation before they assume responsibility for their learning in an actual situation.

The commitment to having school personnel share equally in the definition and operation of a teacher education program has far-reaching implications for the structure and organization of both schools and colleges. Operationally, mechanisms will have to be established which permit equal participation in:

1. Establishing the competencies that are to be demonstrated under laboratory conditions.
2. Establishing the behaviors or products of behavior that are acceptable as evidence of those competencies.
3. Confirming the demonstration of competence under laboratory condition.
4. Establishing the competencies to be demonstrated under live classroom conditions.
5. Establishing the behaviors or products of behavior that are acceptable as evidence of those competencies.

6. Confirming the demonstration of competence under field conditions.
7. Representation in all policy matters relating to the teacher education program.

One major consequence of a program so designed is the far-reaching implications it has upon the functions which staff within both schools and colleges will have to play. Staff within the college setting will have to become involved in contract negotiations, performance assessment, guidance, the development of instructional systems, involvement in instructional functions. These represent far-reaching changes in relation to that which now exists, but even greater changes will have to occur on the part of staff within schools. In contrast to being relatively passive hosts to "student teachers," the schools will become actively involved at all levels of decisionmaking relative to the program, and they will assume major responsibility for instruction and assessment within the practicum phase of the program. This calls for the development of a function within the schools that does not now exist and the creation of staffs that have a set of competencies that they currently do not possess. The assumption of responsibility for this function will require major change in the operation of schools, a redistribution of resources, and a major involvement in an inservice education program as a means of preparing persons to assume their new and enlarged responsibility for instruction and assessment. On the basis of evidence now available, it is probable that the combined inservice education program needed by colleges and the schools to support a teacher education program of the kind described will require as many resources as will the preservice program.

The Development of an Instructional Management System Which Assures That the Support Functions Needed To Carry Out Such a Program Are Available

Every instructional program has to be managed. In most programs these functions are taken as a matter of course; administrators, registrars, counselors, and maintenance personnel are unquestioned elements in program operation. In a ComField-type teacher education program, these same supporting functions must be provided, but because of the performance-based, individually paced, personalized and largely self-instructional nature of such a program, they must be provided in a markedly different form. In order to operate, a ComField-type instructional program requires eight support functions:[3]

1. Personnel selection and training.

[3]The support functions refer only to those that must go on within the management system; they do not speak to who performs those functions or the manner in which they should be carried out. For example, the function labeled "policy and adapation" indicates that the functions of establishing ComField policy, translating policy into operational guidelines, deciding upon new and/or modified program operations, carrying out inter- and intrainstitutional coordination, etc., must be accomplished. The model does not specify the nature of the organizational structure needed to carry out out those functions.

2. Maintenance of equipment, supplies, and facilities.
3. Development of instructional systems for use in the program. and the pursuit of the basic research needed in support of that function.
4. Continuous evaluation of the effectiveness and appropriateness of the program.
5. Continuous adaptation of the program in light of its systematic appraisal.
6. Cost accounting of the program.
7. Execution of the program.
8. Maintenance of an information management system that permits all of the above to occur.

Each of the management functions are elaborated in the paragraphs which follow.

Personnel Selection and Training. The personnel function is responsible for meeting all personnel needs in a ComField-type teacher education program. This includes the recruitment, screening, selecting, and training of instructional and support staff. It also includes the recruitment, screening, and selecting of students. Student advisement and counseling activities are planned and coordinated with the instructional program. All staff training needs, both in the college and the school setting, are carried out within the context of this function.

Maintenance of Equipment, Supplies, and Facilities. The title describes this function sufficiently. It is to be noted, however, that the space, facilities, equipment, and materials needed in support of a ComField-type program take much different form and will require much closer management than they do in traditionally structured teacher education programs.

The Development of the Instructional Systems To Be Used in the Program and the Pursuit of the Basic Research Needed in Support of That Function. The steps involved in the design and development of institutional systems have been spelled out so nothing more needs to be added here. Research in support of instructional systems development will take the form of a search for "instructional principles," that is, the instructional contents and strategies that bring about given kinds of outcomes for given kinds of pupils in given kinds of settings.

The Evaluation Function. Since a ComField-type program is designed to be adaptive, it must possess the means for being responsive to both emerging problems and changing needs. Toward this end at least four kinds of evaluative data are needed.

1. The appropriateness of the pupil outcomes identified as guides in determining the sensitivities and capabilities that need to be developed in prospective teachers in order to bring them about. (Are the ultimate objectives of the program the correct ones?)

2. The effectiveness of teachers who have given sensitivities and capabilities in bringing about the outcomes desired in pupils. (Are the sensitivities and capabilities that have been identified as being needed to bring about given outcomes in pupils the correct ones?)
3. The effectiveness of instructional systems in bringing about the sensitivities and capabilities for which they were designed. (Are the procedures used in the teacher education program effective?)
4. The impact of the teacher education program beyond its immediate influence on teachers and pupils. (Is the school or larger social system changed as a result of the program?)

The means for making such judgments depends upon a comprehensive evaluation system.

The Policy-Adaptation Function. The policy function is the highest level decisionmaking process represented in a ComField-type instructional program. Representation at the policy level must include persons from the college, the schools, professional educational agencies, and the public-at-large. The adaptation function is responsible for regulating the operation of a ComField-type program. Efforts are given to translating broad policy into operational guidelines, designing new and modified program operations, and carrying out inter- and intrainstitutional coordination. The adaptive function must have representation from both the instructional and support components within the teacher education program and from other professional and special resource personnel as needed to carry out the adaptive function.

The Costing Function. From what has been described thus far, it is clear that management decisions in a ComField-type program become extremely complex. It is also likely that they will become increasingly sensitive to the pressures of economics, for as the costs of education outdistance the resources allotted to it, managers of the program will be forced to maximize system effectiveness and minimize system costs. Managers of a ComField-type program must also demonstrate favorable cost-benefit ratios. A basic assumption underlying the ComField model is that both cost effectiveness and cost benefit data must be made available to those who support the program. Specifically, the model assumes (1) that educators have an obligation to provide taxpayers and legislators cost benefit information so that they can make informed judgments relative to program support when asked, and(2) that managers of a ComField-type program must have cost effectiveness information in order to make informed judgments as to program operation, priorities, etc.

To obtain data of this kind three costing capabilities must be available:

1. Data that derive from straightforward cost accounting
2. A procedure for deriving cost effectiveness data
3. A procedure for deriving cost benefit data.

Program Execution. The execution function is responsible for seeing that policies are translated into operational guidelines and then carried out. Labels traditionally used to describe this function are "management" or "administration."

The Information Management Function. The information demands within a ComField-type instructional program are extremely high. As students progress through an instructional system, they must have information that permits them to make appropriate choices as to next learning steps; advisors must be able to call up performance history, etc. Information needs are also high within the management effort. Instructional systems development personnel must have performance records for each system and/or subsystem. Cost/benefit and program evaluation data must be available upon call by those responsible for the adaptation or execution of the program, etc. To meet these demands, a computer-based information management system needs to be used as the primary means for the storage, retrieval, transmission, and display of information within the program. Model specifications require that natural language be used in interacting with the computer.

The relationship between the ComField management and instructional systems is illustrated schematically in figure 3. Three objectives of the management system are reflected by the organizational structure:

1. To keep the instructional program squarely in the center of things and thereby insure as well as possible that the support units remain as support units rather than becoming focal points within the program.
2. To provide maximum opportunity for information and directional influence to flow both from the instructional component to the support components and vice-versa.
3. To provide for a continuous flow of information to the policy-adaptation component, and hence to the program execution component.

While such a model cannot guarantee that all units within a ComField-type program will act in concert and in support of the instructional program, it does provide an operational framework which at least makes it possible.

A Summary of the Contributions Expected To Derive from the Comfield Model

By adopting the ComField model, an elementary teacher education program is in the unique position of being able to provide (1) evidence that a prospective teacher is able to perform the tasks that he is expected to perform prior to assuming responsibility for the teaching of children, (2) the means whereby schools can become intimately involved in the preparation of persons responsible for their operation, (3) the means whereby prospective teachers can contribute significantly to the shaping of the curriculum that is to guide their professional development, (4) the means whereby a college educational experience has personal relevance, (5) the support systems needed to carry out such a program, and (6) evidence as to

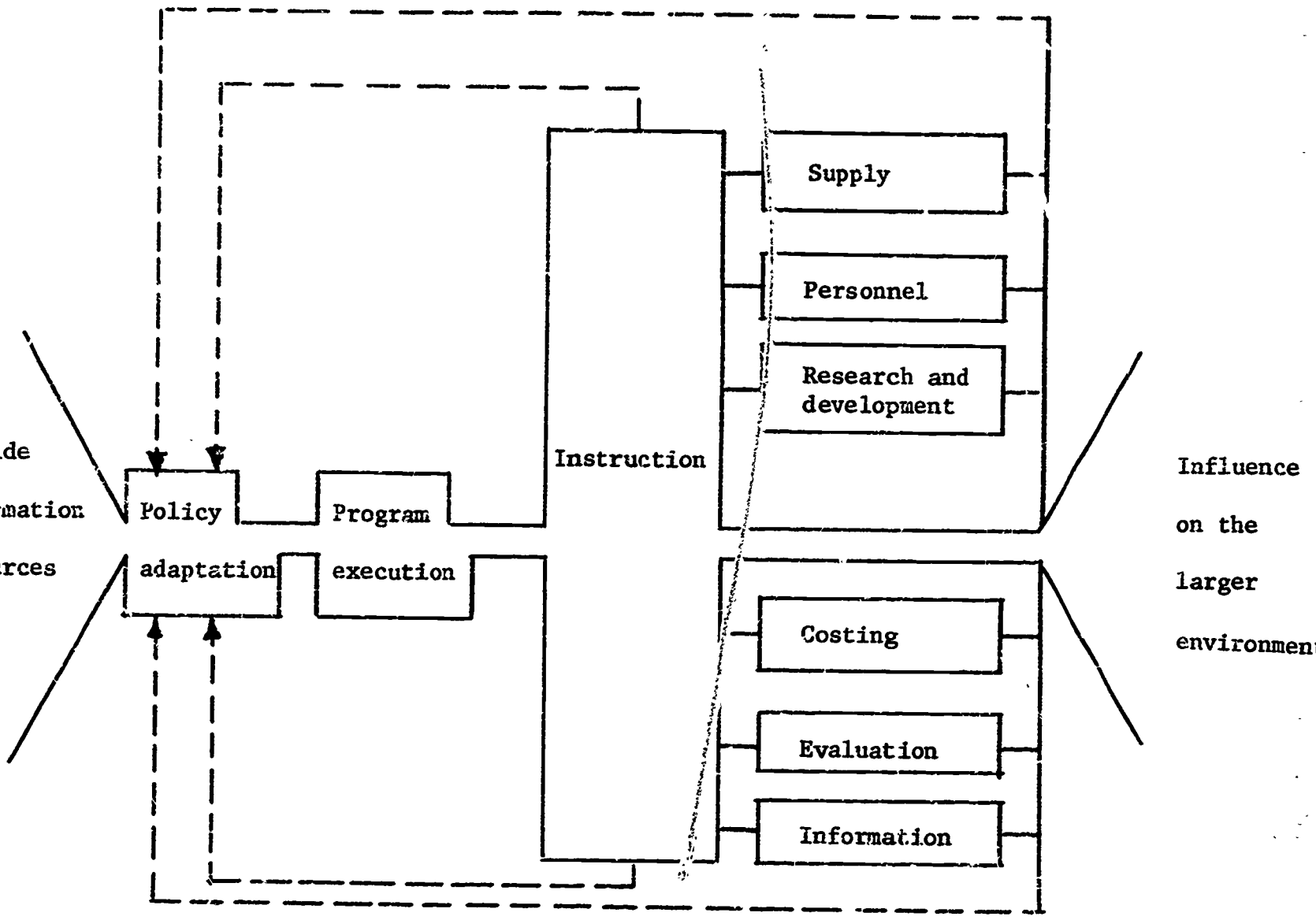

FIGURE 3

A SCHEMATIC DIAGRAM OF THE COMFIELD MANAGEMENT SYSTEM

the cost, effectiveness, and benefit derived from such a program. It is also anticipated that two second-order outcomes will occur from a program so conceived: (7) that prospective teachers will develop into independent, self-directed, continuing learners themselves, and(8) that the systematization and personalization of instruction will transfer to the education of preschool and elementary children. The basic assumption underlying hope for such a long-range outcome is, simply, that when prospective teachers themselves engage in an educational experience in a way which gives it personal meaning, and when they themselves become independent, self-directing learners, they above all others will be likely to create a similar kind of learning experience for the children they teach.

PROGRAM GOALS AND RATIONALE

The goal of a ComField- type teacher education program is to prepare teachers to perform the various functions required of them in the elementary schools of the 1970's and 80's. The aim of the ComField model is to provide specifications for the development of such a program. As indicated previously, the rationale underlying the model is relatively straightforward: If prospective teachers are expected to be able to perform certain functions upon certification, they should demonstrate that they can perform them prior to certification. It also rests upon the assumption that if teachers are to perform the primary function of facilitating human development, the nature of our present cultural-social context, and the nature of alternative futures, the program which prepares teachers to do this must be clear about the nature of learner outcomes to be nurtured, the nature of the conditions that are required to nurture each outcome, and the nature of the competencies needed by teachers to provide the conditions that will nurture each outcome.

SELECTION PROCEDURES

The ComField model has no restrictive specifications relative to who may enter the teacher education program. Anyone who has been admitted to a college that has adopted the ComField model as a basis for its teacher education program will have established college entry criteria, and it is assumed that students who meet them are sufficiently qualified for entry into the initial phases of the teacher education program. This is not to imply, however, that acceptance in the program means that a student is also accepted as a good risk as a prospective teacher. The philosophy underlying the ComField model, however, is that anyone who meets the minimal requirements of entry into a college that has adopted the ComField model should be free to enter the teacher education program and attempt to meet its requirements. It is also assumed that such entry may be made at any point in one's life and from any substantive background.

Whether a person in the program succeeds within it depends on his ability to perform the criteria specified for exit from it, including those which pertain to self-understanding and the development of an idiosyncratic teaching style. If these criteria are met, independently of

how long it takes to meet them, he will receive certification; if they are not met, and those in the program decide ultimately that there is little likelihood of their ever being met, a student may be asked to leave the program without full certification. Under no conditions, however, are these judgments to be made prior to each student having full opportunity to demonstrate his ability to meet the criteria set for certification.

THE PROFESSIONAL PRESERVICE COMPONENT

The underlying task of the professional preservice component in a ComField-type teacher education program is to prepare prospective teachers to be able to demonstrate that they can perform under laboratory and practicum conditions, that they can bring about the desired outcomes in children, that they can perform the noninstructional tasks required of teachers, and that they have developed a recognized and defensible teaching style. In addition, the model requires that each prospective teacher demonstrate competence in the application of what has been termed general adaptive and interpersonal strategies. An assumption of the model is that this last class of competence will facilitate the application of the first three classes mentioned. As indicated previously, the ComField model does not specify the specific competencies to be realized from the program--this is the prerogative of the institutions or the states or the regions that adopt the model. The model does specify, however, how such competencies are to be determined and what they will look like generally once they are determined. It is on this basis that a general outline of the nature of the professional preservice component is offered.

Before describing this component of the program, however, the reader should be sensitized once more to the conception of teaching tasks and the conception of competence in the performance of such tasks assumed by the model. It will be recalled that, for purposes of the ComField model, a task is defined as bringing about a specified outcome under a given set of conditions, and competence is defined as the ability to bring about such tasks. When applied to the development of learning outcomes in children, a competency means, operationally, that the prospective teacher is able to bring about the specified learning outcome for a given pupil or set of pupils who have given characteristics in a given instructional setting. The same holds when referring to competence in the performance of noninstructional tasks: to demonstrate competence in conferences with parents, a prospective teacher must demonstrate that he can bring about a given outcome for a given parent in a given context. The demonstration of competence, therefore, is always characterized by an appropriate mix of influence behavior, desired outcome, characteristics of the target audience, characteristics of the setting within which influence behavior occurs, and requires for its demonstration an appropriate sampling of outcomes for given target populations across given classes of educational settings.

Given such a point of view about teaching tasks and competence in the performance of such tasks, the professional preservice component of a

ComField-type program centers around two kinds of information:

1. Principles of instruction or principles governing the performance of noninstructional tasks, that is, empirically tested statements of the relationship between desired outcomes, the characteristics of target populations, the characteristics of educational settings and influence strategies.
2. The knowledge, skills, and sensitivities that are prerequisite to the application of the principles specified in (1).

Unfortunately, as indicated elsewhere, the information base available in the field of education and the behavioral sciences is such that principles of instruction are still lacking. With few exceptions there simply are no tested, empirically based principles that speak to the conditions or operations that give rise to specific classes of pupil outcomes within specific instructional settings or specific kinds of parent outcomes within parent education settings. For the present, the designers of the ComField model were forced to deal with information within the professional preservice instructional program much as it has always been treated, namely, to provide prospective teachers with relevant batches of information and subskills and then require them to demonstrate that they can then make appropriate mixes of this information in demonstrating the criterion competencies required for exit from the program. The limitations of such a procedure are clear: Prospective teachers are provided only with sets of knowledges and skills that are in some way involved in and prerequisite to the performance of specific tasks they then are forced to "find," through trial and error application of alternative instructional acts, combinations which prove to be effective mixes of this information relative to situation-specific tasks encountered.

The ComField model specifies that content relevant to four sets of competencies be included in the preprofessional program:

1. Content relevant to the development of competencies needed to bring about desired outcomes in pupils.
2. Content relevant to the development of competencies needed to perform noninstructional tasks.
3. Content relevant to the development of adaptive and interpersonal competencies that enhance (1) and (2).
4. Content relevant to the development of competencies which permit the personalization of (1), (2), and (3).

The specific blocks of content which relate to the development of these specific sets of competencies are summarized in figure 4.

As with specific competencies to be realized from an elementary teacher education program, the ComField model does not specify the specific content within the various blocks of content identified in figure 4. To the developers of the model, this too seemed to be the prerogative of the institutions adopting the model. A detailed set of specifications relative to how content is to be used within a model-based program do exist, however,

Content relevant to the development of competencies needed to bring about desired outcomes in pupils

- A taxonomy of pupil outcomes
- Conceptual frameworks for teaching subject matter needed to bring about selected pupil outcomes
- Characteristics of pupils which interact with content and strategy to effect outcomes
- Instructional strategies needed to bring about selected pupil outcomes

Content relevant to the development of interpersonal or enhancing competencies

- General adaptive competencies
- Interpersonal competencies

Content relevant to the development of competencies needed to perform non-instructional tasks

- A taxonomy of noninstructional tasks to be performed by an instructional manager
- Ability to work as a team member in research and evaluation, instructional systems development, and the supervision of assistants; ability to utilize computers and electronic media in instruction
- Ability to conference with parents, work with parents, work with peers, establish school policy, pursue administrative tasks such as maintenance of records, etc.

Content relevant to the personalization of professional competencies

- Self-understanding
- Commitment
- Teaching style

(All blocks of content can be adapted equally well to the preparation of I.M.'s at the preschool, primary or elementary levels.

FIGURE 4

A CONCEPTUAL FRAMEWORK WHICH SUMMARIZES THE MAJOR BLOCKS OF CONTENT WITHIN THE COMFIELD INSTRUCTIONAL PROGRAM

and may be found in the Final Report.[4] Examples of specific blocks of content are provided in volumes II and III of the Final Report.

In addition to specifying the content of the professional preservice component, the model also specifies that mastery of the subject matter underlying instruction around disciplines be obtained in the general education program, that mastery of the blocks of content outlined above be obtained in the foundation-laboratory phase of the professional education program, and that the ability to apply these enabling knowledges, skills, and sensitivities in the performance of criterion competencies be demonstrated under simulated and real life educational conditions. As spelled out earlier, simulated conditions refer to any instructional context that is less complex than that encountered under ordinary classroom conditions, and once criterion performance has been demonstrated under such conditions, the prospective teacher is then free to enter the practicum phase of the training program. In general, the foundations-laboratory phase of the professional educational program is the responsibility of the college or university, and the practicum phase of training is the responsibility of public school personnel. The relationship of the major blocks of content within the preservice professional program are summarized in figure 5 according to phase of the program in which they occur.

RELATIONSHIP OF PROFESSIONAL COMPONENT TO ACADEMIC COMPONENT

Each college has its own set of requirements relative to general or liberal education, and the ComField model specifies that these not only are to be honored, but that the professional preservice educational component must accommodate itself to that college commitment. In some cases this will mean that the model-based elementary teacher education program will have to accommodate itself to a discipline major, an interdisciplinary major, or simply a fixed number of hours in general education subjects. The model makes two additional specification requirements, however, relative to general education:

1. It specifies that all students in the elementary teacher education program will be involved in general-liberal education experiences throughout the course of the preservice program.
2. It specifies that students in the elementary teacher education program will acquire through their general education experiences the knowledge of disciplines that is prerequisite to entry into instructional experiences that lead to mastery of conceptual frameworks for teaching disciplines.

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[4] H. Del Schalock and James R. Hale, A Competency-Based, Field-Centered Systems Approach to Elementary Teacher Education, Final Report, Vol. I (Washington, D.C.: Government Printing Office, 1969), pp. 48-51 and 83.

GENERAL EDUCATION	PROFESSIONAL EDUCATION				CAREER TEACHING
	Foundations-laboratory Phase			Practicum Phase	
Knowledge prerequisite for entry into instructional programs dealing with the conceptual frameworks underlying disciplines	Mastery of repertoires of knowledge that deal with the conceptual frameworks needed for teaching subject matter to young children	Mastery of repertoires of knowledge dealing with the elements and strategies of the teaching act	Demonstration of competencies which bring about desired learning outcomes in children	Demonstration of competencies which bring about desired learning outcomes in children Demonstration of competencies which lead to the successful performance of non-instructional tasks	Knowledge prerequisite to successful performance as a supervising teacher in the practicum phase of Com-Field
	Mastery of repertoires of knowledge essential to the performance of general adaptive and interpersonal skills		Demonstration of competence in the performance of general adaptive and interpersonal skills	Demonstration of competence in the performance of general adaptive and interpersonal skills	
	Mastery of repertoires of knowledge essential to the development of self-understanding, commitment, and a preferred teaching style		Demonstration of behavior acceptable as evidence of self-understanding, commitment, and a preferred teaching style	Demonstration of behavior acceptable as evidence of self-understanding, commitment, and a preferred teaching style	

Prospective IM meets program entry requirements

Prospective IM meets performance requirements for exit from the foundations-laboratory phase

Prospective IM meets performance requirements for exit from the practicum phase

FIGURE 5

A CONCEPTUAL FRAMEWORK FOR SUMMARIZING THE ORGANIZATION OF THE MAJOR BLOCK OF CONTENT WITHIN THE COMFIELD INSTRUCTIONAL MODEL

The model does not make specifications as to the instructional model to be followed in the general education program--it does not specify that instruction in supporting disciplines needs to be performance-based, field-centered, or personalized.

INSERVICE COMPONENT

The ComField model contains two major specifications relative to inservice education:

1. A systematically designed, performance-based, field-centered and personally relevant inservice education program shall be designed and implemented for instructional personnel in the schools that will prepare them to perform as supervising teachers in the practicum phase of the preservice education program.
2. The instructional systems utilized in the practicum phase of the preservice training program will be made available to all experienced teachers in a school district that desire or are required to gain the competencies obtainable through their use.

The first specification commits a school district and other participants in the application of the ComField model to the development of an inservice training program that is no less complex in its development and implementation than is the preservice professional program. It requires an involvement in all of the steps required in designing and implementing the preservice program. At this point, however, the specific set of competencies needed by supervising teachers to carry out the demands of the practicum are unknown, the knowledges and skills prerequisite to their performance have not been identified, and there is no precedent as to how long it will take to develop mastery of such competencies. What is clear is the requirement that such competencies be established within a sizable portion of school personnel by the time preservice students meet criteria for exit from the laboratory phase of the program. Operationally, the development of the inservice program will begin at essentially the same time that the development of the preservice program is undertaken.

The second specification is less binding in that it provides an extension of the training program designed for the practicum phase of the preservice component to inservice teachers only when it is requested by them or when school policy dictates that they master the competencies made possible through those systems. In this sense the specification is provided to meet an obligation should a request for such an inservice training program be made.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

One major set of faculty requirements has already been referred to, namely, the competencies needed in school personnel to permit them to perform the instructional and assessment tasks required in the practicum phase

of the preservice training program. It is estimated that the magnitude of the inservice training program required to develop these competencies in school personnel will be roughly comparable to that involved in the preservice training program. Competencies of the same order of complexity and sophistication will be required of college staff in order to develop and implement the program in the foundation-laboratory phase of the program. As in all other areas, the ComField model does not specify what the competencies are that college faculty will need in order to implement the program. It does spell out, however, how these competencies are to be identified, what they will look like, and how the staff training program generally will proceed in bringing them about. It is anticipated that all staff training programs will involve the systematic design and implementation of a performance-based, field-centered and personalized instruction model.

Staff utilization patterns will of necessity differ considerably from what now exists, in both colleges and schools, in order to implement a ComField-type teacher education program. While it is not possible to predict such patterns until situation-specific programs have been defined, it is possible to anticipate that new differentiations in staff functions will develop. For example, some staff may assume primary responsibility for contract negotiation while others do so for foundation or enabling resources assessment; others may assume primary responsibility for foundations or criterion performance assessment while others do so for instructional systems development. It is even probable that students in the teacher education program will become major participants in instructional systems development efforts, contract negotiations, and enabling resource assessment.

EVALUATION COMPONENT

Within the context of the ComField model, evaluation is thought of as the examination of products and events in light of specified standards for the purpose of making adaptive decisions. Given this definition, the model specifies that four kinds of evaluative data be continuously supplied the appropriate decisionmakers within the model-based program:

1. Feedback on the appropriateness of the pupil outcomes that have been selected as guides in determining the competencies to be developed in prospective teachers. (Are the ultimate objectives of the program the correct ones?)
2. Feedback on the effectiveness of teachers who have given competencies to bring about outcomes desired in pupils. (Are the competencies that have been identified as relevant to given outcomes the correct ones?)
3. Feedback on the effectiveness of instructional systems in bringing about the competencies for which they were designed. (Are the procedures used in the teacher education program effective?)
4. Feedback on the impact of the ComField-type program beyond its immediate influence on teachers and pupils. (Is the school or larger social system changed as a result of the program?)

More detailed specifications for the evaluation function are spelled out in the Final Report.[5]

PROGRAM MANAGEMENT

Because of the performance-based, individually paced, personalized and largely self-instructional nature of a ComField- type teacher education program, the management of such a program requires markedly different functions than those required by traditional teacher education programs. The demand of the model for continuous program evaluation and adaptation, for example, or for mutually supportive working relationships between schools and colleges, requires that relatively unprecedented evaluative and adaptive functions be built into such a program if it is to operate as planned. As a consequence, specifications for the functions needed in support of the ComField instructional model are critical adjuncts to the instructional model itself.

Three specifications are contained in the ComField model relative to the management function. These are:

1. The management model shall contain the support functions required to permit a ComField-type instructional program to operate.
2. Cost data shall be provided for all operations with a ComField-type teacher education program, as well as the program as a whole.
3. The management model shall be organized in such a way that all functions within it will have as their aim the enhancement of instruction.

These various functions have already been reviewed so further attention will not be given them here.[6] Also, detailed specifications relative to management functions may be found in the Final Report.[7] In studying these specifications the reader will realize that the task of creating a functional management system for the program is comparable in magnitude to the task of creating the instructional program.

SUMMARY

The ComField model of an elementary teacher education program is the product of a consortium of 26 colleges and universities from the Northwest region of the United States working in cooperation with five state departments of education, the Northwest Regional Educational Laboratory, and the

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[5] Ibid., pp. 120-23.

[6] Ibid., pp. 21-25.

[7] Ibid., pp. 106-26.

Teaching Research Division of the Oregon State System of Higher Education. The model specifies that each prospective teacher demonstrate the ability, under both simulated and live classroom conditions, to effect changes in the behavior of pupils that reflect the outcomes desired for them. In addition, the ComField model specifies that each prospective teacher demonstrate that he can effectively perform the noninstructional tasks required of him in a school setting, that he demonstrate that he can effectively use interpersonal or group process skills to facilitate the application of instructional and noninstructional competencies, and that he demonstrate that he has integrated all professional competencies into a unique and personally relevant teaching style.

Procedurally, the ComField model specifies that instructional systems be employed to bring about professional competencies and their personalization; that instruction within these systems be individualized with respect to point of entry into the curriculum, pacing, sequencing, information processing preferences, etc.; and that a computer-based information management system be used to handle the frequent and diverse demands upon information created by the above. Two additional procedural requirements are specified: Cost/benefit data is to be provided for all aspects of the program, and an adaptive mechanism is to be developed to insure the continuous modification of the program in light of evidence as to its costs, effectiveness, and appropriateness. A management model designed to implement these procedures within participating colleges and schools is also specified.

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SYRACUSE UNIVERSITY

A Guide
to

SPECIFICATIONS FOR A COMPREHENSIVE UNDERGRADUATE AND INSERVICE TEACHER EDUCATION PROGRAM FOR ELEMENTARY TEACHERS

by

Wilford A. Weber

84/85

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SYRACUSE UNIVERSITY

OVERVIEW

The Syracuse University model program is a generalized model intended to provide a blueprint for developing and implementing an elementary teacher education program for the generalized elementary school teacher.

It is a model designed to be adaptable for the specialized preparation of the teacher with a unique focus; for example, a teacher of the culturally disadvantaged. The model also is intended to be flexible enough to be adapted by a variety of teacher education institutions.

The model is based on six principal assumptions:[1]

1. No one point of view regarding teacher education has been demonstrated to be most effective. Therefore, it is assumed that from a pluralistic open dialogue involving students, teachers, and researchers, hypotheses can be generated and tested which may tighten the circle around those ideas, activities, artifacts, and people that would constitute a more ideal teacher education program than that with which many of us currently work.
2. We live in a world where basic institutions and their value structures are changing at an exponential rate. Therefore, it is assumed that since we do not know with certainty what form that future world, its societies, and institutions will take, or how the children of such a society should be educated, teachers today must be educated to be continually self-renewing as they adapt to and play a major role in shaping the changes that seem certain to occur in the future world of education.
3. A model program which nurtures a pluralistic and self-renewing teacher education program must be an open system. It is assumed, therefore, that the model program can continue to be relevant to the changing world only if it has a built-in intention, action, feedback structure for processing ideas, generating hypotheses, and collecting data regarding the system qua system and the system in relationship to the changing world in which the program will exist.
4. Clearly, the requirements of a changing world call for self-renewing teachers as well as self-renewing teacher education programs. The "products" of teacher education programs must possess the disposition and skills to change during their professional careers if they are to be as effective in the year 2000 as in 1974. Therefore, it is assumed that the development of self-renewing

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[1] William Benjamin and others, Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers, Final Report (Washington, D.C.: Government Printing Office, 1969), pp. 1-4.

teachers can only be accomplished by a program which is a self-renewing one staffed by self-renewing teacher educators. Implied, then, is continuing inservice education for the professional program staff.

5. A model program must recognize human uniqueness. It is assumed that learning styles, learning rates, and what a person considers important to learn in part constitute the uniqueness of an individual. It is further assumed that providing a program that recognizes and accommodates these unique differences is one way of fostering the development of self-directed, self-renewing teachers. Thus, the model program is largely individualized and self-paced.
6. The education of teachers must involve not only the teacher education institutions, but also the public schools and the educational industries. Therefore, it is assumed that the optional functioning of the model program is dependent upon a condition of proto-cooperation[2] that involves teacher education institutions, public schools, and educational industries working together in new ways.

PROGRAM GOALS AND RATIONALE

The model program is in part a response to the challenges of the future. Certainly with respect to the pervasiveness of change, the program suggests that we should educate teachers to confront change, to react to it responsibly, to guide it constructively for the welfare of the individual and society, and to initiate change in the institutions and communities in which they will teach. Toward these ends, the model program has been created to help develop individuals to (1) become increasingly perceptive, (2) have a positive concept of themselves as teachers, (3) come to terms with themselves in respect to their motives for becoming teachers, and (4) develop a system of professional values and skills consistent with their personal integrity and the demands of the education profession.[3]

The basic operating concept on which the program is built is an intent-action-feedback process model. Each instructional module, each component, and the total program functions within the demands of this concept. The model is an open model capable of accommodating and working constructively with many diverse views expressed in terms of (1) purposes or objectives (intent), (2) courses of action and actions (action), and (3) assessment and evaluation of outcomes (feedback). The process dimension of the model demands that the program modify its intents,

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[2]Protocooperation is a term borrowed from the field of ecology which refers to a condition in which two or more organisms in interaction mutually benefit from their relationship with each other. The relationship is not obligatory but, unlike symbiotic or mutualistic relationships, no harm accrues to any of the organisms when they are not in interaction (see Ibid., pp. 4, 30-35).

[3]Ibid., pp. 9-10.

actions, and feedback processes on the basis of its own experiences. The model, then, has the potential of reconstructing the experiences of the students, teachers, and the program as a corporate entity.[4]

In satisfying the requirements of the intent-action-feedback process concept, operational objectives and rationales (intents) were developed for each of the seven instructional components which comprise the total program. Appropriate instructional activities (actions) were likewise developed and detailed for each of the components based on that component's intent. An accounting of the consequences of the actions are called for by each component's evaluation and assessment procedures (feedback). This feedback allows for the modification of future intents and actions (process). Complete descriptions of the seven instructional components[5] and a description of the information and evaluation support system[6] are presented in the Final Report.

SELECTION PROCEDURES

While the model program gives extensive consideration to the problem of student performance criteria and assessment, it does not deal with the issue of student selection procedures. Clearly, this is an area which will need to be examined in the phase II feasibility study. Selection and recruitment procedures will be looked at with an eye on the "mix" of student characteristics required for research purposes.

PRESERVICE COMPONENTS -- THE FIRST FOUR YEARS

The model program is designed as a five-year program. The first two years are devoted to liberal studies. The junior year begins exploratory professional study and continues liberal studies. The senior year is devoted to full-time professional study. The fifth year is an inservice, resident year. It is discussed in a later section of this guide.

The seven components of the preservice program are integrated into the basic design of the total program. These components are: (1) liberal education, (2) methods and curriculum, (3) child development, (4) teaching theory and practice, (5) professional sensitivity training, (6) social-cultural foundations, and (7) a self-directed component. The process of developing a model composed of these components provided an excellent test for the workability of the pluralistic assumption about the nature of reality in teacher education. The components are by design diverse in nature and character.[7]

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[4] Ibid., p. 17.

[5] Ibid., pp. 72-439.

[6] Ibid., pp. 478-93.

[7] Ibid., pp. 19-26.

The liberal education component (in conjunction with additional liberal arts studies) constitutes all of the freshman and sophomore years and roughly half of the junior year. The six professional components begin during the junior year, and with the exception of the social-cultural foundations and self-directed components, conclude at the end of the senior professional year insofar as formal study is concerned.

Liberal Education

The liberal education component consists of 18 hours of liberal education (to be supplemented by varying hours of liberal arts education depending on the requirements of the adopting college). These 18 hours are divided as follows: six semester hours over a period of two semesters that deal with changing perspectives in the humanities; six semester hours over two semesters dealing with changing perspectives in the social sciences; six semester hours over two semesters dealing with changing perspectives in the natural sciences. Each of these three two-semester courses are designed to create a unified liberal education component that will be taught by a staff of professors representing different disciplines in the broad area covered by each course. The courses should be a combination of lectures and seminars supported by an academic advisory system to assist students in their course work and in integrating this work with other aspects of their education, both professional and nonprofessional.

The goals of the liberal education component are similar to the goals of liberal arts. This component should help to "free" students so that they may transcend ignorance and limiting specialization. The component should enable students to perceive themselves and the world in new ways, to realize the existing alternatives in given situations, to think, feel, and decide on a reasonable basis. The component is predicated upon the assumption that it is the "operation" through which these liberal disciplines proceed that has much to do with liberating the human condition. The goals are, therefore, predominantly process goals; transcending ignorance by acquiring new ways of perceiving, realizing, feeling, and deciding rather than the product goals of knowing anthropology, physics, religion, and so forth.[8]

Elementary Methods and Curriculum

This component will engage the student in problem resolution. The term "resolution" is used rather than solution because resolution implies a continuing process whereas solution implies a final disposition of the problem. In teaching, problems are acted upon in such a way that their nature changes, and the change requires a new course of action. In a world of rapid change, the mastery of the process of acquiring and utilizing knowledge and skills is far more important than the specific knowledges or skills acquired. The professional who can apply effective approaches to new problem situations is better off than the professional who has been educated, intentionally or inadvertently, to try to make new problem situations fit the old approaches. The approach through problem resolution dictates no particular method of instruction. It does ask that the

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[8] Ibid., pp. 19-21 and 72-88.

student develop or request instructional techniques that relate to the nature of the problem.

The methods and curriculum component is constructed in terms of modules. The modules deal with the content of the five general areas of elementary school subject matter (language arts, reading, social science, science, and mathematics) as well as with the teaching methods associated with them, and methods of student appraisal.

The primary goal of this component is basically a process goal. The student is to be educated so that he may confront problems and resolve them. The secondary goal is one of providing basic understandings and skills to assist students in the resolution of professional curriculum and methodological problems in elementary teaching during training and in their initial years of full-fledged professional teaching.[9]

Child Development

The objectives of the child development component focus on the concerns of sensitivity, creating an awareness in teachers for their prime concern: the children they teach. The component reaches beyond sensitivity and awareness, however, as it helps the student understand the meaning of children's behavior.

This component is not constructed along course lines. It consists of a carefully developed sequence of modules which will begin in the junior preprofessional year and conclude in the senior professional year. A central focus throughout this component is an active involvement of students in describing and analyzing child behavior. Techniques, theories, and normative information from the child development area have been selected and utilized on the basis of their pertinence to this effort.

There are three major developmental and closely related goals for the child development component. First, it is intended that the student will become aware of the value of carefully and objectively observing child behavior. Second, the student will learn to discriminate between kinds of behavior observed and will increase the number of dimensions which are observed. The third goal is to increase the student's repertory of possibilities for attempting to "make sense out of" and respond appropriately to observed behavior. Inherent in these goals is the assumption that if the teacher becomes attuned to "taking in" child behavior, is cognizant of many dimensions of children's behavior, and has some alternative means of considering the meaning of that behavior, then teaching will generally be affected in positive ways, and the teacher will respond to children more appropriately.[10]

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[9] Ibid., pp. 21-22 and 89-174.

[10] Ibid., pp. 22 and 175-218.

Teaching Theory and Practice

This component views teaching as a decisionmaking process in which the teacher examines many facets of his environment and the possible outcomes, and establishes a course of action for himself and his pupils. Teachers make plans for both long- and short-range activities--for the global objectives of education as well as the moment-by-moment decisions needed--as they are in dynamic interaction with their students. This process of decisionmaking is a three-phase process on which the teaching theory and practice component is predicated.

The component is modular in construction and extends from the junior year into the senior year. Like the other components, it is closely articulated with the other professional components in the model program.

The basic goal of this component is to enable students to make wise, nonsubstantive teaching decisions. In order to do this, the component will help the student (1) discriminate between increasingly finer differences in teacher behavior as displayed by other teachers, (2) practice teaching behaviors in order to develop a wide repertory of behaviors, (3) examine the range of objectives of education and prepare measurement techniques to assess their achievement, (4) interpret and apply the results of research on the effectiveness and strategies of teaching as they relate to achieving specific outcomes, (5) practice the decisionmaking skills, especially those of "searching" for the potential behaviors and strategies most effective for particular pupils working for specific objectives.[11]

Professional Sensitivity Training

This component is specifically concerned with the development of the student's understanding and skills relevant to the dynamics of intrapersonal and interpersonal group and organizational interactions, in terms of himself as a teacher and these other focal points of reference.

This component is organized in terms of modules of learning experiences, and these are developed around readings, seminars, and T-group experiences. The modules begin early in the junior preprofessional year, and the final module is to be completed before the end of the senior year. Three groups of modules comprise the component. The first focuses on the understanding of self as a person; the second, on developing understanding and skills relevant to the role of the teacher in the classroom; the third, on increasing student awareness of self as a member of the educational system.

The three major goals of the component are developmental in nature. Awareness of self as a person is the fundamental goal. It is assumed that the student is best able to increase his sensitivity regarding his role as a teacher, the second major goal, after he has acquired a sufficient understanding of himself as a person. The third major goal is to help the student become aware of his role as a professional in the school organization and the total educational system. It is these goals of awareness and sensitivity which will help the student become open to and

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[11] Ibid., pp. 22-23 and 219-82.

responsive to change. As he better knows himself and knows his role, he can cope more securely with the dynamics of change.[12]

Social-Cultural Foundations

The social and cultural foundations component consists of five groups of modules. The component has a minimal input during the junior year of the program. In fact, this component's role in the preprofessional aspect of the program primarily would be to give beginning teachers enough understanding of the social and cultural dynamics of the classroom and the school as a social institution to make preprofessional training phenomenologically real. The "intellectual problem approach" to the study of education tends to disturb students who are highly anxious about their ability to live with the everyday practical problems of teaching. It is assumed that during the senior professional year, this anxiety about the ability to perform adequately as a classroom teacher will be reduced by the "reality testing" furnished by the participant-observer field experiences. At this time the student should be able and willing to "stand back" and reflect upon the educational institution in which he will participate as a professional, upon the forces which shape that institution, and upon the social and cultural factors which influence his behavior and the behavior of the pupils he seeks to teach.

The pattern of increasing the intensity of the social and cultural foundations input during the senior professional year is repeated during the latter part of the resident year after the students are past the initial anxiety of assuming responsible teaching assignments.

Throughout the three years of the program, the social and cultural foundations component is designed to assist the students in understanding the institution of education in American culture and in addition (in interaction with the other components) assist the student to more accurately (a) view himself in group and organizational interactions, (b) view the teaching act as more than a set of technical skills, and (c) understand the forces which legislate for and against curriculum and methodological innovations in the elementary school.

The subject matter of the social and cultural foundations component is drawn from the social sciences and philosophy as content and method from those disciplines that are considered relevant for teachers. Concern is not limited to support and development of technical skills of teaching, but neither are those skills to be excluded. The general goals of the social and cultural foundations component are to provide experiences would enable the student to:

1. Understand the social dynamics of educational groups and institutions (the classroom as a group, the school and the school system).

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[12] Ibid., pp. 23 and 283-313.

2. Understand the social, political, and economic forces which affect schools and schooling in the United States.
3. Develop skills in the analysis of social situations.
4. Develop skills in the analysis of language as a tool for communicating ideas and influencing the behavior of others.
5. Develop skills in analyzing the value dimension of educational problems and in making value judgments.[13]

Self-Directed Component

This component is intended to foster independent, self-directed activity oriented ultimately toward professional ends. It has considerably less structure than the preceding components particularly with respect to the subject matter which will make up the component. It does have the structure provided by specific goals and the supporting instructional situations which characterize the component. The essential task for the student in this component is to (1) determine what changes he would like to see take place in the children he teaches, (2) describe these changes behaviorally, (3) determine what specialized training is needed (in addition to that provided in other components of the model program) to help him in the accomplishment of these goals, and (4) to accomplish such ends as he has specified with the pupils he teaches during his resident year.

The component is designed to provide a helping relationship in the performance of his complex task. The student selects a counselor-advisor with whom he works on a regular basis. This relationship between student and counselor-adviser is an enabling relationship combining the talents of the counselor with the talents of a generalist in the field of elementary education. In addition to this one-to-one relationship with a counselor-adviser, the student may participate in one of the student-controlled enabling seminars of about 12 students each. These activities are to be supplemented by a student-controlled weekly newsletter for expressing ideas and concerns about the profession and the program.

The student develops a planning and goals paper around which his self-directed activities revolve. He is ultimately expected to realize these plans and goals through his own independent activities. The goals toward which this component work are the goals of professional independence which will enhance the dignity, integrity, and autonomy of the student as a teacher, help him take responsibility for his own learning, and help him to independently modify his own ideas, values, and behavior. From this self-directed activity would come (1) continued increased understanding of the unique qualities of himself as a teacher and (2) the development and implementation of a personalized set of educative experiences culminating in a professional specialization that transcends the general training gained in the basic program.[14]

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[13] Ibid., pp. 23-24 and 314-409.

[14] Ibid., pp. 25 and 410-39.

Organization of the Components

Each of these components is comprised of a series of instructional modules. A module is defined in this model as a planned instructional episode of a duration ranging from a minimum of several hours to a maximum of several months. Most modules have pre- and postperformance measures, though some are designed so that performance measurement is continuous. Modules take on many forms including totally mediated instructional episodes and student-directed seminars revolving around student concerns. The largest grouping of students specified in any module is found in seminars of 12 to 15 students. In many modules the student engages in completely individual instruction.

During the junior preprofessional year, the student learns and applies his learning as he proceeds largely at his own rate through a series of instructional modules that comprise the six professional components. The applications of learning occur in such diverse settings as simulations, tutoring elementary school pupils, and in exploratory microteaching. Tutoring and microteaching is done in what is referred to in the model as tutorial and microteaching centers, staffed by trained clinical teachers (elementary teachers who have had special training in diagnosis and remediation of pupil-learning difficulties). The model provides for these centers to be located in elementary schools.

Thus, during the junior year, in addition to an exploration of the world of the elementary school teacher, the student learns a series of professional skills and knowledge that become the foundation for full-time professional study and practice during the senior professional year and the resident teaching year (fifth year). Should the student decide on the basis of the junior year of exploration that being an elementary school teacher is not for him, provisions are made in the model for the student to continue his college program in some other field without loss of credit.

Should the student decide to pursue full-time professional study for his senior year, he would continue work in modules of the six professional components in greater depth and intensity. During the senior professional year, tutorial relationships with elementary school pupils and exploratory microteaching are replaced by a series of increasingly more complex teaching experiences that bring the student step-by-step to the point of planning, teaching, and evaluating a series of teaching units for which he is responsible. This teaching is done in what is referred to in the model as teaching centers located at the public schools and staffed by trained clinical teachers and clinical professors. The supervision of the student in the teaching centers is accomplished through applying the concept of team supervision where generalists (clinical teachers) and specialists (clinical professors) work with the students in a variety of team-planning and team-evaluation sessions.

During the senior professional year, the student makes a decision about a teaching specialization. The specialization could be one as general as

nursery school education or the social sciences, or as specific as information retrieval and data processing on children's literature for intermediate grade Mexican-American children. Provisions are made in the model for the student to explore several specializations before making a tentative decision regarding a specialization of his choice. Assisting the student in the process of thinking through significant problems in elementary school education, finding a problem area that is of interest to the student, and then working out a program of studies leading to a specialization in that area are some of the functions of the self-directed component in conjunction with personnel from the other components. Each component provides for open exploration modules to assist the student in choosing an area of specialization.

By the completion of the senior year, the student should have developed skills, knowledge, and attitudes to function as an elementary teacher generalist and gain provisional certification in most states.

The model provides at this point for another student decision. This decision involves pursuing the program of studies leading to a specialization and becoming a resident teacher for the fifth year of the model program.[15]

RELATIONSHIP OF PROFESSIONAL COMPONENTS TO LIBERAL EDUCATION COMPONENT

As described earlier, the model program is designed as a five-year program of which the liberal education component (in conjunction with additional liberal arts studies) constitutes the entirety of the freshman and sophomore years and about half of the time of the junior year. The six professional components constitute the remainder of the junior year and the senior year. Input from the social-cultural foundations and self-directed components extends into the resident year.

As can be seen from the description of the liberal education component,[16] liberal education forms the basis for and is intimately related to the professional components. The liberal education component synthesizes the liberal arts, the social sciences, and the natural sciences as well as the humanities in a manner which enables prospective teachers to know or to know how to master "the what" of teaching. The liberal education component is a combination of liberal arts and professional education as it seeks the best in each area in order to create a reasonable, relevant, and effective program. Like the professional components, the emphasis is on process dimensions, not product concerns. The basic methodological approaches provide examples of self-directedness to students as the central focus deals with development of decisionmaking abilities.

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[15] Ibid., pp. 5-6.

[16] Ibid., pp. 72-88.

Clearly, the liberal education component is an integral part of the program, one which utilizes the liberal arts in a rather new and more effective role in teacher education.[17]

INSERVICE COMPONENT -- THE FIFTH YEAR

The student may elect to continue for a fifth year which is seen as a resident year and a period for developing and refining (1) skills and knowledge learned during the preservice period, and (2) a unique specialization. The student would pursue his specialization program during the summers preceding and following the public school year and engage in half-time partnership teaching at a resident center for an entire school year. In this model, partnership teaching means that two resident students would share responsibility for one classroom for which each would receive half the salary of a beginning teacher. Supervision of the residents would be performed by a team of trained clinical professors who would also conduct seminars, the content of which would be drawn from resident's teaching problems and in many cases would be applicational extensions of the professional training obtained in the professional components of the junior and senior years. The partnership assignment of residents to one classroom would allow for flexible schedules of teaching, participation in special curriculum projects, and independent study in the student resident's area of specialization. The model makes provisions for the granting of a master's degree or its equivalent upon completion of course work the summer following the resident year of teaching.

In summarizing the pre- and inservice programs, the model provides for three years of professional study and practice based on a foundation of two years of liberal studies. The three years of professional study and practice are designed as a series of largely self-paced experiences, each of which is a successive approximation of the terminal goal of the model program--a skilled and self-directed teacher who can meet the demands of teaching at the time of his graduation from the program, but who has developed the disposition and skills for continued adaptation to a certainly changing world that will have substantial impact upon the nature of elementary education and the role of the elementary school teacher. Throughout the program, the model calls for supporting services of the self-directed component including provisions for counseling advisement and personal exploration of goals, values, and their consequences when acted on in a professional setting.[18]

FACULTY REQUIREMENTS AND STAFF UTILIZATION

Faculty requirements and patterns of staff utilization will be more

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[17] Ibid.

[18] Ibid., pp. 6-7.

clearly detailed by the phase II feasibility study, however, much attention is given to these concerns in the model. The major point here is that the model clearly implies a continually changing program to produce self-renewing teachers, but in addition requires the continual inservice education of those who educate such teachers. The model provides self-renewing experiences for teacher educators, so that the program and the teacher educators who staff that program will be responsive to the changing reality of elementary education. It is a major assumption of the program that the development of self-renewing, self-directed teachers can only be accomplished by a program staffed by self-renewing, self-directed teacher educators. This demands initial and continuing inservice education for the professional staff of the program.

The organizational support system[19] is designed to provide for the training and organizational development experiences demanded by the program. The organizational support system also provides for the development of a faculty which can perform the new roles required by the program. In particular, the modular system, self-pacing, individualized instruction, and the self-directed component of the program call for new and different expectations of the faculty. Openness, flexibility, and intimacy which go beyond that usually found in the college instructor-college student relationship is crucial to the success of the model program. Indeed, the teacher educator working in the model program would need to get his hands dirty and live the experience with the students. The organizational support system would play a major role in the development of such faculty.

Descriptions of the faculty, administration, and support staff required by the program run through the descriptions of the various components.[20] Special attention, however, is given to the faculty involved in aspects of the professional sensitivity, self-directed components because of the unique roles they would be called upon to play in T-group sessions, enabling seminars, and advising. Here, as elsewhere, the behaviors required of the faculty member are detailed so as to facilitate inservice training procedures.

An added responsibility of the organizational support system is the development of an organization that can facilitate the attainment of the model program's goals by focusing on the internal operating structure of the program (personnel and processes) and its relationship with the larger organization with which the model program would operate (the total university, the total school system, the educational industries, and the regional laboratories). The key function in this regard is the creation of a protocooperative which is best able to implement and sustain the model.

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[19] Ibid., pp. 494-508.

[20] Ibid., pp. 72-439.

EVALUATION COMPONENT

Evaluation procedures are the responsibility of the information and evaluation support system.[21] It is these procedures which provide the information on which program modification and refinement are based. In addition, the system is charged with the task of gathering information about student progress and feeding this information back to the student and the instructional staff in a form which is useful in facilitating the student's self-paced progress through the program. The evaluation system is also used in assessing the effectiveness of the program (process) for students with different characteristics (presage) in terms of the program's ability to foster the development of competent, self-directed, self-renewing teachers (product). Finally, it is a function of this system to disseminate findings derived from a study of the experimental program to other teacher education institutions.

The evaluation of the ongoing program is seen as process evaluation focusing on the use of formative data as feedback into the system.[22] The evaluation of student progress implies a monitoring function.[23] An evaluation strategy that requires process, presage, and product measures is suggested by the need to examine program outputs in terms of program inputs and throughputs.[24] The dissemination function depends upon the careful explication which only carefully conducted research and evaluation can provide.

It must be remembered that the self-renewing aspect of the program is largely dependent upon the adequacy of the evaluation procedures.

PROGRAM MANAGEMENT

In the model program, it is the responsibility of the support systems to facilitate the instructional programs. It should be recognized that only a basic skeleton is suggested by the model. This skeleton will no doubt be "fleshed out" during the phase II feasibility study. Even so, it is recommended that an adopting institution engage systems experts who can adequately specify the parameters of the development and operations activities most appropriate for that particular setting. The descriptions presented in the model are meant only to rough out the problem areas; they are not exhaustive.

Protocooperation is the foundation upon which the support systems are

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[21] Ibid., pp. 478-93.

[22] Ibid., pp. 482-85.

[23] Ibid., pp. 485-86.

[24] Ibid., pp. 486-93.

developed. The construction of a system is used because it implies events, relationships, and needs which can be specified and facilitated. Since technology is implied by the model, it is mandatory that the system be an open-loop system capable of continuously reacting to the needs of the participants while operating within prescribed limits so that it can effectively remain flexible.[25]

Three systems are envisioned by the model: (1) a program support system, (2) an information and evaluation support system, and (3) an organizational support system.[26] Since the roles of the information and evaluation support system and the organizational support system have already been described, attention here is mainly directed toward the program support system.

The program calls for systems approach to program management. Five stages of the program development are envisioned: (1) program design, (2) component design, (3) module design, (4) module construction, and (5) module testing. In addition, during the operational phase of the program, evaluation, modification, and retesting of the modules is a continuous process. Five elements of the program are described as being of central concern: (1) instructional objectives, (2) instructional experiences, (3) instructional materials, (4) measurement, and (5) maintenance.[27]

It is readily apparent that the effectiveness of the program support system is largely dependent upon the functioning of the information and evaluation support system. If the program is to be self-renewing, the crucial role of the support systems must be recognized.

SUMMARY

This description of the Syracuse University model program is documented evidence that the condensation of 550 pages into a few dozen or so is at best a difficult task. The reader may find this description as being overly simplistic and necessarily vague and incomplete. Certainly, an examination of the model program as detailed in the Final Report would be more informative and adequate.

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[25] Ibid., pp. 461-64.

[26] Ibid., pp. 465-508.

[27] Ibid., pp. 465-77.

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TEACHERS COLLEGE, COLUMBIA UNIVERSITY

A Guide
to

THE TEACHER-INNOVATOR:
A PROGRAM TO PREPARE TEACHERS

by

Bruce R. Joyce

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TEACHERS COLLEGE, COLUMBIA UNIVERSITY

OVERVIEW

When attempting to make a complete reconceptualization of a major educational area, such as teacher education, one cannot begin with the assurance that he can imagine what the eventual components of the educational program will be. In the area of teacher education, it has always been assumed that there would be a kind of experience which could be called student teaching or internship or observation and participation in the public schools. Yet, a number of contemporary educational methodologies can be used to replace some of these experiences which have always been given. We are able to simulate classroom students and even communities to such an extent that it is now possible to carry on many aspects of training under the controlled conditions of the simulator rather than in the random conditions of the school situation. When one does this, one begins to rethink the patterns of laboratory experiences, and one may or may not come up with student teaching or its equivalent.

Hence, it was assumed in the development of The Teacher-Innovator that the program components were to be generated afresh with each group of model builders as each developed its conceptions of the teaching process and the means for preparing teachers who would be competent in that process. This document is structured to provide the reader with insight into the kind of thinking that went into developing the Teachers College model. The headings and subheadings that are used are derived to serve that purpose.

The Problem of Developing a Performance Model

The first task in the application of systems thinking to the development of an educational program is the creation of a conception of the goal. In this case, the goal is to be a teacher or a person who functions in institutions which are devoted to the education of children. The goal conception for an educational process model needs to be stated in terms of performance (the behavior of the individual in relation to the domains critical to his function). In this case then, the performance model needs to be stated in terms of kinds of teachers' behaviors or the kinds of behaviors that enable the teacher to function as an educator.

The development of a performance model of the teacher is extremely difficult because teaching is highly complex, it is not yet being studied very effectively, and there are many conflicting and diffuse ideas about what an effective teacher is. Let us look at these problems in turn:

Complexity. To build a training program for a functionary whose job is not very complex, one can frequently arrive at the specifications of the job and hence at the performances required of the functionary by

doing a task analysis of what is required to get the job done. For example, the training of a technician who will perform simple functions differs from training teachers in many, many ways. The parameters of the technician's job are quite narrow. The effects of his behavior are quickly apparent so it is very easy to tell whether he is responding to any given component within the training program. Also, one wants him trained according to a fixed criterion--for although one would not object if such a technician thought for himself, one does not really want him deviating very much from the established procedures unless he is quite certain that the ersatz procedure will substitute completely for the specified one. Unlike the technician, the teacher works in a situation requiring him to perform many complex behaviors, the results of which are not easy to assess, and we want him to be able to solve problems effectively rather than to apply formulas which might not discriminate between his clients.

Diversity in Educational Views. Further complicating the job of describing the effective teacher is the fact that we have not reached agreement about the kinds of educational procedures that should be employed in any given situation. We are not in a state of total ignorance about teacher education or about teaching, but neither do we have final solutions to educational problems. Consequently, we do not have widespread agreement about the performances required of the teacher. In education, there are many people who maintain that teaching is largely an art and that the practice of education is unique to the personality and style of each individual teacher. This conception is especially widespread among practitioners themselves, but is also very common among teacher educators. Symptomatic of this is the rejection in many quarters of attempts to make behavioral analyses of teaching. Many practitioners and educational professors not only believe that existing systems for analyzing teaching behaviorally are inadequate, but actually recoil from the notion that we might be able to make such analyses reliably. The upshot of this is that there are many practitioners and teacher educators who are resistant to the idea of developing performance models, for describable performance is incompatible with an artistic conception of teaching.

This poses a number of critical problems for the model builders in the present effort, for nearly all of us accepted the assumption that we could to some extent describe teaching in behavioral terms and apply behavioral training procedures to produce a practitioner. We can expect the field to resist this effort, and we can expect to be in the minority in the education community as we carry on this type of work.

Inadequate Descriptions of Teaching. Even those of us who believe that we are able to describe the behavior of the teacher in positivistic language have to face the fact that we have not adequately done so as yet. Even the resurgence in the study of teaching in recent years has not yet resulted in a sufficiently scientific description of the behavior of the teacher that we are able to derive a performance model out of the analyses of the present functionary. This is complicated by the fact that even if we had described the present functionary adequately,

there are few people outside of the profession itself who would accept the present performance of teachers as the basis of the performance of teachers-to-be. There is widespread public dissatisfaction with teaching as it is now carried on, and this dissatisfaction complicates our attempt to build performance models from the study of the existing functionary.

However, there are bases on which we can begin to build hypothetical performance models of teachers. There are, in fact, quite a number of well developed stances toward teaching and learning. Cybernetic psychology for one has well developed positions about learning from which one can derive theoretical models of potentially effective teacher behavior. Therapeutic models, such as those of Rogers, provide similar sources. Developmental psychology, both those schools which concentrate on cognitive development and those which concentrate on personality and affective development, have resulted in positions from which we can come to substantial positions about what a teacher might do to get a given effect. Similarly, analyses of the society and analyses of subject disciplines have resulted in theories of learning and instruction. There are also many developed approaches to curriculum and instruction which suggest the relationship between educational environments and anticipated outcomes on the learners. There is also a wealth of educational technologies to which the teacher can relate and which can provide a healthy basis for his experimentation.

The Teacher as Experimenter

Not only because we do not have final solutions to our educational problems and because our educational institutions and technologies are in flux, but also because there is a base of alternative theories on which scholarship in education can presently be built, we are in a position to make the education of the teacher a preparation for experimentation in education. If we cannot provide the teacher with lasting solutions to educational problems, we are nonetheless in a position to teach him how to approach what he does in such a way that he tests and otherwise studies educational strategies. We can try to help teaching to become collegial scholarship or the process of teaching and learning. By linking to learning theory conceptions of society, conceptions of social institutions, and analyses of subject matter, the teacher can generate and test hypothetical conceptions of education.

It is our choice to build a performance model which is not based so much on a description of the teacher as a functionary as it is on the conception of a teacher as an innovator-scholar--a person who, working with his colleagues, develops and tests solutions to educational problems.

The Nature of Our Performance Model

The performance model for The Teacher-Innovator was developed as a result of several years of study and argument about the intellectual equipment and clinical competencies needed by a teacher to create a va-

riety of education environments and to study their effects on children. Since there has been no long-term empirical study of these competencies, their selection had to be a matter of judgment.

The process of selection began with identifying several domains in which a teacher functions when he attempts to generate and test various combinations of educational ends and means.

In a sense, our primary task was to develop a broad performance model of the professional educator, a structure of teaching that would enable the creation of the ends and means of the teacher education program. The basis of our rationale stems from the idea that professional performance can be described in terms of control over certain areas of reality that are essential to develop creative roles, rather than the ability to fill already defined teaching roles. The selected areas of reality would enable the teacher to work as a creator. This conception avoids the problem of developing performance models based on studies of existing functionaries or our limited visions with respect to functionaries for today's schools. The rationale presented herewith represents a stage in the collegiate thinking of faculty members at Teachers College who have independently developed models of teacher education: Bruce Joyce, Arthur Foshay, Gerald Weinstein, Margaret Lindsey, and Robert Schaefer. While Joyce's conceptions have structured the writing of this document, the other conceptions have influenced it heavily.

Creativity and Control over Reality

In order to develop performance models for teacher education--to create a model of a professional who will grow in capacity, create new options for children, and contribute to his profession, it first is necessary to identify the areas of reality that he needs to control in order to define and solve educational problems. This is a very different conception of professional control from one which is centered on the training of the present-day functionary. Conceiving professional functioning as the creative manipulation of reality puts future growth in a central position.

The second stage in creating a program of teacher education is the development of curricular systems which will enable teacher education students to achieve control of the essential areas of reality.

The Four Roles of the Teacher-Innovator

We identified four roles which seem essential for the teacher who is an innovator and a scholar. Within each role, certain kinds of control appear necessary.

Institution-Builder (shaper of the school). In this role the teacher-innovator works with other faculty members, community representatives, stu-

dents, and administrators to design and make real complete educational programs and organizational structures. The shaper of the school controls strategies for studying and designing curricula systems; analyzing and creating effective social systems in the school; and assembling and employing technical support systems which facilitate education.

Interactive Teacher. The most familiar teaching role occurs during contact with children. At this point the teacher needs strategies for making instructional decisions which are tailored to the characteristics and needs of the students. He can work with groups of children to build effective democratic structures through which they can conduct their education. He controls a wide variety of teaching strategies and wide range of technological assists to education. He is a student of individual differences, and he has the interpersonal sensitivity to touch closely the minds and emotions of the students and to modify his own behavior as a teacher in response. He is able to bring structure to chaotic situations without being punitive. The teacher does this in company with his colleagues. He rarely works alone partly because he needs their colleagueship and the shared analysis of teaching and learning that is a continuous part of their professional life. With them he controls techniques for designing continual small experiments of teaching and learning.

Innovator. To be an innovator rather than a bureaucratic functionary, a teacher needs to combine personal creativity with ability to work with others to build educational settings in which innovation rather than imitation is the norm. He has techniques for analyzing the social structure of the school, especially how it inhibits or facilitates creative behavior.

Scholar. As Robert Schaefer puts it, we cannot "wind the teacher up like an old victrola and hope that he will play sweet cerebral music forever." Continuous scholarship renews him and adds to his knowledge about education. He controls techniques for studying the processes of interactive teaching and theories of learning. He specializes in one discipline until he knows the nature and the modes of inquiry of that discipline. Equally important, he knows how to engage in research that relates that discipline to the lives of young children. He controls structures for studying the school and for studying teaching and learning, so he can design and carry out educational experiments. He masters a range of teaching strategies derived from different views of learning, and more important than that controls techniques for developing and testing new ones.[1]

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[1] Bruce R. Joyce, The Teacher-Innovator: A Program To Prepare Teachers (Washington, D.C.: Government Printing Office, 1969), pp. 16-17; ED: p. 15.

The Performance Model as a Goal

Once the four teacher roles had been identified, there were two possible courses open to us as the model was developed. One was to explicate fully the performance model examining each domain and determining the detailed sets of behaviors that make up complete performance in the domain. An alternative route was to settle for a behavioral, yet general definition of the functions within each domain and to proceed to the identification of the means for achieving competence in the roles. The latter was chosen because of the short duration of the project and the desirability to make a significant step toward the rationale for the various means required in a program designed with a complex performance model as the objective. Consequently, the program developed such that the specification of behavioral objectives and the development of means proceeded simultaneously with only as much specificity in objectives being achieved as was necessary to keep the developmental activity going forward. At the conclusion of the project, therefore, much remained to be done in the complete specification of objectives and in the engineering work required to match the sets of detailed objectives closely with the means that were developed.

THE STRUCTURE OF THE PROGRAM

There are two aspects to the structure of the program. One is a set of general methodologies which are employed to weld the student body into a community of scholar-teachers, to provide for individual differences in personality development, to enable students to set their own pace in learning, and to provide a laboratory in which students can practice creating and testing educational environments.[2] The second aspect of the program is four basic components, each one derived from the fundamental roles of teaching and designed to yield control over those aspects of reality required by the roles. Each component has a series of subcomponents, and in addition each one has its own rationale and own curricular or teaching strategy.[3]

THE GENERAL METHODOLOGIES OF THE PROGRAM

There are four main features of the general methodology of the program. One, there is provision for democratically organized (inquiry) groups of students to administer the program to themselves. These groups take a large share of the responsibility for reshaping their education and control the pace with which they proceed through the components and subcomponents. Faculty members serve as counselors and technical advisers and leaders of dialogue

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[2]For full description, see Ibid., GPO: pp. 45-156; ED: pp. 42-146.

[3]For full description, see Ibid., GPO: pp. 157-466; ED: pp. 147-436.

about education, but the students themselves study the objectives of the components and subcomponents, study the means, and administer the technical training to themselves.[4]

Second is the application of a differential training model which prescribes different education environments for students of varying conceptual levels. The differential training model provides ways that faculty members can tailor the program to the characteristics of the students.[5]

The third general feature is a laboratory school program taken from Robert Schaefer's concept of the school as a center of inquiry.[6] This school is not designed simply to be an exemplary school in terms of its program, but to be exemplary in the way the educational process is studied by the teachers and in the collegial relationship which they bear toward one another as they seek to define educational purposes and means and try to understand themselves and their students. The teacher candidates in the teacher-innovator program need experience in an environment which is unlike the normal school environment in that teaching and learning are studied as well as carried on. The school as a center of inquiry is the element in the program designed to permit this experience to occur.[7]

The fourth general element is the contact laboratory or the provisions for the teacher candidates to have direct contact with children and schools. Although the four basic components in the teacher education program include many experiences in simulation laboratories and with small groups of children, the contact laboratory ensures that the teacher candidates will study the school as it is and will learn to practice in the real world of the schools (albeit as innovators in them).

The four general structural characteristics of the program intersect with the four basic components as represented in figure 1.

If one were to fill in all 16 cells in figure 1 with examples of the interaction between the four basic program elements and the four basic components, one would find that all cells would be filled with many examples. Each of the general elements is important in the execution of each of the basic components. For example, the inquiry groups study institution-building together, work in the inquiry school together, studying the characteristics of that institution, and then during the contact lab-

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[4] Ibid., GPO: pp. 51-56; ED: pp. 46-51.

[5] For full description, see Ibid., GPO: pp. 52-84; ED: pp. 52-77.

[6] Robert Schaefer, The School as a Center of Inquiry (New York: Harper, 1967).

[7] See Joyce, op. cit., GPO: pp. 85-146; ED: pp. 78-137, for rationale of this school.

		General elements			
		Inquiry groups (democratic method)	Differential training model (faculty administered)	Inquiry school (laboratory school)	Contact lab. (direct experience with children)
Four basic components	Institution-builder				
	Interactive teacher				
	Innovator				
	Teacher-scholar				

FIGURE 1

RELATIONSHIP BETWEEN GENERAL STRUCTURAL ELEMENTS AND FOUR BASIC COMPONENTS

oratory, they develop institutional plans and test them out while they work with real children under less controlled conditions. The relationship among the general structural elements and the four components will be seen in many places as we proceed to describe the program. The following illustrates the relation of the inquiry groups to the general components:[8]

Inquiry Groups

The basic teaching strategy in the program is cooperative inquiry. The teacher candidates are organized into democratic "inquiry groups" of about 12 students. These miniature democracies are assisted by faculty counselors who help them to educate themselves. The substantive components have all been designed so that they are virtually self-administering. In no activity is a faculty member more than a seminar leader. The structure of each component is explained to the inquiry group which then, with the help of the faculty, negotiates its way through the activties.

Within each inquiry group the candidates are organized into feedback teams. Each feedback team consists of three or four teacher-candidates who coach each other when they are learning skills to help analyze one another's teaching and to carry out small educational experiments throughout the program. These two units, the inquiry group and the "feedback team," are kept together as much as possible throughout the teacher education program so that the members of the group share the commitment to experimentation that is established at the beginning of the program. These units support one another as they stretch into new activities and experiments.

In addition, each inquiry group elects representatives to steering committees of faculty, administration, and candidates who are responsible for administering, evaluating, and revising the program components. An overall steering committee discusses policy matters and can call meetings of all the candidates and faculty when it is desirable.

The cooperative inquiry method, combined with the democratic organization of the program, accomplishes three purposes:

1. It teaches the teacher candidates how to organize an educational program that operates as a democracy. Hopefully, there will be reasonable transfer to their teaching situation.
2. It involves the teacher candidates in continuous experimental activity which is supported by a group of their peers. This group eventually can function as a reference group, anchoring the experimental norms for each member.

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[8] Ibid., GPO: pp. 18-22; ED: pp. 16-20.

3. It involves the teacher candidates in the shaping of their own educational activities which should be a highly motivating activity. There are good odds that the students will become welded into a tight community, an experience which should have personal value as well as increasing the effectiveness of professional education.

The Differential Training Model

The second structural element is a model for individualizing instruction which is based on the work of David E. Hunt of the Ontario Institute for Studies in Education. Hunt has taken the position that an optimal educational environment can be prescribed for individual teacher candidates which function in two ways: first, it will increase the learning of ideas and skills; second, it will increase the personal flexibility of the teacher candidate. Hunt's model provides for modification of educational procedures to take into account four characteristics of the teacher candidate: his competency level, feedback preference, value orientation, and cognitive structure. All of these characteristics are related to achievement by the teacher candidate, and cognitive orientation is related to personal flexibility.

The components are organized so that pacing by competency level is accomplished in the skill areas through procedures that the candidates administer directly to themselves. For example, a candidate needs to practice a teaching strategy only until he has mastered it, and the means for determining mastery are built into the component in which teaching strategies are the central concern.

Other aspects of the differential model are carried out by action of the faculty member as he works with the inquiry group. Basically, he modifies his role in order to change the educational environment that is presented to the candidates. With respect to feedback preference, for example, the faculty member modifies his behavior so that candidates who prefer feedback from authority figures receive much from him or other faculty, whereas candidates who prefer peer feedback receive less authority feedback and greater measures of peer judgment.

With respect to cognitive orientation, the faculty member modifies the amount of structure and task complexity that is presented to the teacher-candidate. For example, candidates of low cognitive complexity operate best in environments which are fairly well structured and in which task complexity is not too great. Highly complex individuals, on the other hand, operate best under low structure and high task complexity. Hunt's theory suggests, and he presents much research to bear him out, that when there is a substantial mismatch between cognitive complexity and the environment, the individual does not achieve as well and is unlikely to grow in flexibility. An optimal environment for growth in flexibility is one in which the amount of structure is somewhat less and the amount of task complexity is somewhat greater than what is optimal for achievement. In other

words, a slight, controlled mismatch has the effect of pulling the individual toward everincreasing cognitive complexity and flexibility.

Inquiry School

After substantial training, preferably in small-group teaching in their own "school," the teacher candidates are attached to teams in the inquiry school in order to carry out fairly lengthy experiments.

The Contact Laboratory

The fourth general structural element in the program is the contact laboratory, which refers to provisions for the teacher candidates to be in contact with schools or children. They are placed in public schools as interns, preferably in assignments where three of them cover the normal duties of two teachers, so that the three can work together continuing to carry out experiments. (It probably should be noted at this point that we take the view that all teaching is an experiment and that the only honest approach to teaching is to treat each educational activity as the testing of a hypothesis about teaching and learning.)

After an initial period of apprenticeship in the normal public school situation, the contact laboratory does not use any experiences which are analogous to those which usually characterize student teaching. Contact is provided, however, in order to give the teacher candidates the opportunity to study schools, teachers, and children, and also so that they can master a wide repertoire of teaching strategies, practice making curricular and instructional decisions, and engage in educational experimentation.

At Teachers College much contact was provided by organizing the candidates to offer educational programs to neighborhood children. There is a great demand for remedial programs in all school subjects, and for enrichment programs as well. Both after-school programs and summer programs are possible. By offering such programs, the candidates serve the neighborhood and create a contact laboratory for themselves in which experimental teaching can be the norm.

The contact laboratory is best described as six phases, each of which serves the four basic components in particular ways, often serving two or more components simultaneously. See table 1.

The contact laboratory begins in the first weeks of the program and continues, ideally, into the first year of paid teaching. Only the initial phase includes apprentice teaching of the type most familiar in traditional student teaching programs. The remainder of the experience is in experimental teaching in which the candidates are mastering a variety of strategies and carrying out teaching units which they develop with research designs.

TABLE I

SIX PHASES OF CONTACT LABORATORY

Phase	Type	Purpose
One	Experiencing the school	A four-to eight-week apprenticeship to a public school
Two	Small-group and tutorial teaching (preferably in candidate-operated program)	10 to 20 weeks of experimenting with teaching strategies
Three	Unit-experimentation in inquiry school	Group experiments in teaching units taking four to eight weeks
Four	Experience in curriculum modes in inquiry school	Observation-participation experience in a variety of ways of teaching
Five	Carrying on an educational program	Inquiry groups develop and carry on a candidate-operated school program
Six	Internship	Paid teaching, preferably in teams derived from inquiry groups

The General Methodology Summarized

The program, then, is operated as a democracy with small self-regulating units of students monitoring their own progress and administering the program to themselves with the assistance of faculty counselors. The faculty counselor modifies his role to provide an optimal educational environment for each individual according to the differential training model. The contact laboratory is organized to provide the teacher-candidates with opportunities for study, microteaching, and experimentation rather than to socialize them to the school as it presently exists. The contact laboratory stretches over a long period of time in order to insure the development of realistic skills, but it is carefully designed to discourage the teacher-candidates from believing that realism means accepting the school as it is today and keeping it the same.

THE FOUR BASIC COMPONENTS: GENERAL STRUCTURE

Let us turn now to the general organization of the program components and examine them in their relationships to each other, in their specific rationales, and specific methodologies. In this section it is not possible to go into extensive detail, and the Final Report of the project will be quoted and referred to continuously in this section of the document.

It is convenient to see the four basic components as they relate to the contact laboratory. The teaching strategies subcomponent of the interactive teacher component will be used along with the other components in this explanation.

The contact laboratory, which begins in the first weeks of the program, continues, ideally, into the first year of paid teaching. Only the initial phase includes apprentice teaching of the type most familiar in traditional student teaching programs. The remainder of the experience is in experimental teaching in which the candidates are mastering a variety of strategies and carrying out teaching units which they develop with research designs.

Phase One--Experiencing the School

This phase consists of four to eight weeks of experience as an unpaid teacher aide in a public school classroom. All members of each inquiry group are placed as aides in the same school, and they work in pairs or threes attached to individual classrooms or teaching teams, depending on the staff utilization pattern of the school.

This phase should begin as soon as possible after the teacher candidate enters the program. It serves two purposes. First, it brings the teacher candidates into contact with children, schools, and teachers. Previously, candidates have known the school, but from the perspective of students, rather than teachers. Now, they look at children, and at the school with the eyes of teachers-in-training. They begin to know the people they will try to teach, and they take the measure of the job.

They develop a ground of common experience, also, which can be drawn on throughout the program.

The second purpose is to involve the teacher candidates in the analysis of the school as an institution and the classroom as a social system. These analyses form a critical part of the innovator component. The experience of the school is essential if the teachers are to understand the bureaucratic processes of the school and the alienation that is implicit in learning bureaucratic roles. (See the description of the component for details.) Similarly, the analysis of the social system of the school and classroom is part of the early activity of the institution-builder component and is drawn on in the teaching strategies subcomponent, to help candidates learn to study what Louis Smith calls the microethnology of the classroom. "Experiencing the school" should last at least four weeks, but if the program is spread over enough time, more time, up to six or eight weeks of half-time experience, is desirable.

Phase Two--Tutorial and Small-Group Teaching

This second phase lasts 10 to 20 weeks. It consists of experience with one to five children for short periods of time, several times a week. The experience can be developed in any one of several ways. Teacher candidates can work in a candidate-operated educational program. This might be during after-school hours or on weekends. They could offer "remedial" or "enrichment" programs. Another possibility is assignment as tutors or small-group teachers in a normal public school or the inquiry school. A third possibility is participation in an after-hours/weekend program offered through the inquiry school. Fourth, in an urban program, is participation in a community school, such as a "store front" school.

The second phase of the contact laboratory most prominently serves the teaching strategies subcomponent, for it provides the setting in which candidates practice and study teaching strategies, apply methods learned in flexibility training and structure training, and develop and test out teaching strategies drawn from the disciplines.

Also, however, the tutorial phase serves the innovator component by providing both inquiry and feedback groups with the opportunity for experimentation and the analysis of problems in implementing new educational forms. It also provides the setting for the "creativity training" subcomponent.

In addition, the tutorial phase serves the teacher-scholar component in three ways. It enables students to practice techniques for studying teaching and learning, to replicate and originate research in the teaching of the disciplines.

In order to serve these multiple demands adequately, the tutorial program must meet these criteria:

1. It must provide much opportunity for independent teaching. It may serve a school program, but the teacher-candidates need the opportunity to make and carry out educational decisions.
2. It must be conducted where teacher-candidates can observe each other teach.
3. It must permit television and audio recording of teaching episodes.

Phase Three--Unit Experimentation

In this phase each inquiry group tailors a learning unit (four to six weeks) to a group of children and carries out the unit as an educational experiment. All members participate. There are at least three ways of providing this experience. It can be done in the context of a candidate-run educational program. Or, it can be arranged in a normal public school. Or, it can be provided in the inquiry school.

It requires simply that each inquiry group be given, for a period of one to two months, responsibility for teaching from about 10 to 30 children for from four to eight weeks for from one to two hours a day. (The upper limits are most desirable in each case.)

Phase 3 serves all four basic components. It provides opportunity for an authentic institution-builder activity. Second, it involves the development and testing of teaching strategies. Third, it furthers the innovator component by giving the candidates a reasonable chance to carry out an innovation of their own making. Last, it requires study of the disciplines, teaching and learning, and the institution, and so serves the teacher-scholar component.

Phase Four--Experience in Curriculum Modes: The Inquiry School

In the fourth phase candidates are attached to the inquiry school where they study several types of education. They may serve as aides if the experience has sufficient duration. The school serves all four basic components by providing an authentic example of institution-building and teaching where scholarship is practiced and innovation is a byword. This phase would not be difficult to provide were it not for the necessity of developing the school.

Phase Five--Operating an Educational Program

Next, the teacher candidates need to practice what they have learned and solidify their bond to each other as innovators. If they have been already operating a remedial or enrichment program, this phase is not necessary. Otherwise, the candidates should plan and carry out a summer school or an after-school or weekend program for children.

At Teachers College, during the summer of 1968, this experience took the form of a summer school for neighborhood children, judged disadvan-

taged by the local public schools, whose personnel identified the children and helped recruit them. The teacher candidates planned, executed, and studied the entire education program.

Phase Six--Internship

The first year of teaching should be regarded as an internship. Where possible, teacher candidates should be placed so that three occupy two normal teaching positions, and they should be placed so that feedback groups can continue their experimental activity.

Ideally, the candidates are placed as teams. Either inter-disciplinary or specialist teams are possible, depending on local preferences and opportunities. The most promising candidates might be placed in the inquiry school, attached to teams engaging in curriculum research.

The Total Pattern

The six phases represent types of activities which might be combined in several ways. A small masters-level program might combine all contact laboratory experience within an inquiry school whose components enable all the necessary activities to be carried out.

The six phases here represent an ideal situation under normal conditions where the inquiry school, normal public schools, and the need for aides and interns, are all present.

Table 2 relates the four basic components to the sequence of contact laboratory experiences; tables 3 and 4 represent the phases of the four components by phases of the contact laboratory.

THE FOUR BASIC COMPONENTS: THE MEANS WITHIN THEM

Let us look more specifically now at the means within the four basic components.

The Institution-Builder Component[9]

Teacher education programs have generally put much more energy into preparing the teacher to work directly with children than they have to preparing him for his roles as an institution-builder or simply responsible faculty member. In contrast, we place as much emphasis on the teacher as a developer of curriculum, an organizer of technological systems, and a designer of the social system within the school as we do to his functions as an instructional decisionmaker and interactive teacher.

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[9] Ibid., GPO: pp. 295-306; ED: pp. 278-89.

TABLE II

CONTACT LABORATORY AND BASIC COMPONENTS

Phase	Genre	Activities	Components served
One	Experiencing the school	Teacher aide: analysis of school and classroom	Institution-builder, Innovator, Teacher-scholar
Two	Tutorial-small group teaching	Experimenting with teaching strategies	Institution-builder, Interactive teacher (teaching strategies subcomponent), Teacher-scholar, Innovator
Three	Unit study	Experimenting with unit teaching	Interactive teacher (teaching strategies subcomponent), Institution-builder, Teacher-scholar, Innovator
Four	Experience in inquiry school teams	Studying school as an inquiry center	Innovator, Institution-builder
Five	Operating own school program	Experimenting and studying teaching and learning	All components
Six	Internship	(As in five)	All components

TABLE III

PHASES OF COMPONENTS BY PHASES OF CONTACT LABORATORY[10]

THE INTERACTIVE TEACHER COMPONENT

Contact laboratory-phase	Subcomponents of interactive teaching component			
	Instructional decisionmaking	Teaching strategies	Flexibility training	Structuring the classroom
I Experiencing the school	"The Teaching Game"		Study "coping" behavior	Study microethnography of classroom
II Tutorial-small group teaching	Tasks in the simulated school	Study and master maneuvers	Communication tasks	Master structuring maneuvers
	Study specialty related strategies	Study and master strategies	Practice in tutorial	Experiment with teaching strategies
	Practice in tutorial situations	Create and test strategies	Situations	Diagnose and apply
III Unit experiment	Apply to unit	Apply to unit	Apply to unit	Apply to unit
IV Inquiry school	Analyze strategies of inquiry teams	Analyze strategies of inquiry teams	Analyze teachers	Analyze structuring in inquiry teams
V Operating remedial-enrichment school	Apply strategies	Apply and test strategies	Apply and test self (continue training as appropriate)	Apply and test self (continue training as appropriate)
VI Internship	Apply strategies	Create and test strategies	Apply and test self (continue training as appropriate)	Apply and test self (continue training as appropriate)

[10] Ibid., GPO: pp. 152-155; ED: pp. 143-46.

TABLE IV

PHASES OF COMPONENTS BY PHASES OF CONTACT LABORATORY[11]

INSTITUTION-BUILDER, INNOVATOR, SCHOLAR COMPONENTS

Contact laboratory-phase	Components			
	Institution-builder	Innovator	Teacher-scholar	
			Study of teaching	Study of learner
I	Analyze social, technical, and curricular systems of school	Experience and analyze bureaucratic structure		
II	Tasks in simulated school	Analyze bureaucratic as nonbureaucratic behavior	Study four conceptual systems	Study developmental theories
	Study curricular specialty-alternative curricular systems	Develop experiments in reference group	Study own teaching	Apply to students
III	Develop and test unit	Develop experiments in reference group	Study own teaching	Apply to students
IV	Study strategies of inquiry school	Reference group establishes ties to inquiry school faculty		Study in inquiry school
V	Plan and carry out remedial-enrichment school	Reference group plans and carries out remedial-enrichment school		Carry out experiments in R-E school
VI	Apply strategies in teams	Reference group members placed in teams		With team members, continue study

[11] Ibid.

The justification is, of course, that education depends greatly on institutional character. The teacher does not work in a vacuum nor do the children learn simply by interacting with the teacher. The teacher teaches within an institutional context that affects whether he will have close colleagues, what talents they will bring to him, and what kind of relationship they will have.

The character of the school largely determines what type of technical support systems will be available, what kinds of inservice training, what cooperation he will have from the other school faculty in dealing with common problems, what curricular structure he will work within, and a host of other things. If the reader needs this point underscored, he might turn to the description of the "School as the Center of Inquiry" (chapter 8) and compare the institutional possibilities for education in that kind of institution with those that are ordinarily found on the public school scene.

The child, too, is enormously affected by the institution and not only through the effects that the institutional structure has on his teachers. Schools have social systems and in some of them the social systems work against the educational purposes of the school.[12] (Peer pressures, for example, affect student preferences for activities.) Hollingshead and many others have conducted depth studies of schools which make it fairly clear that the average school's social structure reflects the social structure of the community at large, a happenstance that can work for good or ill. Whereas in some communities the school is a place of serious and lively dialogue on the nature of the society, in other schools the status system of the society operates, and some students receive better treatment than others because of the social position of their parents.

Schools vary, also, in the vigor of their social climate. In some schools the curriculums are relevant and live, and the teachers have enthusiastic agreement about what they are trying to accomplish. In others, the curriculums seem mechanical, and the teachers teach alone. The physical setting and logistical arrangements also affect the students. In some schools there is great support by materials and auxiliary personnel. In these schools the learners have many options for developing themselves: they can read more widely, show themselves more films, perform more scientific explorations, teach themselves through self-instructional courses, and so on. In other schools the technological support systems function less well.

The school as an institution, then, is an enormously important education force. By giving so much prominence to institution-shaping competence in this program, we manifest operationally our belief that the institution-shaping functions of the teacher are as important as anything else that he does. Hence, the inclusion of the component, is, we believe, the most extensive preparation of its kind that has ever been designed into a teacher education program.

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[12] James Coleman, The Adolescent Society (Glencoe: The Free Press, 1961), describes this phenomenon.

There are those who will say, "But will the teacher have the opportunity to use his institution-shaping ability, considering the way schools are run today?" While acknowledging the difficulty, we insist that institution-building is an essential for teaching, for learning, and for the overall redevelopment of the school in our society. A teacher-innovator who innovates only within the four walls of one classroom would probably be a wonderful person, his effectiveness would not be as great as if he participated actively also in the creation of a proper milieu for his students. It is possible, in fact, that changes confined to the one classroom may actually work against the efforts of many of the other teachers.

The Processes. The processes involved in shaping a school have been defined by Joyce in the book, Alternative Models for Elementary Education.[13] These include, first, the process of developing organizations of community leaders, educators, students, school administrators, and persons whose children will be in the schools. Such an organization constitutes what Joyce calls the responsible parties. These are the people who are entrusted with designing the educational program and modifying it as time goes on. The second process is that of selecting the mission of the school or the distinct purposes that it will have. In order to participate in this process, the teacher needs to be well acquainted with varieties of approaches for developing educational programs. He needs to be knowledgeable about theoreticians and practical men who have designed educational missions of various kinds. He needs to know, for example, about A. S. Neill's school, Summerhill, about the Bank Street School, the academic mission as Bruner has described it, the desires of community groups today engaged in the redevelopment of education.

The third major process in shaping the school is the development of the means of education. We can define these as three: curricular and instructional systems, technological support systems, and the social system or community of the school. In order to develop these, the teacher needs to have an acquaintance with alternative patterns of curriculum and instruction, with varieties of technological support systems and ways that they can be organized to support education, and with the dynamics of the social system of a school and how it can be developed.

The last process is the development of the organizational plan of the school. To do this adequately, the teacher needs to know about alternative systems for organization of teachers and students so that the educational environment will be stable and yet responsible to the needs of individuals and the spontaneous events of the world. Since Joyce has described the strategies for developing teams of responsible parties, for approaching the tasks of identifying the missions of the school, for building their curricular, social, and technological systems, and for developing organizational plans that are compatible with missions and means, it is not necessary to detail these processes here. They will be described somewhat in the course of developing the particular specifications of the component especially the behavioral objectives, but the full analysis requires the reader to turn to the books, Alternative Models for

[13]Bruce R. Joyce, Alternative Models for Elementary Education (Boston: Blaisdell, 1968).

Elementary Education and The Structure of Teaching.[14]

Behavioral Objectives. The behavioral objectives of the component are extremely complex, for the shaping of the school requires knowledge and skills in many areas. Large general objectives are stated with specific examples for clarity. This way vagueness and the chaos of a large number of different objectives can be avoided. The objectives in some cases are closely correlated with some of the interactive teaching subcomponents. The objectives are sequential only to a moderate extent, and the sequencing is largely in terms of a general progression from theoretical learning toward practice in simulated school settings and then to actual practice in institution-building. These do not represent discreet levels of attainment.

The First Objective: Knowledge of major theoretical positions on the shaping of the school. This includes knowledge of the theoretical work and research on the institutional problems of innovating in education.[15] It also includes knowledge of the major contemporary reformers such as A. S. Neill, Herbert Thelen, Jerome Bruner, John Holt, Robert Anderson, John Goodlad, and others who have within the last few years attempted to develop new institutional plans for education and knowledge of a reasonable sample of historically important positions, such as those of Plato, Comenius, Locke, and Dewey. In addition the teacher needs acquaintance with case studies of attempts to build educational institutions self-consciously, including some contemporary examples such as Novar School, the Horace Mann-Lincoln School, the Valley Winds School, the Laboratory School at University of Chicago, and others.[16]

The Second Objective: Knowledge of procedures for developing organizations of community members, educationists, and students to develop educational patterns and carry them out. The teacher needs to be familiar with reports such as the decentralization report of the Ford Foundation on the New York City Schools, and with case studies and general positions on the developing of community agencies with participatory government boards. Alternative Models for Elementary Education and The Structure of Teaching provide guides to these procedures.

The Third Objective: The skill to organize participatory groups to develop educational components. This includes the ability to organize a steering committee and carry it through the planning stages so that a component of education is actually organized. This is the operational aspect of the second objective.

The Fourth Objective: Knowledge of the alternative missions of the school which have been suggested in the theoretical literature or developed in practice. This involves an understanding of the fundamental

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[14]See entire volume, Joyce, Ibid.; and Bruce R. Joyce and Berj Harootunian, The Structure of Teaching (Chicago: Science Research Associates, 1967), chapters 2 and 4.

[15] See Matthew B. Miles, editor, Innovation in Education (New York: Teachers College Press, Teachers College, Columbia University, 1964), for information in this area.

[16] Joyce and Harootunian, op. cit., chapter 4.

theoretical positions from which educational missions are derived. For example, the psychoanalytically oriented theorists tend to favor missions oriented toward the individual and his development into an integrated and functional self. Academic scholars tend to favor missions which emphasize academic learning in nature, and social reformers or socially concerned people such as Dewey, tend to be concerned that the social functions of the school supply a plentiful number of effective citizens. This objective includes an acquaintance with the major conceptual systems for studying the learner and making judgments about his intellectual, social, and emotional development, and includes the knowledge of a general theoretical position on learning and the general strategies which have been developed for organizing curricular systems. Within one curriculum area the teacher needs a thorough knowledge of current leading curricular and instructional systems. (When the means of this component are discussed, we will illustrate the attainment of this competence through the social studies, but that is simply for brevity and convenience.) Obviously, it should be true of specialist teachers in mathematics, science, social science, language, reading, and in social development. An example of a speciric objective is: "Knowledge of and ability to implement the major approaches to curriculum and instruction in the social studies."[17]

The Fifth Objective: Knowledge of strategies for tailoring an educational system so that it fits the needs of specific communities and learners. This includes the ability to analyze the educational needs of communities and learners and to develop curricular and instructional strategies which are calculated to fill those needs. The Structure of Teaching and Alternative Models for Elementary Education have definitions and guides to the literature.

The Sixth Objective: Knowledge of alternative ways of organizing the technological support systems of schools. This includes a knowledge of contemporary technological assists to human behavior, conceptions of library design and utilization, and the theory of support systems. The teacher needs, for example, to know how to operate the individually prescribed intruction program developed at the University of Pittsburgh. He needs to know how dial-access retrieval systems function, and how a library can be organized to provide random access by students to books, original documents, films, film strips, tape recordings, multimedia courses children can administer to themselves, and so on. The teacher knows how to use television tape recorders for storing and using lectures, the use of television feedback to analyze group behavior, etc.

The candidate should develop a high level of skill in the administration of at least one technical support system.

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[17] See, for example, Joyce, op. cit., GPO: pp. 307-16; ED: pp. 290-99.

The Seventh Objective: The teacher should have knowledge of the theoretical and research literature that pertains to the development of the social system of the school and should apply a strategy for building the social system. Specifically, he should have a knowledge of reports such as the Teachers College Report on the Washington, D.C., school system, other publications such as James Coleman's Adolescent Society, August Hollingshead's Elmtown's Youth, Willard Waller's The Sociology of Teaching, L. M. Smith and W. Geoffrey's Complexities of the Urban Classroom and L. M. Smith and P. Keith's Social-Psychological Aspects of School Building Design.

In addition the candidate should possess analytic tools for looking at the social system of the school and should know the major theoretical positions with respect to the development of social systems. For example, he should be acquainted with G. C. Homans' publication The Human Group and the work of John and Elaine Cumming on Milieu Therapy. Guides to this literature are provided in The Structure of Teaching and Alternative Models for Elementary Education.

Also, he should be able to work with teachers and students to develop at least one aspect of the social system of the school. If he is a foreign language teacher, he might demonstrate that he can organize students and other faculty to operate the language laboratory support system so that it will provide prescribed types of service to the students and teachers. If he is a science teacher, he might work with students and faculty to set up a self-instructional science laboratory or the equivalent. In other words, he should be able to define aspects of the social system and bring them into being.

The Rationale of the Component. One of the great difficulties in interesting teachers and teacher candidates in institution-building is the tradition in education that teachers do not play important roles (in the average case) in the development of the school. Teachers have generally been hired for specific teaching positions, and their duties have been oriented toward a specific group of children. In many situations teachers have felt powerless to influence the overall shape of the school. Despite attempts by theoreticians of administration and supervision to bring about different practices in the schools, there is no question that the teachers were frequently correct about being powerless. The teacher candidate has observed enough schools and teachers that he usually enters teacher education with no expectation that his duties will be at the institutional level. Therefore, he frequently does not even see why he should study alternative patterns of curricular organization even within his subject area. The teacher-to-be often wants to study interactive teaching rather than look at curriculum from grades 1 to 12 or more. He tends to be willing to accept the placement of the courses into various grades and then to develop his technological competence within the given universe. To challenge this set is difficult, and the rationale of this component has been developed with considerable attention to the problem of demonstrating to the young teacher that he can play an important institutional role. By involving him from a very early point in his educational career with institution-shaping tasks, he will see the usefulness in interactive teaching of the institution-building competencies.

The devices have been planned to build motivation for institution-building. The general democratic teaching strategy of the teacher education program, involving candidates as it does in the governance of this program, the cooperative inquiry method within each component and the inclusion of the candidates in the operation of the technical systems that facilitate their learning, accustom the candidates to institutional decisionmaking roles and should help them see the feasibility of such involvement.

Second, each inquiry group knows from an early point in the program that it is going to have responsibility for the enrichment-remedial school or for a section thereof. Our experience in the Teachers College, Columbia, program during 1967-1968 was that as soon as teacher candidates knew that they were going to develop a summer school of their own for neighborhood children, many of those who had previously rejected institution-building activities eagerly embraced curriculum planning roles and worked enthusiastically to develop community organizations and technical support systems. Evidently, the knowledge of the assignment that was to come was highly motivating.

The third tactic is to involve the candidates from the beginning of the component in realistic decisionmaking in simulated settings. They make curricula and instructional decisions for a Harlem neighborhood, a New England town with a typical spread of socioeconomic backgrounds and community problems, and an English town. They have available to them information on more than 50 aspects of over 14 youngsters who serve as the "student body" of the simulated school and complete case studies of the three communities. The curricular and instructional making tasks that they undertake in this simulated school are lively and realistic--designed to illustrate the importance of institutional planning as well as how to go about it.

In general, the component begins with exercises in the simulated school. (These are coordinated with activities from the instructional decisionmaking subcomponent which also uses the simulated school.) These activities involve decisionmaking so that the teacher has to deal with different combinations of learners, different types of teaching tasks, various curricular organizational patterns, and different communities. The work in the simulated school leads to the study of strategies of curriculum and instruction which is combined with work on teaching strategies in the interactive teaching component. Next, the candidates study curricular and instructional patterns in their area of specialty, so that they will develop competence to bring a substantive area to institutional development.

From that point, the teachers try to apply the strategies they have learned. They have an assignment in the school as the center of inquiry. They develop and carry out experimental units. They operate the remedial and enrichment school.

The Means of the Component. The specific means of the component will be described sequentially in terms of phases, bearing in mind that the entire program is designed to involve the teacher candidates in institution-building.

Phase One: The first phase of activity takes place in the simulated school, as is described in chapter 10-A of the Final Report. The simulation consists of a great deal of information about three communities. One is Spanish Harlem, one is a composite town in New England which is called Prestonport, for convenience, and the third is an English town named Banbury. The information deals with most aspects of social, political, and economic life in the three communities. These sets of information on the three require candidates to take into account the characteristics of the community. For example, they can be asked to prepare a social studies curriculum for the Spanish Harlem community, then for the New England community, and then for the English community. The differences in living circumstances and cultural heritage should enable the trainees to explore many ways in which community characteristics can be capitalized on in the building of a curriculum.

The second part of the simulated setting is a set of 14 data storage and retrieval systems containing information on children. The 14 learners, thus simulated through information, constitute the student population of the simulated school. By altering curriculum tasks with reference to the learners, it is possible to induce the teacher candidates to come to grips with the ways that learner characteristics can be accommodated in curriculum construction and to explore the kinds of complications that develop when particular combinations of learner characteristics occur together. For example, tasks can be given that require curriculum-making for different combinations of children. Similarly, data can be presented so that the candidate has to cope progressively with various types of learner characteristics.

The component begins with the rationalization of the component to the inquiry group, the introduction to the simulated school, and the presentation of a problem task which requires institution-shaping activity. During the first tasks it will become apparent to the trainees that they need some more substantive information for making decisions. They simply do not know how to create an educational institution. From this point the activities alternate between seminar sessions on institution-building strategies and activities in the simulated school. The seminars are built entirely around readings and materials which are designed to acquaint students with the strategies for approaching the institution-making tasks.

Alternative Models for Elementary Education is the first book to be read. It identifies positions of educational reform and provides ways of looking at the development of participatory government within a school, alternative approaches to the development missions of the school, the development of curricula systems, technological support systems, social systems, and school organizational patterns.[18]

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[18]Also, see Ralph W. Taylor, Basic Principles of Curriculum and Instruction (Chicago: University of Chicago Press, 1950); Jerome Bruner, The Process of Education (Cambridge: Harvard University Press, 1961); John J. Goodlad and Robert Anderson, The Non-Graded Elementary School (New York: Harcourt, Brace, 1959); John Holt, How Children Fail (New York: Pitman, 1964); and Jonathan Kozol, Death at an Early Age (Boston: Houghton Mifflin, 1967).

During the seminars, Alternative Models for Elementary Education gives the intellectual structure whereas the others are representative of particular points of view with regard to schooling and school organization. It provides a rather comprehensive bibliographic guide to alternative missions of the school and alternative patterns for building curriculum, social systems, and technological support systems as well as organizing the personnel of the school. The students with the faculty counselor should develop a program of readings to acquaint them with the major theoretical positions identified. Many faculties will wish to develop readings dealing with major positions in educational philosophy as well. This phase should be coordinated also with the "world of the learner" aspect of the teacher-scholar component to acquaint candidates with structures for studying and responding to individual differences.

Phase Two: Phase two of this component begins after the teaching strategies subcomponent of the interactive teaching component. The study of teaching strategies provides the conceptual knowledge of nine approaches to curricula and instructional strategies and the possession of the ability to carry them out in the classroom. This provides essential knowledge and skill for the teacher. If a person is to be a shaper of a school, he must have alternative approaches and know he is able to carry out a reasonable number of them. Otherwise, his discussion of curriculum and instruction will seem empty and artificial.

A seminar should then deal with the question of curriculum modes and how they can be organized.[19] The candidates, should also, working in the school as a center of inquiry, study the use of support systems for schools.

Phase Three: The study of strategies in the curriculum areas. In this phase each teacher must bring himself to competence in the curricula and instructional strategies in one curriculum area. He needs to be acquainted with the major systems which are used in this areas to approach instruction. Because these change, the component needs to be redeveloped continuously by the faculty so it will include the current developments in the field. A support system of instructional material in the area should be provided so that the trainees can analyse them and learn to apply them to children.

In the appendix to this chapter on strategies in the curriculum areas, there are two papers representing the type of document needed to help

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[19] Ibid., GPO: pp. 85-109; ED: pp. 78-102.

candidates orient themselves to the field of their specialty.[20] These explore a number of approaches to the social studies and provide a map of readings and guide to materials in each field. Candidates should study the alternatives in each field and, in tutorial and small-group teaching, begin to try out the approaches and study their effects. These illustrate only the social studies field. The faculty should develop materials for each of the curriculum specialties. In the early childhood field, for example, the teacher candidates need to study the different approaches defined by Bereiter and Englemann, Robinson and Spodek, Montessori, and others--they should not simply study one doctrine.

Phase Four: The Experimental Units. The inquiry group should develop and carry out a unit of activity in the specialty of the members with a complete curriculum plan, support systems, and experimental design.

Phase Five: Each inquiry group should be assigned to a specific phase of activities in the remedial-enrichment school and should carry this work out with assistance from the faculty counselor. Candidates should plan all phases of the activity and offer the component of education for the children. Hence, an inquiry group made up of reading specialists will operate a reading activity; the science specialists, a science activity; and so on.

Phase Six: The feedback teams are apprenticed to the school as a center of inquiry to study institution-building activity and receive coaching from the staff of the school on the problems of shaping the school.

Administration of the Component. While there are a number of possible patterns for administering the component, a straightforward one involves the assignment of a faculty counselor to each inquiry group throughout the component. Since the component stretches throughout the program, this relationship can provide continuity for the group by providing a core of shared experiences. The group can be welded, through its common experimental activities, into the reference group that is so essential to the teacher-innovator component. Other faculty members, assisted by advanced students working as interns, can staff the simulated school and keep up-to-date the bibliography and illustrations of alternative approaches to curriculum specialties. As the inquiry group moves into the phases that involve experimental teaching, the faculty-counselor can continue to work with the group, helping it to design and carry out its experiments. During his long relationship with the group, the faculty counselor can apply the differential training model in the manner described in the interactive teaching component.[21]

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[20]Also see Bruce R. Joyce, Social Studies Extension Service (Chicago: Science Research Associates, 1968), and Bryan Massiales and Benjamin Cox, editors, Social Studies in the United States (New York: Harcourt, Brace, 1967).

[21]Ibid., GPO: pp. 220-24; ED: pp. 205-09.

Evaluation and Feedback. The simulated school provides an environment in which performance is easily observed. The development and carrying out of the experimental units and the work in the remedial-enrichment school is, assuming the use of techniques for observing and analyzing teaching described in chapter 10, also easy to observe.

Both evaluation and feedback should be carried on in terms of solutions to institution-building problems rather than to the assimilation of content per se. It should, also, be informal and cooperative, although based on the analysis of performance.

Since institution-building is a group activity, the group should be the unit for most analysis of competence, whereas the individual and the feedback was the unit in the interactive teaching component.[22]

The Interactive Teacher Component

There are four subcomponents of the interactive teacher component. The first of these deals with instructional decisionmaking; the second, with mastering nine teaching strategies and the ability to create and test one's own teaching strategy; the third, with the flexibility training program; and the fourth, with a program designed to teach the young teacher how to shape the social situation in the classroom. This is the most complex component in this program, and the reader is referred to the Final Report for most details. However, the following describes the second subcomponent which deals with the mastery of the teaching strategies.

To the person learning to teach, this subcomponent probably will be the most vivid, and to the faculty, it should serve as a unifying element. On its success depends the real utility of the other subcomponents in the area of interactive teaching. It serves to link the intellectual aspects of teaching (the making of decisions, the shaping of subject matter, and the selecting of technology) with the clinical aspects of teaching (the touching of minds and emotions with the learner, the creation of the social system of the classroom, and the manifestations of flexibility and sensitivity).

For six years we have engaged in a developmental effort to develop a basis for a subcomponent which would bridge theory and practice so that the work of the teacher would be comprehensible in terms of ideas about teaching and learning. If it can be achieved, the school can be built as a center of inquiry into teaching and learning as well as a place in which school is kept.

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[22] Ibid., GPO: pp. 295-306; ED: pp. 278-89.

To attempt to relate educational theories very closely to the operational practices that occur when a teacher and a learner are engaged is to transform educational theory quite radically. Except in the most abstract minds, theories of education have seemed to float free of the world of the school and the teacher and the child. In this subcomponent a serious attempt is made to make educational theories explicitly operational in terms of things that teachers and pupils do and to provide the teacher with the capacity to generate rational positions about teaching and learning which he can operationalize himself.

The Processes. This subcomponent focuses directly on what we shall call strategies for teaching. A teaching strategy is simply a thoughtful teaching operation in which the teacher does what he does because he believes it will have a positive effect on the learner. At its most sophisticated, a teaching strategy is an elaborated theoretical position that has come into reality as a teacher and learner have interacted. The process of teaching with strategy involves the development of hypothetical positions about the results of various forms of teacher-pupil interaction and the translation of these into teacher behaviors. For example, A. A. Neill, the headmaster of the famous Summerhill School, has a carefully thought out theoretical position on education. Neill has translated this position into action. He has built a school, trained a faculty, and organized students in such a way that his theoretical position has been brought into reality. As they work with students at Summerhill, the faculty members are aware of what they are doing and guide their behavior by well thought-out guidelines about the relationships between teacher behavior and learner behavior. Neill is an example of a teacher who has developed the ultimate skill in teaching strategy because he is able to generate theoretical positions and to operationalise them with children.[23]

Another person who has done this is B. F. Skinner. Skinner has developed and tested thories of operant conditioning and has translated these into the devices for learning which have become known as programed instruction. Skinner has a theoretical position that he also has turned into teaching devices and rules for teacher behavior that actually operate effectively with children.[24]

Not everyone accepts Neill's position on education nor does everyone accept Skinner's position. Both, however, have developed and used theoretically anchored teaching strategies.

We take the position that our teacher-innovator should be

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[23] A. S. Neill, Summerhill (New York: Hart, 1960).

[24] B. F. Skinner, Tecnnology of Teaching (New York: Appleton-Century-Crofts, 1968).

able to comprehend the models of these and many other theorists and should be able to carry out a wide range of strategies--to operationalize a variety of theoretical positions about education.

For the teacher this involves the process of mastering a repertoire of teaching behaviors that can be used for many ends.

While we are not certain what combination of events makes a good lesson or what combination of qualities makes a good teacher, the potentially better teacher is one who is able to plan and control his professional behavior--to teach many kinds of lessons, to reach many diverse learners, to create different social climates, and to adopt a wide range of teaching strategies of changing conditions. The reason the teacher must possess a range of teaching strategies is simply because different styles of teaching behavior are useful for different educational purposes, and every teacher seeks educational ends that demand more than one way of teaching. Sometimes students are unruly, and the teacher must shift his strategies to develop a cooperative social system. Sometimes students are bold thinkers and challenge the teacher to lead them in the exploration of content that interests them. Other students are conforming thinkers, reluctant to venture original ideas. They need to be induced to stop seeking "right" answers and develop an intellectual autonomy. There are learners lacking important basic skills who need direction and protection until they can acquire them. Each student is a unique combination of needs and abilities.

In each class or inquiry group is a unique combination of individuals. The teacher learns to recognize differences between students and groups of students and adjust his strategy and style of teaching as he turns from one to the other.

A teacher who cannot vary his method or style is seriously limited. He needs to be able to select from a repertoire of tactics that will lead to different objectives and induce different students to learn.[25]

It is important then that the teacher master a basic repertoire of moves which he can use to carry out a variety of teaching strategies. He also needs to learn a representative sample of theoretical positions about education and how to translate these into teaching strategies.

In this subcomponent provision is made for the teacher to master four basic teaching maneuvers that are the beginning of a repertory which will enable the teacher to manifest quite a variety of teaching strategies. Provision is also made for the teacher to master nine basic strategies which represent widely known theoretical models of education. Further, provision is made for the teacher to create and carry out strategies of his own making and to test these out gathering information about their effectiveness.

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[25] Joyce and Harootunian, op. cit., pp. 94-95.

The Maneuvers of Teaching. When he is interacting with his students, the teacher controls his behavior to induce student reactions that will lead to learning. The teacher maneuvers, in a sense, to elicit from the student those behaviors that will lead to the achievement of the educational objectives the teacher has selected. If the teacher wishes the student to become a better thinker--for example, to be able to frame hypotheses and test them--then he asks questions, poses problems, or makes provocative statements in the hope that the student will be caught up in a problem and induced to develop and test hypotheses (and subsequently led to reflect upon and to improve his ability to do so).

The target of every teacher behavior, then, is a responsive student behavior. The wider the range of teaching maneuvers, the better the teacher's chance of bringing about more kinds of desirable learning from larger numbers of students. The goal of teacher education is to help the novice teacher widen his repertoire of maneuvers.

Teaching maneuvers very nearly run the entire gamut of human behavior. For example, teachers use gestures and facial expressions. They ask questions; they speak in soft voices or in stentorian tones; they carefully set the stage, feeding the students information and ideas and then asking questions that cast both into doubt.

Teachers also build maneuvers into teaching materials. They construct books that lead students step by step through difficult material. They develop exercises that induce new ways of thinking. They build materials that require the practice of skills and the use of information. They create elaborate games that simulate economic or political activity. The teacher uses himself in conjunction with teaching materials, combining his own words and personality with books, motion pictures, and other devices to create learning situations and elicit student responses he could not achieve without collaboration with technology.

How many teaching maneuvers are there? There are as many as imaginative teachers can create through the use of their own knowledge and the skills and products of technicians and publishers. It is a pity that the work of so many teachers and of so many teaching materials embodies such a narrow range of all the strategies possible. There is a tendency for teachers to find comfortable styles--a few maneuvers that seem to work for them--and then to settle into those styles, smoothing them out, but not expanding their repertoires. To prevent this, the teacher needs to become a student of teaching styles and maneuvers. He can analyze his own teaching and identify the kinds of maneuvers he employs habitually. One of the uses of the "Manual for Analyzing the Oral Communications of Teachers" in appendix A is to help teachers analyze their own verbal communication and expand their repertoires of comfortable maneuvers. Several universities are now carrying out extensive projects designed to help teachers analyze and expand their styles.[26] In addition, here are several

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[26]For example, see the Project on Student Teaching at Temple University (Edmund Amidon, director) and the Microteaching Project at Stanford University (Dwight Allen and Robert Bush, co-directors).

publications that can help teachers identify the range of possible maneuvers.[27]

In the following pages we will discuss a number of classroom maneuvers that illustrate the broad spectrum of behaviors a teacher uses to effect student behavior. We have included maneuvers designed to bring about four kinds of student behavior, which by no means exhaust all of the possibilities. These maneuvers are:

1. Maneuvers to induce productive thinking. Productive thinking includes the ability to generate alternative hypotheses and problem solutions, to synthesize information and build generalizations and theories to explain it, and to create original stories and ideas. Every teacher needs a variety of tactics to stimulate productive thinking.
2. Maneuvers to induce mastery of content and achievement of skills. At times it is desirable to bring students to a certain level of performance--to teach them a skill, a body of information, or generalizations that explain information. Maneuvers for this include demonstrations, recitation, programed techniques, and tactics that structure material to maximize memory or skill development.
3. Maneuvers to induce self-direction. Self-direction is another common goal of instruction. Appropriate maneuvers include counseling, role playing, discussion, and other tactics which induce students to reflect on themselves and take responsibility for setting their own goals and procedures for learning.
4. Maneuvers to structure activity. Whenever an activity is difficult for students, or whenever students are uninterested or unruly, it may be desirable for the teacher to induce an organizational structure that enables learning to proceed. Some maneuvers accomplish this by initiating tight organizational procedures for the group. Others are aimed at increasing the students' interpersonal skills.

If a teacher can induce these four kinds of student behavior, he will be able to carry out a great many teaching strategies. One can think of maneuvers as a basic repertoire of tactics or as the elements of a basic teaching style. With these maneuvers he can begin to operate competently in the classroom. As he gains experience, he can develop more maneuvers for inducing these and other student behaviors, thereby increasing his capacity to reach larger numbers of students more effectively. The discussion that follows illustrates a few of the many behaviors a teacher can use. Experience will show that there are other kinds of desirable student behavior to be considered as well.

The maneuvers we will describe or illustrate will not be appropriate for every teacher. Each teacher must create the kinds of tactics he is

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[27] See Norris M. Sanders, Classroom Questions: What Kinds? (New York: Harper & Row, 1966); James A. Smith, Setting Conditions for Creative Teaching in the Elementary School (Boston: Allyn & Bacon, 1966).

comfortable with and can implement in accord with his personality. However, the teacher need not feel that he is confined to a limited number of maneuvers. We have found that while teaching styles are indeed related to personality factors, many teachers can expand their repertoires dramatically if they will learn to analyze their teaching and make deliberate attempts to increase their range.[28]

As we shall see, the range of effects on student behavior is increased by the fact that the same maneuver can serve more than one purpose. A drill exercise, for example, designed to help students master information, may also organize the individual students's activity and initiate a working environment in the classroom. In the same vein a maneuver designed to increase a student's self-direction may also involve him in a project that leads to productive thinking.

The analysis of teaching maneuvers is complicated by the fact that nearly all teacher behaviors have an emotional as well as an intellectual impact on the student. When a teacher calls on a student, he may scare him if the student is unsure of his ability, or perhaps he may comfort and support the student by giving him attention and recognition. The effective or emotional dimensions of teaching are extremely important, and we need to consider the rewarding and punishing effects that maneuvers can have.[29]

Ways of producing these four basic teaching maneuvers are described more fully in the body of The Structure of Teaching.

The Nine Models of Teaching. In the appendix to this subcomponent nine models of teaching are described in considerable detail and reference is made to the theoretical positions from which the models are derived. The models include:

1. An inductive teaching strategy developed from the work of Hilda Taba.
2. A strategy for inducing the students to attain concepts derived from work by Jerome Bruner and his associates.
3. An inquiry training model developed from work of Richard Schuman who developed a training program to help children build scientific theories.
4. A cooperative inquiry model derived from the position of Herbert Thelen on the democratic process as it is applied to teaching.
5. A nondirective model developed from the work of psychologist Carl Rogers on ways of helping students to teach themselves.
6. A differential training model derived from work by David E. Hunt, which provides means of adjusting the strategies according to

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[28] Joyce and Harootunian, op. cit., pp. 94-95.

[29] Ibid., p. 111.

personality characteristics of the students.

7. A teaching strategy derived from the analysis of a process.
8. A programed model developed from the research on operant conditioning conducted by B. F. Skinner and his followers.
9. A model developed from the work of Abraham Maslow dealing with the development of an integrated personality.

These nine models represent widely known theoretical positions on education. They do not exhaust all possibilities, but the subcomponent provides for the exposure of the teacher candidate to yet other positions which he can translate into going teaching strategies. Note the emphasis on introducing the candidate teachers to a variety of theoretical positions on teaching. We take the view that the teacher should not be taught that certain types of teaching are good for all occasions and should become the preferred strategies. Some teacher education programs emphasize nondirective or democratic methods to the exclusion of all other methods and have discouraged directive teaching. Other teacher education programs have emphasized directive teaching to the exclusion of other methods. Yet others emphasize particular approaches to education (as Montessori methods) or to specific ways of teaching certain subjects (as science). Our position is that the student should have available to him the best of the spectrum of educational theories and the ability to implement them in the classroom. Critical to this mastery is comprehension of theoretical positions and the clinical capacity to execute strategies derived from them.

The Behavioral Objectives of the Subcomponent. The behavioral objectives of the teaching strategies subcomponent occur in four levels. The four levels are generally sequential in that it is most likely that a student will progress through the four levels more or less in order, but as usual in this program the suggested sequence can be altered greatly. Even so, it is best to explain the subcomponent to each inquiry group in terms of sequential levels because the explanation is much more compact and reasonable that way.

Objective One (Level One): The teacher discriminates the four basic teaching maneuvers and their uses:

1. Maneuvers to induce productive thinking.
2. Maneuvers to induce mastery of content and achievement of skills.
3. Maneuvers to induce self-direction.
4. Maneuvers to structure activities.

The teacher should be able to explain a theoretical position underlying the use of each of the maneuvers. He should also be able to discriminate the maneuvers in episodes of behavior produced by teachers and to examine learner reaction to them.

Objective Two (Level One): The teacher can demonstrate an example of each of the four teaching maneuvers. He can create a lesson or plan for an encounter with children so that it will include the use of each one of the four maneuvers and can execute the maneuver when teaching chil-

dren so that it is distinguishable by his fellow candidates and faculty counselors.

This level of achievement is essential to the development of the teacher. A teacher who cannot accomplish these two objectives or equivalent ones is in no position to teach except in the most limited sense of the term.

Objective Three (Level Two): The teacher candidate can identify the nine teaching models described in the appendix to this chapter and the theoretical positions that underlie the models. This means that he has knowledge of the theoretical positions of Taba, Thelen, Rogers, Schuman, Hunt, Maslow, etc. Also, when he observes teachers working with students he is able to distinguish the model or strategy that is being used.

Objective Four (Level Two): The teacher candidate can build and execute lessons utilizing each of the nine strategies. This means that the teacher can prepare objectives within a curriculum area, select an appropriate model, develop a lesson for a series of lessons around it, and execute it in the classroom with appropriate adjustments to the particular learners.

This is another critical objective in this program. While it is probably not essential that all nine teaching strategies be mastered, a reasonable repertoire needs to be established consisting of these or their equivalent. All do not need to have to be produced magnificently, but they should be recognizable and reasonably smooth. Since it is possible to build instructional materials around several of the models, it is possible for the teacher candidate to satisfy this requirement partially through the creation of instructional materials. For example, strategy number 8 is a "programed" strategy derived from Skinner's work in operant conditioning. This provides a paradigm around which programed instructional materials can be developed. Similarly, the "advance organizer" model can be used for a television presentation or for written materials which are presented to students. Some of the other models require face-to-face teaching (as, for example, the cooperative inquiry and the nondirective models).

Objective Five (Level Three): Within at least one curriculum area (his specialty), the teacher identifies a basic repertoire of teaching strategies and learns to execute them while working with children.

The teaching strategies may be derived from models like ones included in the appendix which have been developed specifically within the curriculum area (as, for example, the area of reading or mathematics instruction). To accomplish this objective the teacher candidate needs to acquire a knowledge of the major systems for organizing instruction within the curriculum areas concerned, identify the teaching strategies which are recommended or which are appropriate within that area, and then he needs to learn how to put those ideas into practice.

It is important for the teacher to learn a balance range of strategies which are developed from the different positions toward learning that are taken by theoreticians and practitioners within the curriculum areas. For example, in the social studies area some authorities favor the democratic process model which is similar to the one contained in the appendix directive to this chapter; others prefer the directive model. Recently, we have seen strategies developed from process analysis brought into the social studies field, in the form of simulation or legislation simulations. Yet others have developed teaching strategies which are derived directly from the subject disciplines. A teacher who is developing control within a curriculum area should try the strategies recommended by the different schools of thought so that he can judge for himself what it is like to work with children from those positions and because he needs a repertoire that will enable him to seek a wide range of objectives with many different learners.

Objective Six (Level Three): The teacher will learn to carry out teaching strategies that utilize contemporary technical support systems.

The specific nature of the strategies and the technologies will depend on the curricular specialties of the teacher candidate and the ages of the children with whom he works. For a language teacher, the language laboratory is an example of a technical mode. In the social studies, televised programs are an example.

Objective Seven (Level Four): The teacher candidate develops and tests a model and strategy of his own or adapts one of the general models or one of the subject-area-specific models which he has learned in this component.

The Rationale of the Subcomponent. The first phase of the subcomponent is a modification of the previous work by Amidon, Flanders, Allen, Medley and Mitzel, Joyce, and others in which they have demonstrated that teachers can learn to analyze specific small behaviors in teaching and to master the relatively small units of behavior which Joyce and Harootunian have called maneuvers. The general paradigm operates as follows: The teacher learns to discriminate the desired behaviors, attempts to produce them, obtains feedback with his peers by examining episodes which have been recorded on audio or video tape, and, with coaching, repeatedly practices the behaviors until they are mastered.

While it might be possible to develop the entire subcomponent in this way (teaching the teacher to discriminate relatively small behaviors and then building them up into a comprehensive whole), the course that we have chosen is to follow this practice only until the teacher has developed a limited basic repertoire consisting of the four maneuvers identified previously. From this point, he moves to larger and more meaningful units of teaching behavior which have been developed from major theoretical positions on learning. The inquiry group, as it studies these major positions and attempts to produce the strategies that have been derived from them, gives itself a rather thorough course in educational psychology and

learns to operationalize psychology in the classroom. Teaching needs to be a purposeful activity which is essentially the continuous testing of hypotheses about learning. If we concentrate only on small units of teaching behaviors that can be built up into meaningful strategies, the focus would be on relatively meaningless bits. However, when the focus is on strategies which are based on well thought-through and researched stances on learning and teaching, the meaningful unit becomes the focus of the program.

The subcomponent is also organized on the assumption that the rationalizations of teaching should consist partly of general models of learning and partly of models which are derived from the particular curriculum areas. Hence, after the general models have been mastered, the subcomponent proceeds to explore models in a particular curriculum area. A curious circumstance develops in many areas as a consequence of this. Many of the theoretical writings about instruction in the curriculum areas have been stronger with respect to the disciplines than with respect to the models of learning. Many of the products of the academic reform movement are elegant with respect to subject matter, but have almost no coherent teaching strategy. Other products consist simply of one expository unit after another. A few products, of course, have clear-cut, well articulated strategies. The teacher often has to transform materials so as to teach concepts for the academic disciplines by applying general learning models to them or creating more effective models himself.

The Means of the Subcomponent. The conduct of the subcomponent will vary somewhat depending on whether it is taught as a whole or is divided into several sections that occur at different points in the education of the teacher. The phases of the component, for example, could follow one another straight through an academic year and then lead right into internship or participation in the school as a center of inquiry. However, it could also be divided so that the mastery of the maneuvers and the introduction of the models could occur during one year, the study of the strategies within a particular curriculum area might follow during another year, and then the development of models and the use of strategies developed by the student himself might occur in yet another point in time.

However the component is divided, it begins with the organization of the inquiry group and the explanation to it of the behavioral objectives and the phases of the component which have been prepared beforehand. Then, as the group proceeds, it will no doubt transform both the objectives and the means in various ways. There are many advantages to keeping an inquiry group together throughout the entire component. For a group that learns the basic maneuvers, learns about the nine basic models of teaching, masters them with children, proceeds to the study of teaching strategies within the curriculum areas specialities, and finally moves into a school, developing and testing its own teaching strategies can be a very rich experience. The activity can provide the substantive basis for relationships among the group of students who is becoming a reference group with respect to innovation.

The means are here described in terms of phases that are based on each of the four levels of behavioral objectives.

Phase One, Learning the Basic Maneuvers of Teaching: The objectives of this phase are identifed previously to discriminate and learn to execute four basic teaching maneuvers. The component should begin with the reading of The Structure of Teaching, especially chapter 3, "Teaching with Strategy." This identifies and explains the four maneuvers in some detail and provides a variety of examples for carrying them out.

The inquiry group (probably working in "feedback teams") should then set about the mastery of the basic maneuvers. Members should plan lessons which employ those maneuvers, teach the lessons to each other and to children, tape-record and videotape their performance, analyze their behavior, and coach one another with the assistance of the faculty members. This process should continue until all members of the group have mastered the models satisfactorily. More than one maneuver can be engaged in during any one encounter with a group of students, but care should be taken that each new teacher masters it in such a way that it can be a prominent part of an important phase of a lesson or learning activity.

To identify the maneuvers in taped and video taped episodes, the groups will find it useful to use the systems of analysing teaching that they are mastering during the research on teaching phase of the teacher-scholar component. Both the Gallagher-Aschner and the Joyce-Harootunian systems are useful for identifying the maneuvers to induce productive thinking and the maneuvers to produce achievement. The Flanders system and the Joyce-Harootunian systems are useful for analyzing and improving maneuvers relating to the structuring activities and inducing students to structure activities for themselves. As will be noted in the organizational plans, the subcomponents are correlated to make that possible. The early phases of research on teaching should come no later than simultaneously with the early phases of work with the strategies of teaching.

Phase Two, Learning Nine Basic Strategies of Teaching: In phase 2 the third and fourth objectives above are to be achieved. This involves learning the nine theoretical positions on teaching and learning from which the nine strategies have been derived and mastering the strategies as the basic repertoire of each teacher. The organization of the phase could take several forms. An inquiry group could simply decide which models it prefers to start with and then work through the models one by one. Or, each feedback group can do the same. It would also be possible to establish nine microteaching laboratories, one for each model, and the students could study individually with the other members of their feedback team serving as coaches. There are many advantages to the first course of action. It gives an opportunity for an inquiry group to explore fully the theoretical underpinnings of each of the positions on learning and to examine the alternative ways that each position can be worked out. For example, the "concept-attainment" model is taken from some fairly sophisticated psychological research and is worth some substantial study. As the candi-

dates learn the model, as a group, with 10 or 12 of them working together, each one building lessons around the teaching strategy, the richness of the strategy will become apparent as will its wide applicability. The faculty member can help the students explore the ways that it can be applied to a wide variety of subject matters and how it can be shaped in a variety of forms.

The same is true of the other models, for strategies have been selected which are extremely versatile and if they are explored fully, they become much more than nine versatile models of teaching. Three or four basic variations will emerge from each making a repertoire that actually will consist of 30 or 35 workable teaching strategies.

Each candidate should persist in the mastery of the models until the other members of his feedback group and the faculty counselor are satisfied with his level of performance.

To identify fully the substance of this phase of the component, it is necessary to read the descriptions of the models in the appendix to this chapter on the teaching strategies subcomponent.

Phase Three, Teaching Strategies Within a Curriculum Area: In the curriculum section of the institution-building (chapter 11-B) component and the instructional decisionmaking section of the interactive teaching component (chapter 10-A) the teacher candidates learn the alternative patterns for curriculum and instruction within one traditional curriculum area of the school. Stress is placed on his mastering alternative systems for conceptualizing and organizing instruction within the curriculum areas. It is expected that each teacher will specialize in one curriculum area in order to provide him with an area of depth competence to which other learnings can be anchored and to provide him with an area of immediate competence once he is given the opportunity for responsibility within a school. In phase three of the present component, the intellectual work involved in understanding the alternative systems of approaching the curriculum areas is combined with the clinical competence derived from learning to rationalize and execute teaching strategies. The focus is on development of competence within the curriculum area. To make this possible, each feedback group needs to be given responsibility for teaching a group of children in a curriculum area such as reading, arithmetic, social studies, science, art, music, modern language. In the nursery school or kindergarten, the group may be responsible for a phase of activities that is to be its speciality. The phase may be analogous to one of the aforementioned curriculum areas (as it would be if one took the approach to preschool physical education that Bereiter and Englemann do). It may be a phase of activity such as language development which is related to the later work of the school, but which takes shape in the nursery school in a very different way from the later form. The feedback team then proceeds to develop a unity of activity that it carries out, setting the behavioral objects, selecting the learning model and deriving the teaching strategy from it, building the materials that are needed, carrying out out the activity, and testing hypotheses about learning. The team executes

the unit as a group although individuals may handle particular aspects of the work.

The faculty role in this phase of the component is particularly important for the experiences are lengthy and complex and are not easy to repeat. The activity needs to be as successful as possible during its first execution. A feedback team may get opportunities for several such activities, but it is a costly learning experience and one which cannot be prolonged unnecessarily. As a result, the faculty member wants to take care that the plans of the group are very adequate. The group needs to meet the children and to work with them in diagnostic settings before making its plans. The faculty member should be consulted frequently as to the adequacy of the plans before they are put into effect.

Phase Four, The Development and Execution of Original Models: In this phase the feedback team is assigned within the school as a center of inquiry or it is helping to operate the enrichment and remedial school. It has full responsibility for a group of youngsters and its charge is to shape a substantial segment of activity developing or adapting a model, creating the instructional materials, and carrying it out fully. The phase extends phase three. The group may select a technological mode of a particular kind or it might even be assigned to a technological mode within the enrichment school or the remedial school and have to adapt a strategy for that particular mode. While it does not take much space to describe this phase, it is as complex as the preceeding one, and the faculty members roles are again critical for the plans need to be tested against him and other experienced teachers to assure that they are reasonably adequate before teaching begins. Again the activity should be carried out as an experiment. The teaching strategy should be phrased as a hypothesis that certain teaching behaviors will have certain effects on the learners, and the hypothesis should be tested.

The Administration of the Subcomponent. The subcomponent requires faculty members who have mastered the maneuvers and models themselves and who continue to find opportunities to teach children and to sharpen their mastery. The subcomponent is difficult to administer because it is highly complex and much is left to the judgment of the faculty members and the process which develops within each inquiry group. It is an extensive subcomponent, taking a long period of time to complete, and each of its four phases are complex in themselves. The last three phases are exceedingly difficult.

The first and second phases require extensive taping and video taping. Filming of teaching and suitable space has to be made available.

The subcomponent has to be correlated carefully with the contact laboratory on which it depends. Table 5 illustrates the correlation.

As in so many of the subcomponents in the interactive teaching component, the availability of audio tape recorders, video tape recorders, and

Teaching strategies phase	Type of activity	Contact laboratory phase
Phase one	Learning basic maneuvers	Phase two (tutorial)
Phase two	Learning basic strategies	Phase two (tutorial)
Phase three	Unit experiment in curriculum area	Phase three (unit experiment)
Phase four	Unit experiment with own strategy	Phase four (remedial or enrichment school)

TABLE V

CORRELATION BETWEEN CONTACT LABORATORY AND TEACHING STRATEGIES SUBCOMPONENT

other devices for reproducing the episodes of teaching are critical. Again it seems that the only practical way to supply the human services to make those available is to employ the student teachers themselves as operators of the equipment and give them both the opportunity of learning from such participation as well as the availability of equipment that is self-operated.

Provision for Feedback and Differential Training. Feedback in this subcomponent is fairly automatic because of the nature of the learning activities. A teacher is constantly aware whether he has mastered the maneuvers or models and his goal is always before him. In the latter two phases, the faculty member has to take an extremely active role, particularly in the planning stages, and the research consultants have to work with the students to develop the systems for testing their hypothesis about teaching. The differential training model is very easy to administer. In the first case, as we have said immediately above, achievement is easy to measure and the learners' tasks can be closely matched to their achievement. (A person has or has not mastered a given model or maneuver and as a result of that fact does or does not continue to master it.) Modulating the structure of the first two phases to suit the cognitive orientation of the students is fairly easy. In the second two phases it is not so easy, and the faculty member is dependent almost entirely on his own judgment. If the student needs a great deal of structure, he has to provide it personally. The structure of the subcomponent itself, while it permits modulation of structure, has no built-in provision for it. It depends entirely on the maneuvers of the faculty member himself. The value orientations of the students, on the other hand, are very easy to accommodate. They can begin with the maneuvers and models that they prefer. For example, some will prefer nondirective teaching methods, and they can begin mastering nondirective teaching models rather than highly structured ones. The converse is also true. Feedback preference is also easy to accommodate, for the faculty can move in and out of the situation providing or withholding authority as the students seem to need it.

Evaluation. The evaluation of achievement is embedded in the methods as they have been described. Each feedback group monitors its members progress through the mastery of the maneuvers, the models, the development of models within the curriculum areas, and the creation of original teaching strategies. Because the creation and implementation of original teaching strategies is conducted as an experiment, the evaluation procedures have to be constructed in order to carry out the activities.

It should be stressed that achievement of the objectives of this subcomponent is essential to the success of the teacher education program. Only a very narrow tolerance of underachievement can be made. A student who does not develop the basic repertoire of teaching maneuvers and strategies will be an educational cripple.

The Teacher-Innovator and the Teacher-Scholar Components

The other two basic components, the teacher-innovator and the teacher-

scholar, are described in The Teacher-Innovator.[24] Each of these is characterized by its own strategy. The first attempts are to employ reference group theory to imbue the inquiry groups with a commitment to innovation. It also tries to help them to understand the problems of coping with the bureaucratic school organization to learn to generate institutional structures which are nonbureaucratic in nature. The teacher-scholar illustrates the techniques which need to be taught to the young teacher to help him analyze teaching and learning. (But by no means are all the possibilities included in the report.)

THE RELATION OF THE PROGRAM TO PROGRAMS OF GENERAL EDUCATION

No attempt has been made in this model to specify what should be entire undergraduate education of the teacher candidate in all subject fields. Our general position is that he should achieve depth in at least one subject field preferably in such a way that he comes to grips with the models of inquiry of that field and begins to learn what scholarship is and how it can be carried on. It is also our position that a great deal of the general education of the student should involve him in the study of humane issues. If we were pressed, we would agree with Hutchins that the primary purpose of the college education is to help the young person to engage in the great dialogue on the nature of the good life and our struggle to achieve it. However, we do not attempt in the report to cope with the questions of the student's general education, nor do we attempt to deal with many questions about the relationship of the teacher education program to the wider educational community that operates the public schools.

It is in implementation that the relationships between "general" and "professional" education should be reconciled. The points at which a teacher candidate is admitted to the school of education or begins his professional work is a matter of legitimate local concern rather than the proper function of a model such as this one. We have provided the rationale and means for one approach to the preparation of a certain kind of teacher. This approach could certainly be adapted to four-year undergraduate institutions, to fifth- and sixth-year programs, or to combinations of these. The professional components as we have described them are quite flexible, and while they need to be coordinated with each other there are many types of coordination available, and quite a bit of institutional variation could be tolerated before the program would be distorted.

The components vary in their state of completeness. Some of them are very nearly ready to implement (as, for example, the flexibility training program). Also, the procedures for constructing data banks to provide young teachers with feedback on the nature of their teaching

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[24] Joyce, op. cit., GPO: pp. 347-466; ED: pp. 330-436.

styles is sufficiently well developed that they could be implemented at this point. Some further engineering work needs to be done on the simulated school and on the teaching strategies subcomponents, but sufficient developmental work is being completed, and enough testing has been done that it would be possible to begin to implement these at the present time.

It must be stressed that our position is not one of proselytization. We do not expect to see the The Teacher-Innovator Model as a dominating feature of very many teacher education programs. We do feel, however, that the complexion of the program and its structure should be of heuristic value to others who would construct models of teacher education, and we think that some of the developed work and some of the components and subcomponents have provided empirical results which should be useful in the cumulative inquiry into teacher education and also have resulted in developed products which should be of practical value in the education of teachers.

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THE UNIVERSITY OF GEORGIA

A Guide
to

GEORGIA EDUCATIONAL MODEL SPECIFICATIONS FOR THE PREPARATION OF ELEMENTARY TEACHERS

by

Charles E. Johnson

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THE UNIVERSITY OF GEORGIA

OVERVIEW

The Georgia Educational Model (GEM) has, as its core, teacher performance behaviors which are lists of competencies embracing both professional performance and liberal education. The behaviors were systematically developed by interdisciplinary teams through the use of numerous resources including descriptions of desired pupil behaviors and teacher job analyses. Attention was given to all aspects of development: cognitive, psychomotor, and affective. Specifications require that all learning activities be directly related to these teacher performance behaviors. The vehicle for organizing and presenting learning activities and materials is a proficiency module (PM), a manual of instructions (available from computers, published documents, or the student himself) designed to guide student learning through individual study and group interaction activities toward acquiring particular behaviors. Professional workers in the field are an integral part of the instructional staff.

Instruction is individualized and clinical. Before undertaking any set of learnings, a student must be satisfied that he has met the prerequisites. Upon completion of any set of learnings, he must show proficiency. The average student qualified for admission to the program will take approximately six years to complete the entire career sequence--both pre- and inservice. This career sequence is divided into three phases: the preprofessional, which focuses on preparation for paraprofessional services; the professional, which prepares the candidate for service as a certified teacher; and the specialist, which prepares the candidate with a specialist degree in one of 15 selected areas.

To provide the student with security and guidance as he moves at his own rate through the program, specifications call for a comprehensive, continuous student orientation and advisement program.

Evaluation starts with admission when data obtained from numerous sources are used in candidate selection. Thereafter, evaluative measures are prepared for each module, block, and phase of the model. All data is placed in tape storage for availability for both short- and long-range evaluation of individuals and program subsystems.

PROGRAM GOALS AND RATIONALE

The basic principle used in developing an exemplary model for the preparation of elementary school teachers was that the instructional program must satisfy the everchanging needs of society and its individuals so as to improve the conditions of man.

Implementing this principle required that a logical sequence of events be followed creating the model. First, it was necessary to project, into the next decade and beyond, the needs of society and its individuals. Such an

investigation is concerned with the economy, technology, political theory, and values of society. On the basis of this information, the next concern was to project the kind of elementary school that would be most effective in fulfilling its role toward meeting these societal needs as well as producing the kinds of individuals who, through their creative contributions, would be capable of aiding society and themselves toward improvement.

Once the projected needs of society and its individuals was established and the nature of the kind of elementary school which tends to fulfill these needs was determined, the criteria for selecting the various components for the model program were able to be enumerated and the foundation for their justification evidenced. The original sources for this summary of goals and rationale may be found in parts 1 and 5 and appendix B of the Final Report[1]; in GEM Bulletin 68-2, "The Role of Society in Formulating an Educational Viewpoint"; GEM Bulletin 68-5, "An Educational Viewpoint for a Comprehensive Program for the Elementary Schools--GEM's Position"; and GEM Bulletin 68-9, "Organizational Patterns and Facilities for Elementary Schools." A bibliography of the GEM bulletins is found in appendix D of the Final Report.[2]

Criteria

The following criteria summarize the program goals established for the model program: (1) At the core of the instructional program, there must be a comprehensive set of behaviors which (as relates to the preparation of elementary teachers) clearly and directly tends toward satisfying needs of society and its individuals. (2) The candidates selected for admission to the model program, preparatory to teaching in the elementary school, must have those personal characteristics which are essential for them to be successful in satisfying the requirements of the behaviors which form the core for the program. (3) The learning activities and materials must reflect the most effectively known means of guiding prospective and inservice teachers toward acquiring the core of behaviors of the model program. (4) The basic instructional procedures must be clinical and individualized (as distinguished from individual or tutorial). (5) The sequence in which learning activities are arranged must be in accord with established principles of learning and the needs of society. (6) The evaluation of student achievement must be based on the extent to which the student has acquired the specified behaviors and must serve as a foundation for the improvement of the student and the instructional program. (7) The techniques and instruments used for program evaluation must take into account all components of the program so as to provide for the systematic and continuous revision and improvement of the model program. (8) The procedures used for orienting the

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[1]Charles E. Johnson and others, Georgia Educational Model Specifications for the Preparation of Elementary Teachers, Final Report (Washington, D. C.: Government Printing Office, 1969), GPO: pp. 1-23, 185-228, 253-69; ED: pp. I 2-23, V 1-45, B 1-18.

[2]Ibid., GPO: pp. 287-90; ED: pp. D 1-5.

staff of the model program must be such so as to insure that the program will be soundly implemented and carried into sustained operation. (9) The model program must involve numerous state and local agencies for effective sustained operation. (10) The instructional program must be the basis for determining the administrative organization which will implement the model program.

Performance Specifications

The teacher performance specifications are the products of an operational system based on the goals and rationale of the program. They are reported in part 3 of the Final Report[3] and are statements which describe particular competencies or behaviors which teachers should possess in order to operate at optimum effectiveness.

These lists of behaviors were systematically determined by interdisciplinary teams under the leadership of specialists in program development and evaluation, which developed their products through the use of numerous resources.

The initial step in determining the specifications for teacher behaviors was to define the teacher's role. It began with determining goals (broad, far-reaching, abstract generalizations) for the elementary school followed by identifying elementary school objectives (statements which interpret goals into the school setting) for subject matter, cognitive processes, skills, attitudes, and values. From these objectives many essential teaching behaviors became evident. Other sources for identifying teaching behaviors were: established observations of the teacher on-the-job, theoretical writings of prominent educators, and accumulated knowledge of the nature of the child. (See GEM Bulletin 68-10, "The Nature of the Culturally Disadvantaged Child"; and GEM Bulletin 68-6, "The Nature of Elementary School Personnel.")

In developing these performance behaviors the position was taken that a teacher education program should attempt to develop a teacher with adequate personality characteristics for establishing rapport with students. Consequently, humanistic learnings, attitudes, sensitivities, and values were incorporated into the program.

Behaviors were categorized into three career sequence levels: the teaching assistant, the certified teacher, and the specialist. (The teacher aide is defined as a category for entry into the career sequence.) Generally, the teaching assistant is represented by behaviors developed by the average qualified pereservice student after approximately two years in the program; the certified teacher, by behaviors developed by the average qualified student after four years; and the specialist, by the behaviors developed by the average qualified inservice teacher after six years.

More than 2,000 specifications for teacher performance behaviors are provided in the following categories:

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[3] Ibid., GPO: pp. 35-161; ED: pp. III 1-137.

Drama.
Composition.
Cognitive processes.
Psychology.
Educational tests and measurements.
Pedagogy.
Social studies.
Speech.
Reading.
Literature.
Listening.
Mathematics.
Media.
Science.
Instructional improvement and professional development.
Specialized training related to local conditions.
History of religion.
Art.
Music.
Health.
Physical education.
Philosophy.
Guidance and counseling.
Social foundations of education.

The system for classifying these was based on taxonomies (Bloom, Krathwohl) to designate the intended behavior of students that would result from specific learning experiences. Categories in the cognitive domain include: (1) knowledge, (2) comprehension, (3) application, (4) analysis, (5) synthesis, and (6) evaluation. Those in the affective domain are: (1) receiving, (2) responding, (3) valuing, (4) organization, and (5) characterization.

Characteristics representing the intended behaviors have been classified according to the highest level of development necessary for optimum performance in specific positions (specialist, teacher, assistant teacher). The assumption is made that the behaviors in one class make use of and are built upon those represented in the preceding classes. For an example, see table 1.

The development of certain motor skills is considered to belong in certain aspects of the cognitive domain. However, some motor skills should be designated separately for clear understanding that these skills are necessary for certain tasks. These motor skills have been classified in four levels: (1) simple action (response), (2) coordinated action (multiple action), (3) action sequence (procedure), and (4) system action (accomplishing an objective). Examples of performance specifications in physical education appear in table 2.

Finally, although the affective domain of the taxonomy has been used in the classification of some objectives, for purposes of clarity and emphasis, those relating to personal development have been separately classified. Here, the taxonomy has not been used because it is hoped that each person (assistant, teacher, and specialist) will strive to achieve the maximum development of their individual personalities (see table 3).

SELECTION PROCEDURES

The detailed specifications for candidate selection for the model program are reported in part 2 of the Final Report. They are based on an investigation of the teacher personnel pool and the teacher performance behaviors previously described. These specifications make provisions in

TABLE I

EXAMPLE OF PERFORMANCE SPECIFICATIONS--
EDUCATIONAL TESTS AND MEASUREMENTS

Characteristic	Level of Development					
	Cognitive			Affective		
	Teaching Assistant	Teacher	Specialist	Teaching Assistant	Teacher	Specialist
3.02.01 Historical background and overview of educational measurement.		1	3		1	3
3.02.02 Purpose for and components of a test guide.		3	6		1	3
3.02.03 Different types of items and teacher made tests.		3	6		1	3
3.02.04 Instructions for and administration of tests.	1	3	6		1	3
3.02.05 Normative data.		3	6			
3.02.06 Interpretation of test scores.	1	3	6		1	3
3.02.07 Desirable test characteristics.		3	6		1	3
3.02.08 Gain experience in finding test information.		3	6		1	3
3.02.09 Standardized intelligence tests.		2	6		1	3
3.02.10 Special aptitude tests.		2	6		1	3
3.02.11 Achievement batteries.		2	6		1	3
3.02.12 Techniques of self-appraisal.		2	6		1	3

TABLE II

EXAMPLE OF PERFORMANCE SPECIFICATIONS-- PHYSICAL EDUCATION

Characteristic		Level of Development								
		Cognitive			Affective			Motor		
		Teaching Assistant	Teacher	Specialist	Teaching Assistant	Teacher	Specialist	Teaching Assistant	Teacher	Specialist
3.19.01	Neuro-muscular system.		3	6		2	3			
3.19.02	Pupil's physical limitations and individual differences.		3	3		3	3			
3.19.03	Neuro-muscular skills such as running, jumping, kicking, striking an object with a racket or bat.	2	3	5	1	3	3	1	2	3
3.19.04	Techniques for developing pupil strength and endurance.		2	5					1	3
3.19.05	Evaluation of pupils through observation.		4	6						
3.19.06	Techniques of developing democratic living through play and learning activities.	1	3	4	2	3	5			
3.19.07	Kinesiology.			5						
3.19.08	A wide range of physical activities for pupils (e.g., rhythms, dances, games, team sports).	1	3	5		3	3	1	2	3

TABLE III

EXAMPLE OF PERFORMANCE SPECIFICATIONS--AFFECTIVE (DOMAIN)
SAMPLE PERSONALITY CHARACTERISTICS

3.25.01	To develop and accept an accurate perception of self, in order to achieve a more adequate personality.
3.25.01.01	Ascertains the degree of acceptance one has among one's peer, academic, social, sex, and similar groups.
3.25.01.02	Assesses the limits of one's potential, in order to learn the extent of one's own capacities.
3.25.01.03	Examines one's tolerance for ambiguity, in order to discover the amount of regulation one requires in life and the environment.
3.25.01.04	Confronts the types of anxieties and types of fears one lives with in daily life, in order to achieve more effective behavior.
3.25.01.05	Determines the degree to which one is authentic in presenting one's personality and real self.
3.25.01.06	Assesses the degree of comfort and/or discomfort one finds in one's environment, in order to achieve satisfaction and stability.
3.25.01.07	Studies and examines the effects of the behavior of others upon oneself when choosing one's own behavior.
3.25.01.08	Understands and is able to use effectively the tools of communication.
3.25.01.09	Finds ways of dealing with conflict, in order that it does not incapacitate one's potential behavioral effectiveness.
3.25.01.10	Has the courage of one's convictions and presses them forward until change seems warranted.

the model program for candidate selection based on a career field with multientry points and paths through that career field.

The career field allows an individual to enter the profession at the lowest category level, and through experience and training, to advance as far as he is capable. This component is thus designed to satisfy the needs for increased quantity, quality, and utilization of teacher personnel.

The multientry points and paths provided in the model program are depicted in figure 1. Traditionally, the route to teaching has been a student graduating from high school and going directly through college and into teaching. This path is maintained and improved in this model. However, the model proposes, as an alternative, that the student be allowed to enter teaching directly from high school as an aide, attend college on a part-time basis, advance to teaching assistant, become a teacher, and finally move on to become a specialist. A third route is for noneducation majors to enter as aides or as teaching assistants and complete their professional training.

The paths for student admission sequence are depicted in figure 2.

Table 4 lists measures used for candidate selection. The model does not propose to reduce the number of students in the teacher preparation program; rather, it offers these measures as a basis for developing predictors of success. Until their value is established, there are several ways of adapting them to individual situations as suggested in part 2 of the Final Report.

INSTRUCTIONAL COMPONENTS

This description of the model's instructional components first concerns itself with the general aspects of the components, then specifically with the professional preservice component, relationships of the professional and the academic components in the preservice component and the inservice component.

General Aspects of the Instructional Components

Instruction is generally concerned with all teaching-learning aspects of the model including learning activities and materials, and procedures and program sequence. Detailed specifications for instruction are included in parts 4 and 5 of the Final Report.[4]

The specifications for learning activities and materials require that all learning activities directly relate to teacher performance behaviors and utilize what is called a proficiency module (PM) as a vehicle for the presentation of learning activities and materials of instruction.

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[4] Ibid., GPO: pp. 165-91; ED: pp. IV 1-V 45.

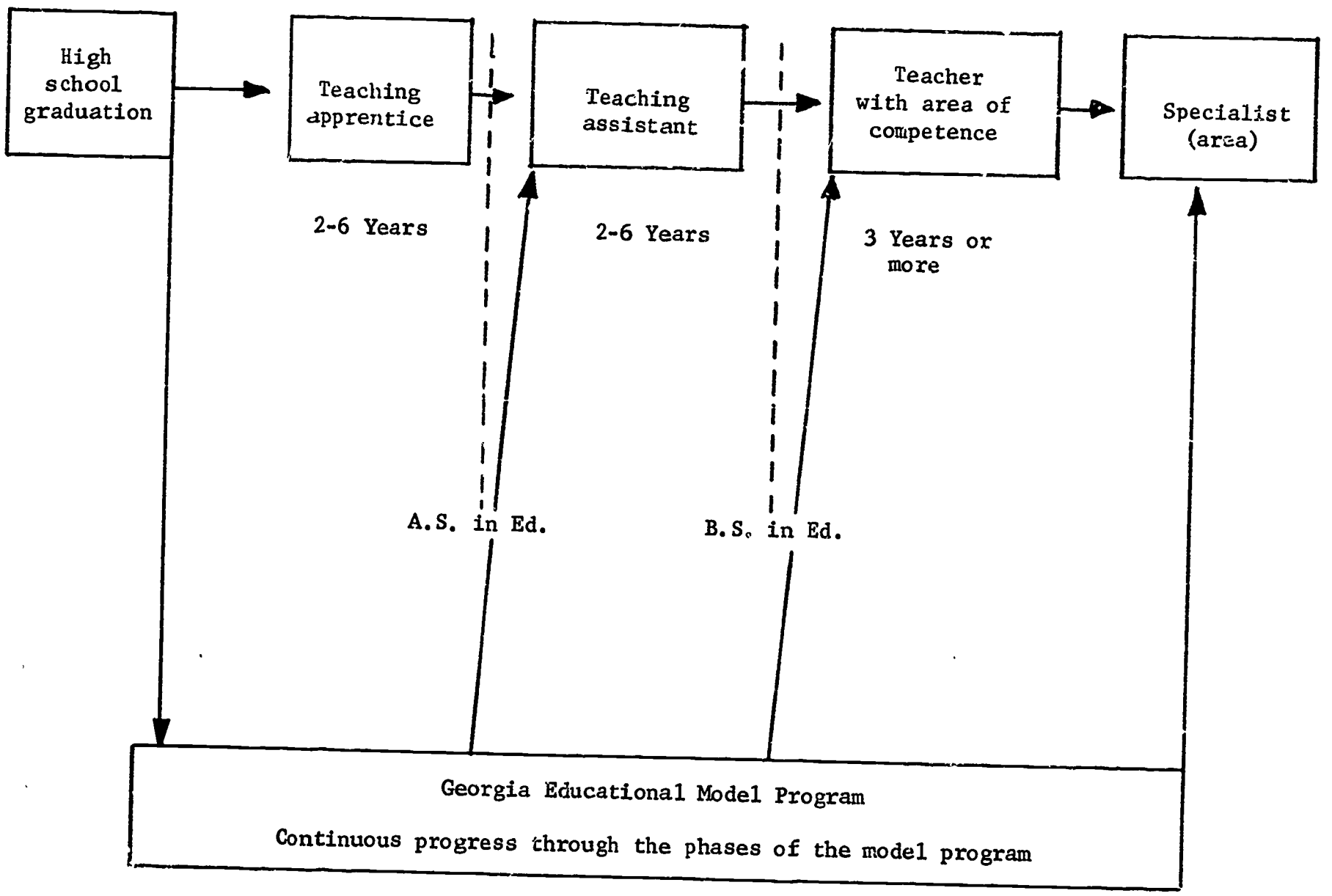

FIGURE 1

PATHS IN THE TEACHER CAREER FIELD

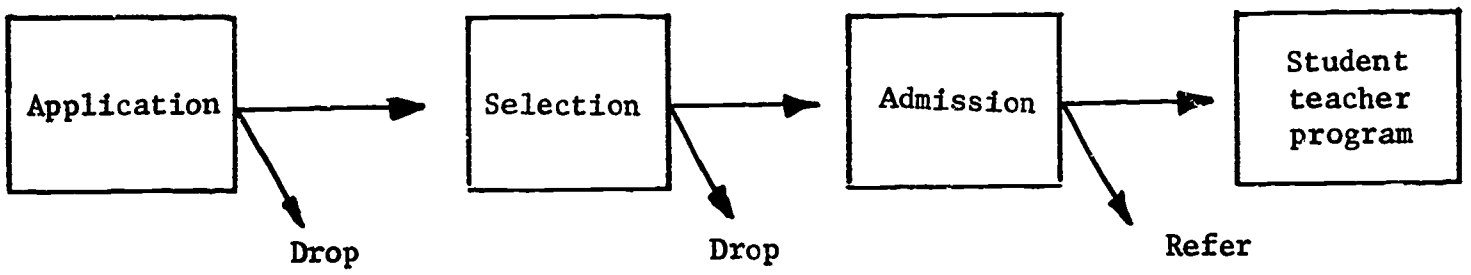

FIGURE 2

STUDENT ADMISSION SEQUENCE

TABLE IV

SCORES REQUIRED FOR ADMISSION

Personnel category	Qualitative (e.g., SCAT)	Quantitative (e.g., SCAT)	Interest (strong for teaching area)	Biographical information blank	Personality schedule (e.g., Edwards's)	School achievement
Teacher apprentice	500		B	*	*	▲ 50th percentile in high school ▼
Teacher assistant	500		B	*	*	
Teacher (area competent)						
Language arts	500		B+	*	*	
Mathematics	500	500	B+	*	*	
Social science	500		B+	*	*	
Science	500	500	B+	*	*	
Art	500		B+	*	*	
Music	500		B+	*	*	
Foreign language	500		B+	*	*	
Physical education	500		B+	*	*	
Specialist	(GRE)	(GRE)	(GRE Ad. Test)			
Reading	500		500			
Mathematics	500	500	500			
Social science	500		500			
Science	500	500	500			
Art	500		500			
Music	500		500			
Physical education	500		500			
Guidance	500	500	500			

*Any significant deviation from normal will be cause for interview by psychologist.

A PM is an instrument which organizes various sizes, kinds, and clusters of behaviors for instruction. It is defined as a manual of instructions (available from computers, published documents, or the student himself) designed to guide student learning through group interaction and individual study toward acquiring particular affective, psychomotor, and cognitive learnings.

A PM contains activities which guide the student in learning thought processes such as those associated with problemsolving and creativity, aid him in acquiring skills such as those needed for effective social interaction or those needed in performing scientific experiments, and provide him with attitudes such as those essential for working with atypical children or participating in programs of curriculum change.

The core of the PM, insofar as the student is concerned, is a series of learning tasks or activities. These tasks are adaptable to individual differences among students in such areas as the rate of learning, sensory, sensitivity, cognitive styles, interest, and previous experience.

As constructed in accordance with the specifications, PMs avoid unnecessary duplication of content and permit the student to move through the program at a pace which is comfortable and challenging to him.

Instruction is both clinical and individualized in the model program. Figure 3 is the diagram of specifications for the sequence of events required for the utilization of a PM and illustrates its clinical and individualized features.

Before undertaking a PM, the student must provide his instructor with evidence that he has satisfactorily met the prerequisites for doing so. The student is then required to perform the pretest which is developed from sampling of the behaviors which the PM is designed to help him acquire. In conference with his adviser, the PM pretest is analyzed and a mutually agreed upon plan of action is prepared. It may be decided that his performance on the pretest indicated that there was no need for him to undertake the learning tasks contained in this particular PM. On the other hand, it may be decided that particular learning tasks in the PM should be carried out. A third possibility is that the student propose his own objectives and learning activities.

If their activities are found to be in keeping with the program goals, they are approved by the adviser. Another alternative, after analysis, is the referral of the student to a remedial clinic should a serious disability or deficiency become evident. This clinical and individualized instructional procedure is continuous throughout each phase of the model program.

It should be understood by the reader that the term test, as used in the previous paragraph, does not mean solely a pencil-and-paper or computerized test. It is broadly inclusive of all aspects of student performance such as thought processes, skills, and attitudes as well as accumulated knowledge.

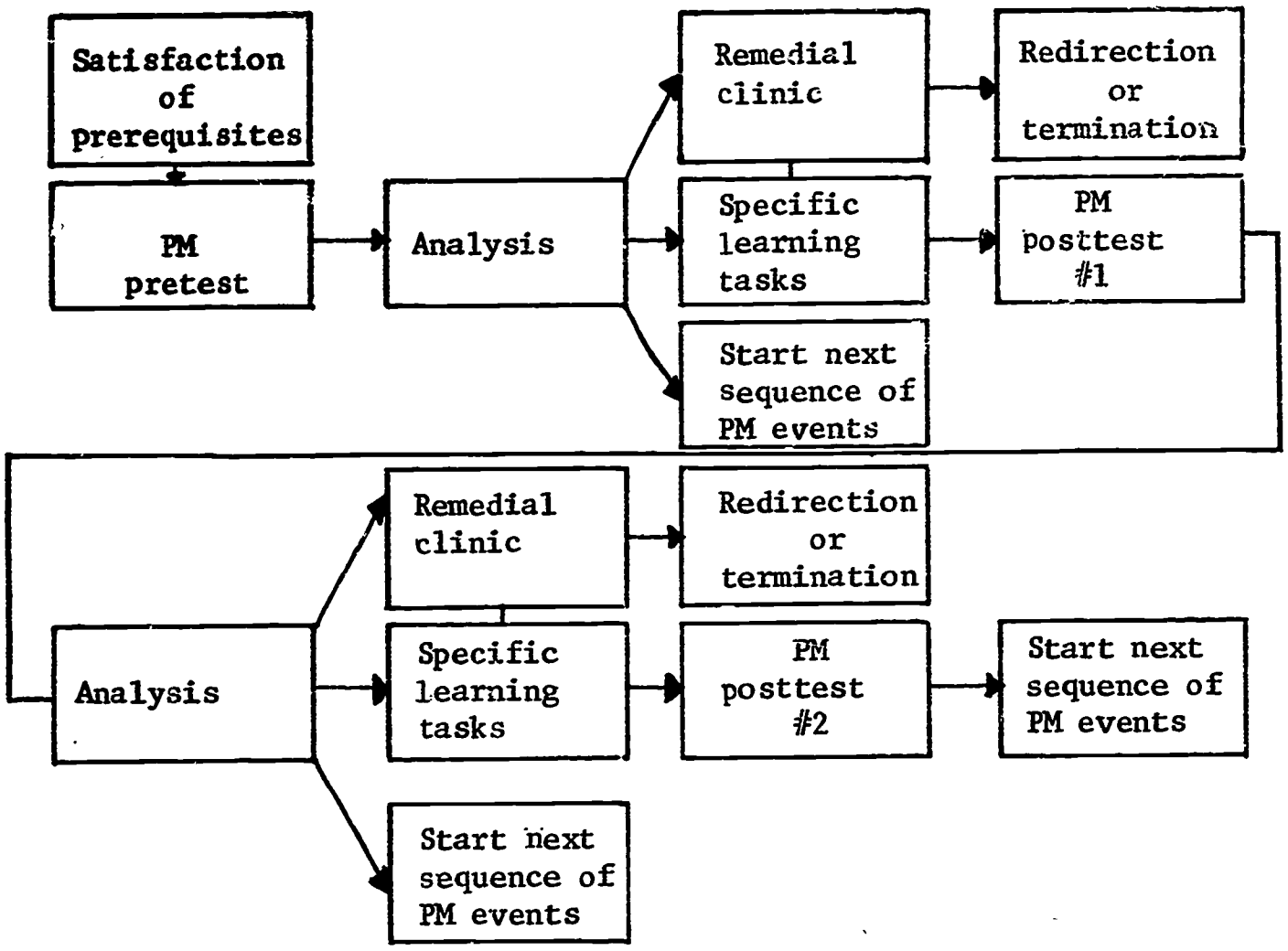

FIGURE 3

DIAGRAM OF SPECIFICATIONS FOR SEQUENCE OF EVENTS

DESIGNED TO INDIVIDUALIZE INSTRUCTION

The model program, including both the preservice and inservice components, is divided into three phases. The first, which is called the preprofessional phase, is roughly the time equivalent of the first two years of the traditional undergraduate program and provides the student with the beginnings of a liberal education, preparation for paraprofessional service as a teaching assistant, and the associate's degree. The second is called the professional phase. It is roughly the time equivalent of the junior and senior years of a conventional preservice program and prepares the candidate for professional service as a general elementary teacher, completes the liberal education requirements, provides a teaching area of competency, satisfies the requirements for the bachelor's degree, and provides the prerequisites for admission to the specialist program. The specialist phase of the model program is approximately the time equivalent of two years of graduate work and provides the candidate with the specialist degree in one of 15 areas of specialization.

The student progresses through the program by satisfying the requirements of the performance behaviors specified in the structure of the PMs. All PMs are classified into types and blocks. The term "types" refers to classes of PMs which group themselves around common functional relationships, such as basic PMs required for all students in the preprofessional program or PMs require of all students enrolled for a particular teaching area of competency. The term "blocks" refers to clusters of PMs which are designated to be taken in sequence. For example, there are six PM blocks in the preprofessional program and 10 PM blocks in the professional program. The student is normally expected to meet the level of proficiency required in all of the PMs of any one block before he moves on to the next. (See the Final Report.[5])

Specific Aspects of the Instructional Components

Professional Preservice Component. The preservice program consists of the preprofessional and the professional phases. Detailed specifications for content and sequence of content for these two phases are in the Final Report.[6]

As the professional content of these two phases, approximately 10 to 20 percent of the emphases of the preprofessional phase and 45 to 50 percent of the emphasis of the professional phase is devoted to professional education; the remainder is devoted to liberal education.

Running continuously with the six PM blocks of the preprofessional phase is an education seminar which is concerned with the study of paraprofessional teaching activities and human growth and development. During the second and fifth blocks, the students are provided approximately six weeks (whatever is needed insofar as time is concerned) of supervised field laboratory experiences, carrying out paraprofessional activities in classroom situations. (See specification 5.01.09 in the Final Report.[7])

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[5] Ibid., GPO: pp. 203-208; ED: pp. V 20-25.

[6] Ibid., GPO: pp. 191-96, 203-07; ED: pp. V 8-13, V 20-24.

[7] Ibid., GPO: p. 193; ED: p. V 10.

The education seminars begun in the preprofessional phase are continued under different leadership and with different objectives during the professional phase as the students continue to pursue the individualized instruction provided by the PM. During this phase the student selects, from among the following, a teaching area of competency in which to concentrate approximately 30 percent of his total effort:

Language arts (reading).
Social sciences.
Natural sciences.
Mathematics.
Health education.
Music.
Art.
A modern foreign language.
Human development.

During each of three of the 10 PM blocks of the professional phase (two, four, and seven), the student is provided with approximately six weeks (whatever is needed) of laboratory experience in practical school settings. In addition, an internship of approximately 10 weeks is provided near the end of the sequence. (See specification 5.01.20 in the Final Report.[8])

For both phases of the model program, PMs in professional education provide for such procedures as microteaching, programed instruction, and training in social interaction.

Relationship of Professional Component to Academic Component. Throughout both phases of the preservice component, considerable attention is given to the academic or liberal education of the student. In the preprofessional phase, PMs are specified for English language arts, social studies, natural sciences, fine arts, mathematics, and health, safety, and physical education. In the professional phase, specifications require extentions of study in these areas plus PMs in the subject area of competency selected by the student. Specification 5.01.04[9] and specification 5.01.13[10] of the Final Report present diagrams of the distribution of emphasis among subject areas for each of these phases of the preservice program. Specific designation of PMs by types and area groups are found in specifications 5.02.19 and 5.02.20[11] of the Final Report. The organization of the program integrates liberal arts with the professional activities to the largest extent deemed feasible.

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[8] Ibid., GPO: p. 196; ED: p. V 13.

[9] Ibid., GPO: p. 192; ED: p. V 9.

[10] Ibid., GPO: p. 194; ED: p. V 11.

[11] Ibid., pp. 203-04; ED: pp. V 20-21.

Inservice Component. Detailed specifications for the specialist or inservice phase of the program are contained in the Final Report.[12]

The specialist or inservice program is regarded as graduate work to be undertaken after certification as a general elementary teacher as defined by the teacher performance specifications.

There are 15 areas of specialization provided in this phase of the program. Summary job descriptions are provided in appendix A of the Final Report.[13] The 15 areas are:

Language arts.
Social science
Natural science.
Mathematics.
Health education.
Art.
Music.
Foreign language.
Human development and learning.
Professional development.
Evaluation.
Instructional media.
Pupil personnel.
Curriculum and program planning.
School-community relations.

The specialist program is organized into three areas: training related to local conditions, instructional improvement and professional development, and specialization through exploration.

Training related to local conditions prepares the specialist teacher for optimum effectiveness in adapting to or modifying unique local conditions. (Those local conditions include school organization, socioeconomic level, and special instructional patterns.) This training is the responsibility of the local school district in cooperation with the adviser and the university specialists.

Instructional improvement and professional development in the specialist program provide for self-evaluation, study of new techniques of instruction, and continued general development as a professional educator. Activities in this area are essentially individual in origin and utilize resources provided by both the local school district and the university.

PMs for specialization and exploration are provided to continually increase the competence and effectiveness of the teacher. A portion of these PMs are required of all as a common core. Others are sequentially arranged to give breadth and depth in a selected area, and still others provide flexibility for exploration. These PMs are carried out in cooperation with either the adviser or local school district supervision.

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[12]Ibid., GPO: pp. 196-97, 203-04; ED: pp. V 13-14, 20-21.

[13]Ibid., GPO: pp. 231-22; ED: pp. A 16-20.

Figures 4 and 5 diagrammatically describe the study sequence and distribution of emphasis among areas of study in the inservice or specialist program. The figures are taken from the Final Report.[14]

FACULTY REQUIREMENTS AND STAFF UTILIZATION

Specifications for faculty requirements, staff utilization, general orientation of personnel to the goals and objectives of the model program, and the more intensive orientation of the project staff charged with the responsibility of developing, implementing, and operating the model program are contained in part 5 of the Final Report.[15]

These specifications require continuous public relations activities and an initial lengthy period of seminars, conferences, and workshops with personnel from all institutions, colleges, schools, and departments involved in the training of elementary school teachers. In addition, it is required that the staff responsible for developing and implementing the model program (including the development of the learning materials) be the key staff for carrying the model program into sustained operation.

Also, since it is required that program evaluation review techniques be employed in maintaining the model program, provision is made during orientation for inservice education of personnel, who are engaged in designing and carrying out management activities, to acquire an understanding and skill in the use of these techniques.

As regards the personal characteristics of the persons who are to work with the project, they must evidence enthusiastic endorsement of the program, its objectives and goals, and the system for implementation, as well as a realization of the total demands which will be made of them in terms of time and effort. Also, they must be willing to submit themselves to a study of those essential features of the program requirements with which they may be initially unfamiliar. For example, a professor of English literature may not be familiar with what is regarded by specialists in learning as the most effective means for developing learning activities designed to satisfy performance specifications of an affective nature. If so, the professor must be willing to acquire knowledge of this sort and the skills which it requires before he is regarded as a productive member of the staff.

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[14] Ibid., GPO: p. 198; ED: p. V 15.

[15] Ibid., GPO: p. 185-228; ED: pp. V 1-45.

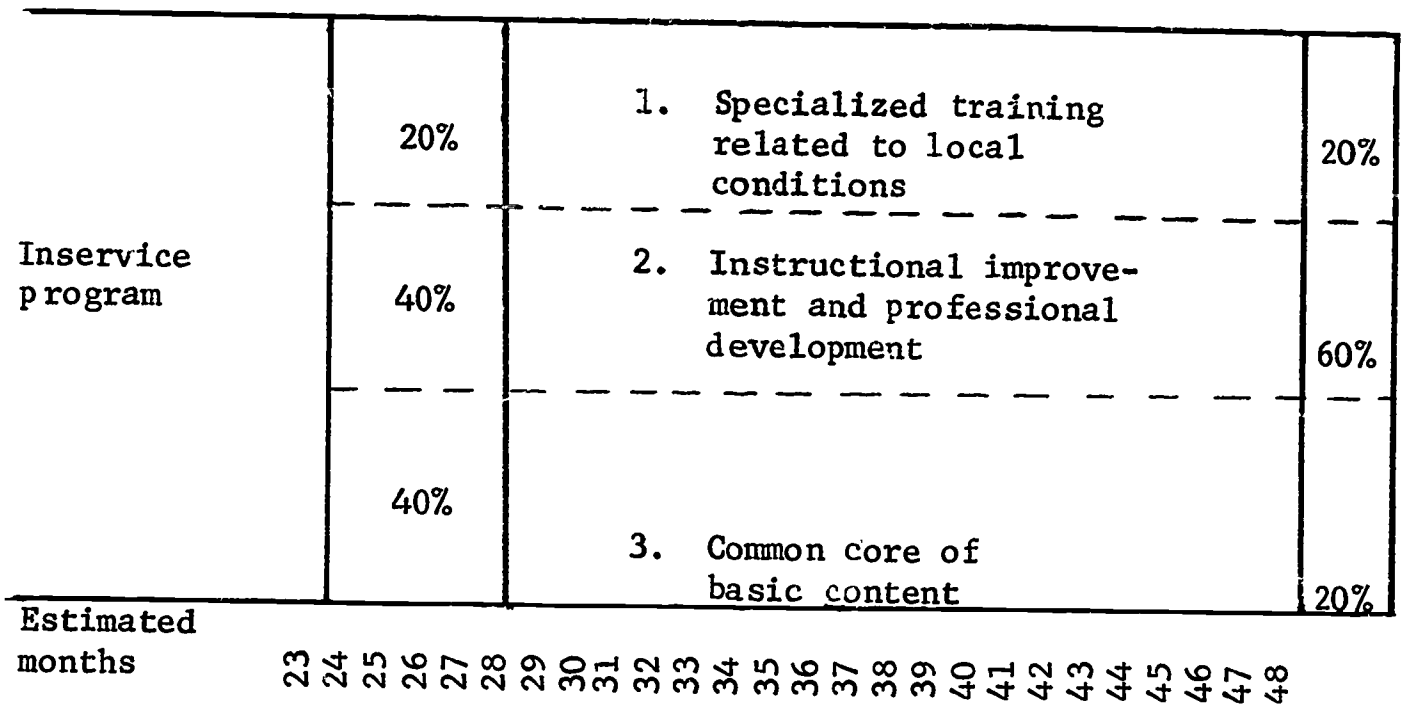

FIGURE 4

DIAGRAM OF SPECIFICATIONS FOR STUDY SEQUENCE FOR SPECIALIST'S PROGRAM

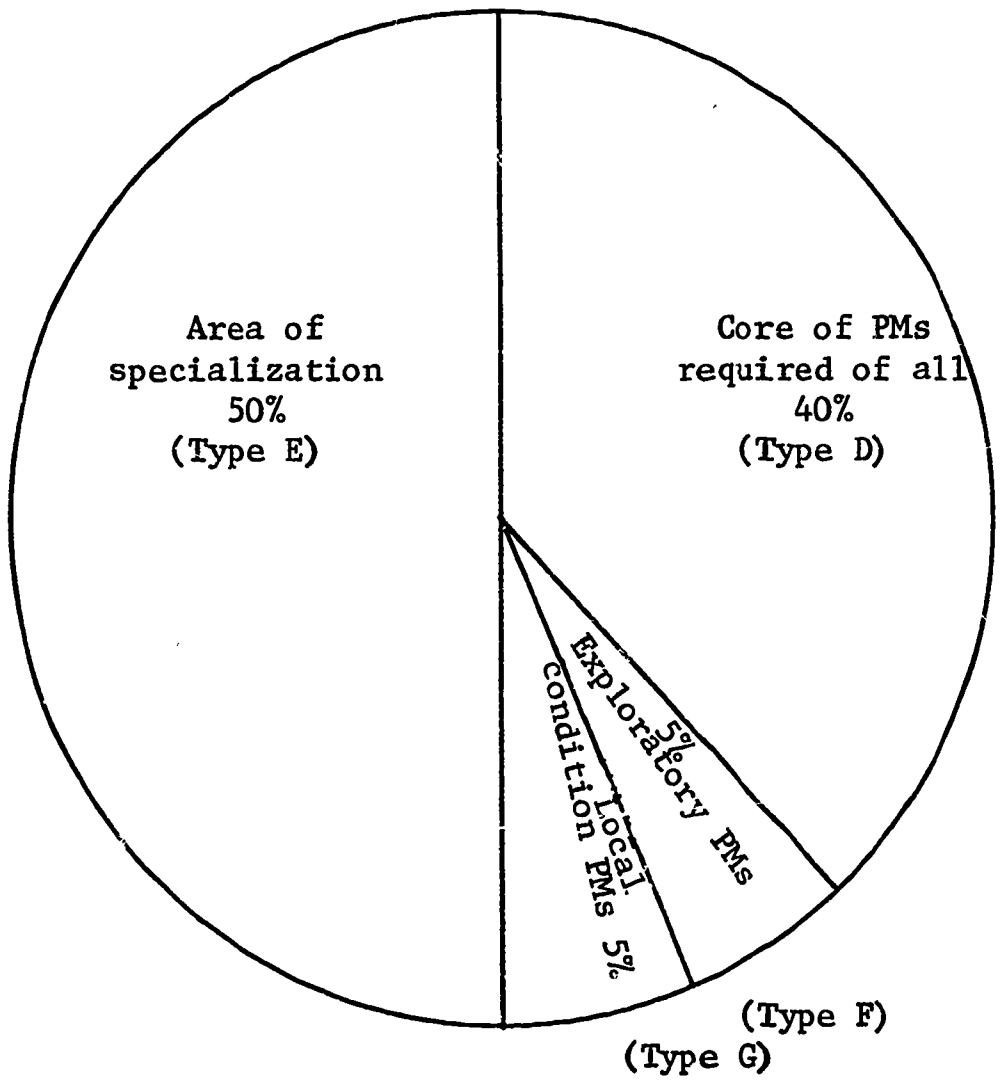

FIGURE 5

DIAGRAM OF SPECIFICATIONS FOR DISTRIBUTION OF EMPHASIS AMONG AREAS FOR STUDY IN SPECIALIST'S PROGRAM

EVALUATION COMPONENT

Specifications for evaluation are contained in part 4 of the Final Report.[16] In general, evaluation data includes that which was obtained from selection of candidates, examination of students before and after instruction, followup evaluation procedures, and cost effectiveness efforts. The characteristics of the model program in regard to the relationship of evaluation to candidate selection have already been summarized. The description set forth here is concerned primarily with the evaluation of student achievement, progress review including followup, data processing, and cost effectiveness.

Evaluation of Student Achievement

The preceding discussion of instructional procedures, which discussed the clinical and individualized aspects of the pre- and inservice model program pointed out that each individual's program would be personalized to the extent that his special capabilities and accumulation of knowledges, skills, and attitudes (as well as his objectives) would be taken into account in prescribing his instructional program.

In the component of instruction, the evaluation of student achievement is carried out primarily with the pre- and posttests which are the integral parts of all PMs. The procedures by which these pre- and posttests are constructed begin with categorized subsets of behaviors. The nature of the evaluation instruments is therefore dependent upon the behaviors to be evaluated. For this reason a variety of evaluation devices will be required. Acquisition of subject matter (facts, definitions, and concepts) will be evaluated with such instruments as objective tests, through such media as paper-pencil tests, or computer consoles. Evaluation of the cognitive processes will employ such means as written (structured and unstructured) essays and problemsolving situations.

Skill evaluation will be accomplished through observations and through the appraisal of the products of effort, while attitudes and values will require self-evaluation scales and observational techniques.

To illustrate the procedures specified for the model program, an achievement test guide for a module in tests and measurements is illustrated in table 5. The objective is placed in the first column and supporting content in the second. Processes of measurement are indicated in the next column where category headings are those of the cognitive domain. Were it an attitude or value scale, the category headings would be those of the affective domain. A performance measure categorizes the skill domain. The number in each cell represents the amount of emphasis given to that topic and the process to be employed. Measures prepared in this manner are used in each module of the model program.

The results of each test are transcribed on tapes for entry into the computer. The objectives and supporting items are coded numerically. When

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[16] Ibid., GPO: pp. 165-84; ED: pp. IV 1-20.

TABLE V

EDUCATIONAL TEST MODULE GUIDE

The student accomplishes the following objectives:	Supporting content	Process used in measurement					
		Recall	Comprehension	Application	Analysis/ synthesis	Evaluation	Total no. of items
Learns a brief historical background of educational measurement	Work of Wundt, Galton, Cattell, and Binet. Measurement in for periods since 1900	3					3
Acquires a brief overview of measurement	Evaluation and measurement, observational techniques, functions measured, individual differences	4					4
Develops an understanding of teacher-made tests	Objectives, processes, content, item types, scoring, characteristics	1	2	2			5
Writes test items	Multiple choice, essay, true-false, matching	1	1	1	1	1	5
Administers the test	Directions, timing, key, reproduction of test, scoring	1	1	1		2	5
Interprets the test	Frequency distribution, mean, mode, median, histogram, standard deviation, correlation		1	1	2	1	5
Prepares and presents normative data	Descriptive statistics, percentiles, standard scores, profiles	1	1	1	2	1	6
Acquires an understanding of desired test characteristics	Reliability, objectivity, practicality, criterion, validity		1	1	2	2	6
Gains experience in finding test information	Sources, types of information, test evaluation procedures		1	1		3	5
		11	8	8	7	10	44

a student is measured to determine his mastery, the code number of the objective is entered and the computer displays appropriate items selected randomly from the category. The computer is programed to tabulate the student's responses and the item characteristics. When the student completes his test, the computer indicates his achievement in standard scores.

Additional devices and/or procedures specified for use in the evaluation component are: standard tasks, teaching performance guides, products of performance, and related criterion measures.

Standard Tasks. Standard tasks are relatively independent performances which are administered at the close of each PM block. They are represented by a number of separate instruments which relate to performances required of all students and inservice teachers at the close of each particular block of PMs. The student or teacher is required to carry on an activity under the supervision of a qualified observer who rates the student on a scale as he carries out the activity. These designated activities are derived from the set of teacher performance behaviors which are of particular concern in developing the learning activities contained in the PMs within the block. Standard tasks are required in all areas of study (i.e., language arts, social science, natural science, art, health education) as well as paraprofessional, professional, and specialist areas of study and performance.

The standard tasks are appraised by whatever techniques are deemed appropriate. For certain tasks, such as preparing a training aid, there are end products to evaluate. Other tasks follow routine procedures and can be evaluated by a check list, such as the tasks of cataloging and filing materials. Some standardized tasks can be checked for accuracy; for example, measuring height and weight and scoring routine pupil work assignments. Other tasks require ratings.

Teaching Performance Guides. Teaching performance guides evaluate teaching skills which are comprehensive in nature and directly related to the student's or teacher's performance in a teaching-learning situation. The skills involve organizing acts into sequence, establishing sequences into procedures, and selecting procedures and materials to achieve objectives of a given system. These instruments are administered through observation of the student or inservice teacher working with pupils near the close of each practical laboratory experience, near the end of the internship, and near the end of the specialist phase of the program.

Specifications require that performance guides employ microteaching procedures. After the student "performs," the student and supervisor play back the video tape recording immediately. In conference, the supervisor and student examine the performance to find opportunities for significant learnings which the student did and did not treat adequately.

Products of Performance. The assessment of the products of performance is used wherever applicable to obtain evidence for evaluating a standard task and for obtaining evidence from the more comprehensive teacher performance tests. Examples of products of performance are a composition, a poem, a

comparison of two theoretical viewpoints, a speech, a painting, a musical composition, a lesson plan, or a diagnosis of the background regarding learning of an underprivileged child.

Related Criterion Measures. Certain factors in the teaching environment were regarded as highly important in providing a broad evaluative base for teaching success. Thus, an evaluation subsystem was structured to include related criterion measures including pupil achievement, parental attitudes, peer ratings, supervisory ratings, and videotape observations of teacher performance for evaluative purposes.

Achievement of pupils involves such conventional measures as elementary school achievement batteries. A parental attitude scale measures the parent's attitude toward the goals and objectives of the system. Peer ratings are appraised by inventories of what the teacher's contemporaries think of his effectiveness as a teacher. Supervisory ratings are obtained on check lists which reveal the supervisor's judgment of the teacher's effectiveness and proficiency in performing assigned tasks. The videotape of the teacher performance is evaluated and scored in a fashion similar to that described in the aforementioned microteaching technique.

Progress Review

After the student's progress has been appraised, the adviser normally advances the student into the next block or phase of the program. However, in the event of unsatisfactory progress, the student may be advised to enter teaching in a paraprofessional category or transfer to another program. If the student requires time to remove a deficiency, the paraprofessional route may be recommended or the student may be dropped from the program.

Progress review points and possible routes are depicted in figure 6. It should be noted that the final block represents a period of followup evaluation designed not only to determine the extent to which the student was successful as a teacher, but also to evaluate the instructional program itself. In other words, the evaluative procedures and devices described in this report will be used to collect data which will reveal strengths and weaknesses in the program, so that continuous improvement of the model becomes a continuing feature.

Data Processing

The data obtained by administering the various measures in the selection, training, and criterion programs are analyzed to determine if the objectives are achieved and to define effectiveness of the various subsystems. The analysis includes such statistics as normative data, item analysis, reliability, analysis of variance, correlational analysis, factor analysis, cost effectiveness, and validity.

Data processing requirements are considered prior to implementation. One of the major requirements is that the data be numerical or coded in numerical form. Another consideration involves the routine of substituting scanner sheets for traditional answer sheets in all measures: (1) selection,

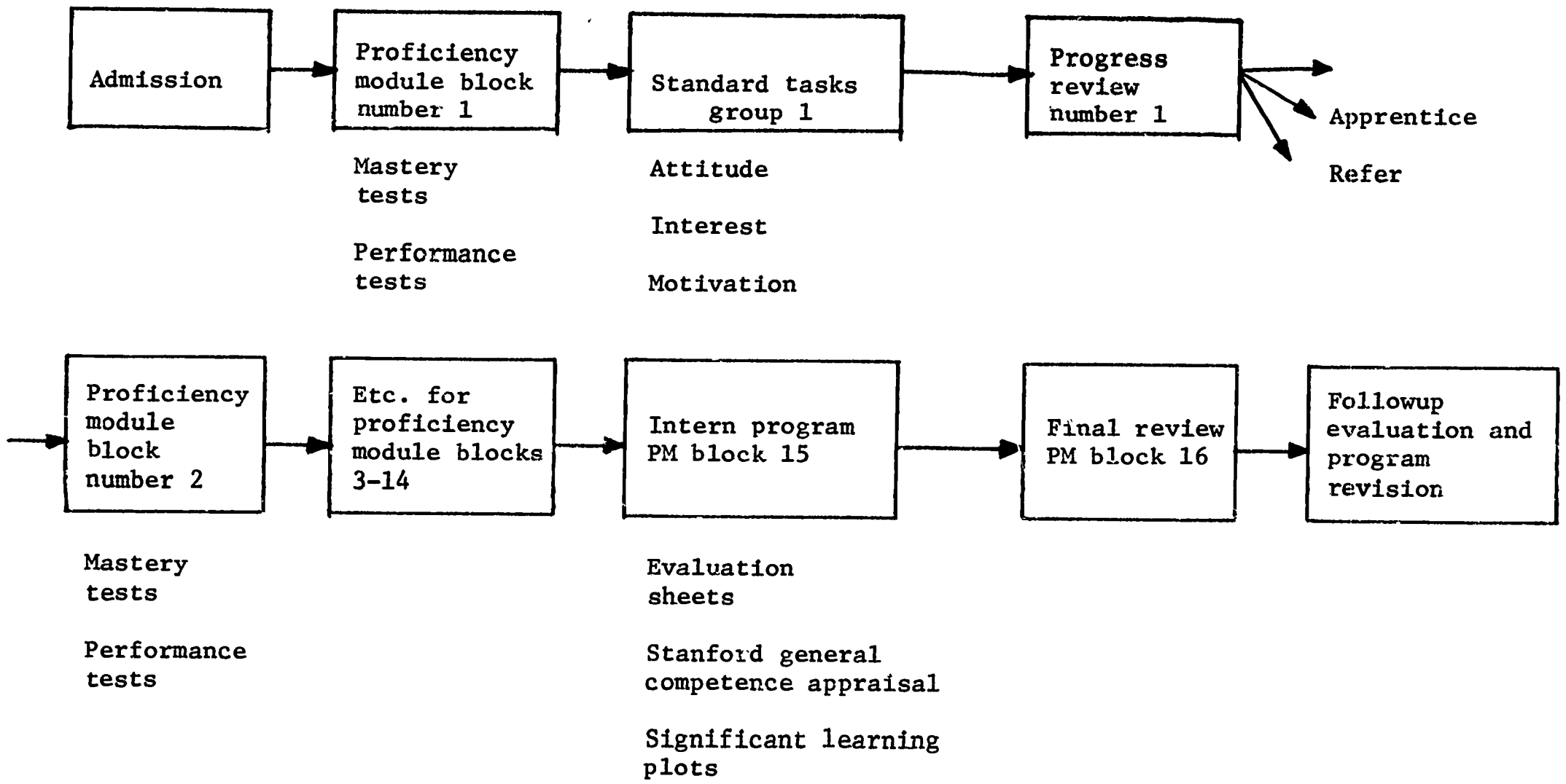

FIGURE 6

APPRENTICE TEACHER PROGRESS REVIEW

(2) training, and (3) criterion. The student responses on scanner sheets are automatically punched on cards. For example, the IBM 1232 Optical Reader transcribes at the rate of 1,000 cards per hour.

After the information is on a card deck, it is transferred to tape storage with the use of a reader, such as the IBM 1052. In the model program, a remote 1052 in the college of education calls a program from the data cell of the IBM 360 Computer. The data processed by the combination provides such information as:

1. Item difficulty.
2. Internal consistency.
3. Means.
4. Standard deviation.
5. Reliability.

This information is made available either on a televiewer or on microfiche.

The information placed in tape storage is available whenever a set of data becomes complete. An appropriate analysis of the complete data is run, utilizing programs such as the Biomedical Computer Programs, e.g., BMD06M, (Dickson, 1965). A complete library of BMDs is available for such operations as multivariate analysis, regressional analysis, canonical correlations, and the like. A statistical analysis of this type indicates the weight to be given to each functional selection, training, and criterion measure.

Cost Effectiveness

In the search of educational technological resources, the availability of materials, aids, methods, and techniques appears to be endless. The funds available for education are limited. The task is to select the resources which serve our purpose best; cost effectiveness is one such criterion. The method employed is an adaptation of the Abt Associates Model (Abt, 1967) with the cost normally fixed by the school budget. Certain student information regarding effectiveness is readily available, for example: attendance, achievement, and dropouts. Other information is unavailable or difficult to obtain, for example: equality of educational opportunity, change in attitude, and adjustment to changing conditions. The effectiveness of a model varies with the community setting and personnel. Thus, the results of a cost effectiveness analysis might differ with implementors.

In the model program there are two major subsystems to consider in cost effectiveness, the teacher education program and the elementary school program. The specifications are for the student who is to become the teacher; however, the teacher, in turn, is measured by the improvement in achievement of the elementary pupil. Thus, the cost effectiveness study includes the entire system.

PROGRAM MANAGEMENT

Specifications for program management and the administrative organization of the model program are included in part 5 of the Final Report.[17]

They are centered on the assumption that the model program functions should be the basis for determining the administrative organization that will implement and sustain the program. Persons who have achieved professorial status for their high level of academic or professional competency will focus their attention on their areas of specialization. Persons with managerial skills will be employed for nonprofessional activities.

The diagram of specifications for basic administration (see figure 7) designates the dean of the college of education as the head administrator. He works with a committee of executives drawn from all colleges responsible for the education of pre- and inservice education of elementary teachers, superintendents of school districts, representatives of other participating universities and colleges, and representatives of the state department concerned with education. The director of teacher education--elementary is the chief of the program. Under his direction are three directors of professorial status and one manager. The directors are of program evaluation, project evaluation, and instructional units. The manager's title is manager of student program advisement services.

The director of program evaluation is concerned with the entire evaluation system within the on-going program including the long-term followup evaluation, while the director of project evaluation is an "outside" observer who has no operational responsibilities of direct involvement in the program. He is responsible for establishing and coordinating the work of a panel of outside consultants who will evaluate the operation of the various components of the program and provide evaluative data to all concerned.

The director of instruction has direct responsiblity for the curriculum structure, and with the help of his staff, supervises the separate instructional units. The manager of student advisement is familiar with program requirements for admission, program sequences, transitional and terminal degree programs, and with the general rules and policies of the institution. He supervises the work of three coordinators (managers), one for each phase of the model: preprofessional, professional, and specialist, who facilitate the work of the adviser and instructors.

Each of the various instructional units (groups a, b, c, and d in figure 7) has an advisory board, director, manager of instructional unit, and three associate managers in charge of various services such as clinics, instructional unit laboratories, laboratory experiences, and group interaction learning experiences. The instructors of the instructional units report directly to the director of the instructional unit, but their work is facilitated by the managers.

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[17] Ibid., GPO: pp. 210--22; ED: pp. V 27-39.

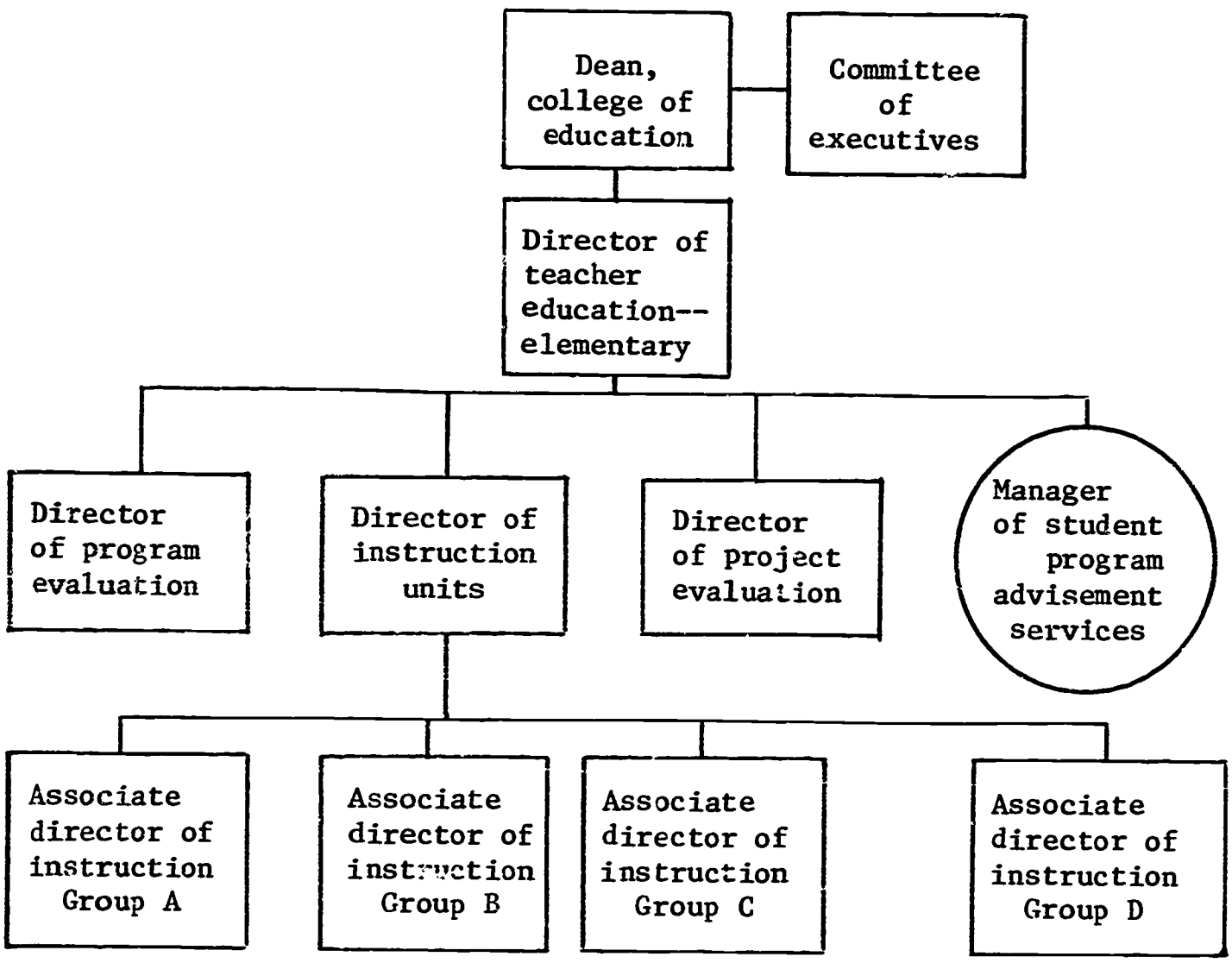

FIGURE 7

DIAGRAM OF SPECIFICATIONS FOR BASIC ADMINISTRATIVE ORGANIZATION

OTHER FEATURES OF THE MODEL PROGRAM

There are special features of this model program which are not directly evident from the summary of specifications presented thus far. These features include: laboratory experiences, student orientation and advisory program, reciprocal commitments, year-round education, staggered registration, mastery criterion, and the teach-as-taught effect.

Laboratory Experiences

The model specifies the need for five kinds of laboratory facilities: (1) general resources laboratories which include facilities used by all students of universities, colleges, and schools, such as central libraries and computer instruction centers, (2) instructional units central resources laboratories which house and provide all learning materials and equipment essential for undertaking of PMs with particular areas and which are not readily or conveniently available in general laboratories, (3) instructional unit field laboratories which provide field facilities as needed, (4) clinics in which remedial services are provided when required, and (5) instructional unit interaction laboratories which arrange for such activities as special lectures, seminars, workshops, and recitals. Specifications for laboratory facilities and experiences are found in the Final Report.[18]

Student Orientation and Advisory Program

To maintain the student's security and need for social interaction as he moves at his own rate through the program, specifications call for a comprehensive orientation and student advisory program. Among other activities, program advisers must hold planned seminars weekly with advisee groups which are relatively stable in membership to discuss education problems of general and professional concern which are not likely to be covered in PMs. Also, all program advisers are required to provide liberal office hours during which individual students may consult with them on matters which are not of general interest during the regularly scheduled meetings. In this way, although the student finds himself interacting with one group one day and another the next, he maintains a home base where he is able to express himself comfortably in a group situation in which he has established social identity.

Reciprocal Commitments

Although specifications for the model program provide for reciprocal commitments, they are not adequately stressed in the Final Report, and opportunity is taken here to give more emphasis to this requirement. The model program must involve numerous local and state agencies for effective development, implementation, and sustained operation. This requires that city and county elementary school districts cooperatively participate in the training of elementary school teachers by providing exchange personnel such as coordinators, supervisors, principals, and classroom teachers to work with the model program on a shared basis. They would serve as instructors or program development specialists as they concurrently assume parttime

[18] Ibid., GPO: pp. 194-95, 222-25; ED: pp. V 11-12, V 39-42.

roles for the specialties in their local school systems. Also, these school systems would provide materials, laboratory settings, opportunities for paraprofessional employment of the students as aides or assistant teachers, and recommendation and/or sponsorship of certain students for special training. In addition, they would open the doors of their curriculum libraries and elementary school classrooms for study, reference materials, elementary school learning materials, and for such activities as observation, paraprofessional participation, supervised teaching, field studies, and demonstrations.

As for state organization involvement, commitments would be made by the regents of the university system for awarding degrees and by the state department of education for awarding teaching certificates. Also, it is required that reciprocal agreements be made to provide cooperative working relationships with the junior colleges of the state and with other interested colleges and universities. These agreements would parallel the preprofessional phase of the program in those institutions where lower division students would enter the model sequence in what has traditionally been called the "junior year."

It is also specified that agreements be made with research and development centers, regional laboratories, and other such units which are concerned with early childhood education, education of the culturally disadvantaged, education of nonEnglish-speaking children, and elementary education, and would share their research findings, programs, and facilities to the mutual advantage of these organizations and the model program operation.

As for reciprocal commitments with the project staff, the specifications call for early and explicit arrangements on authorship rights and royalties, since it is likely that eventually the learning materials produced during the development phase of the project will be published for wider distribution than the local campus. Early decisions regarding this type of commitment are likely to serve as motivating factors to staff members.

Year-round Education

The model program encourages institutions of higher learning to be operative 12 months a year. With this program there is no reason for semesters, quarters, summer vacations, or spring recesses. Such a plan obviously provides for more continuous use of the student's time. It could also provide for increased utilization of the professorial staff, many of whom are "vacationed" three months of the year. Similarly, physical facilities and materials which are partially used some of the time, and over-loaded at other times, might be provided more uniform attention with considerable savings.

Year-round education with individualized instruction provides for the conservation of human resources. For example, the capable student with limited financial assistance might well be able to keep his parttime job and continue learning activities through what are now lengthy vacation periods, and the student who loses six weeks through illness could resume

his responsibilities without the serious losses which are evident under the conventional semester or quarter system.

Staggered Registration

Each fall, winter, spring, and summer, long lines of students are seen on campuses across the nation waiting to enroll in colleges and universities. Thousands of students have to be registered, advised, enrolled, and accounted for all at once. They must be processed through dormitories, lunch rooms, clinics, book stores, and ticket desks. The efforts of all administrative, instructional, technical, and clerical personnel are extended long hours in preparation for the event. Technological equipment from pencils and typewriters to calculators and computers are all required on an overload basis.

The model program is designed to encourage the practice of staggered registration. That is, insofar as enrollment in the model elementary teacher preparation program is concerned, registration of beginning students could take place whenever a suitable number (for example, 25 to 30) were ready and facilities were available. This might be monthly. Thereafter, each student would enroll in the next PM block as soon as he had completed the prerequisites.

Mastery Criterion

At the core of the model program are behaviors which are categorized and sequenced. It is the acquisition of these behaviors that determines the student's success. This is in contrast to the conventional program in which success is often determined on the extent to which a given amount of knowledge is acquired in a given amount of time.

In the model program the student must acquire a defined level of mastery of any particular behavior before he is regarded as having the prerequisites to move on to the next. Thus, the model program encourages the disposition of letter grades, grade point averages, and other symbols of achievement which are based primarily on the extent of achievement within a given time period.

Teach-As-Taught Effect

In the past many teacher education programs have been subject to the criticism that their instructors have tacitly expressed the "teach-as-I-say, not-as-I-do" principle. In many institutions of higher learning, teachers inservice, as well as students in preservice preparation, have experienced a lock-step instruction, void of provision for individual differences and based upon time criteria with rewards in the form of symbols, while at the same time, they are taught to provide for individual differences, develop intrinsic motivation, and care for personality development of the children under their supervision. Despite the fact that many (perhaps most) of these elementary school teachers endorsed the principles of sound educational procedures presented to them, relatively few were, on the basis of their experiences, able to invent and devise sufficient techniques to implement the beliefs they endorsed. Thus, many eventually retreated to teaching as they were taught.

SUMMARY

Since the model is designed on the very principles of instruction that are common to an exemplary elementary school program of instruction, it is anticipated that as these teachers take their places in educational practices upon completion of the model program, they, too, will teach-as-they-were taught. However, they will have learned, first-hand, the techniques to implement their beliefs.

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THE UNIVERSITY OF TOLEDO

A Guide
to

EDUCATIONAL SPECIFICATIONS FOR A COMPREHENSIVE ELEMENTARY TEACHER EDUCATION PROGRAM

by

William Wiersma

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THE UNIVERSITY OF TOLEDO

OVERVIEW

The task of developing specifications for the elementary teacher education model was conducted by a consortium of the 12 state-supported universities of Ohio. Educational agencies outside of the state of Ohio also contributed to the task. Most noteworthy of these were the Research and Development (R&D) Center for Cognitive Learning at the University of Wisconsin and EVCO, a private consulting firm located in Albuquerque, N. M. A steering committee of approximately 20 educators was formed. The steering committee members were selected for their particular expertise or for the particular agency that they represented, for example, the public schools or the Department of Education of the state of Ohio.

PROGRAM GOALS AND RATIONALE

A general set of purposes upon which the specifications development was based was secured from a statement of goals prepared by the Pennsylvania State Board of Education in 1965. This statement, modified to fit the context of teacher education, was reviewed by the steering committee.

A major departure from traditional organization of teacher education program content was incorporated into the model by developing five contexts: instructional organization, educational technology, contemporary learning-process, societal factors, and research. A position paper was prepared for each context. The papers provided a base of expository information from which subcategories were identified. Contexts were divided into major subject areas; subject areas, into topics. A body of reference materials relating to each of the contexts was identified. Specifications, based on more than 2,000 behavioral objectives, were developed within the contexts and their subheadings. The specifications are oriented to the task, in behavioral terms, that the elementary school teacher of the 1970's and beyond will be required to perform.

The five contexts are based on the following assumptions:

1. Educational technology will play a substantial role in the development of teacher education programs in the decades ahead. This role of educational technology has heretofore not been adequately identified, but pressures both from within and without teacher education will increase its development.
2. The instructional organization of the elementary school will change markedly. In the model used, the instructional organization was the multiunit school as developed through the R&D Center at the University of Wisconsin. This emphasis on instructional organization was considered necessary in order to prepare adequately teachers for the elementary school of the future. A

detailed description of this school is found in the position paper dealing with instructional organization.[1]

3. The contemporary learning-teaching process needs a reevaluation and its orientation should be more toward behavioral outcomes.
4. A multicultural society, such as our present society, requires detailed consideration of societal factors in preparing the elementary teacher of the future.
5. Research in education in the past has not been adequately incorporated into teacher education programs, and if research is to make an adequate contribution to the improvement of education, research findings must be incorporated into teacher education programs.

Each assumption relates to a specific position paper or context. An elaboration of the importance of each context is provided in the Final Report in the early part of volume I, and the reader is referred to that volume for more detail.

SELECTION PROCEDURES

The specifications are directed toward six major target populations: preservice, preschool, and kindergarten; preservice elementary; inservice; administrative; college and university personnel; and supportive personnel. The selection procedures obviously are not the same for all target populations. The two preservice populations must meet the entrance requirements of the institution at which the program is being implemented. The other four populations have very minimal entrance requirements in terms of entering the specific programs. Their defined association with the educational process is, in essence, the only entrance requirement. For example, an inservice teacher who is presently teaching in an elementary school is eligible for a program preparing the individual for teaching in a multiunit school. However, entrance to a program does not guarantee the successful completion of the program. Progress toward meeting the behavioral objectives of the specifications will be continuously evaluated.

PROFESSIONAL PRESERVICE COMPONENT

The professional training of prospective teachers using the specifications developed in this model is based upon the content of the five position papers.

The training is very behaviorally oriented. Each specification, in addition to one or more behavioral objectives, contains suggested treatment, materials, and evaluation for meeting the objectives. The treatments vary considerably, ranging from traditional type of instruction to

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[1]George E. Dickson and others, Educational Specifications for a Comprehensive Elementary Teacher Education Program, Final Report, Vol. I (Washington, D.C.: Government Printing Office, 1969), pp. 24-76.

instruction heavily oriented toward the use of audio visual materials or simulation and other forms of technology. There is considerable emphasis upon team teaching not only in terms of the actual teaching in the elementary school, but also in terms of the training program. Specifications were developed dealing with the academic disciplines and skills such as reading, language arts, phonics, handwriting, health, etc. There is also considerable emphasis upon conducting research and development activities in the actual school setting and preparing for instruction in the multiunit school.

It should be noted that all specifications do not apply to all target populations. However, there is considerable overlap of specifications between the populations. Each specification has identified within it the one or more target populations to which it applies. Much of the content necessary for the preservice programs is also necessary for the inservice programs of teachers, administrators, and even college and university personnel, due simply to the fact that this content has not previously appeared in their training or experience. The entire professional training is oriented toward conducting an exemplary instructional program in the elementary school with considerable research and development activities as a part of such instruction. Professional training of elementary school personnel, especially the inservice populations, is based on the assumption of a role-differentiated profession. Intern and actual experiences in the elementary classroom are incorporated throughout the entire program. Within the profession, various roles such as master teacher, intern, unit leader, and principal are identified as are the necessary specifications for their professional preparation.

RELATIONSHIP OF PROFESSIONAL COMPONENT TO ACADEMIC COMPONENT

This model deals minimally with the relationship of professional content to academic content. The underlying assumption is that the training in the academic disciplines per se will be conducted by the colleges of arts and science or the like, according to their particular instructional patterns. The training for teaching in the various disciplines and skills will be a function of the college or school of education, and this particular training is covered in the specifications. This training for instruction comes under the context of instructional organization, under the specific topic called, "Academic Disciplines and Skills--Methodology." The Final Report has 62 specifications which deal with this topic.[2]

INSERVICE COMPONENT

The inservice component receives a great deal of attention in this particular model. This is necessary in order to utilize effectively present certified teachers in the elementary schools of the future. Many of

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[2]George E. Dickson and others, Educational Specifications for a Comprehensive Elementary Teacher Education Program, Final Report, Vol. II, (Washington, D.C.: Government Printing Office, 1969), pp. 21-70.

the specifications dealing with training for research and development activities also apply to the various inservice groups, not only teachers but administrators and college and university personnel. A rather large body of specifications applies to the target population of inservice teachers. However, it is not necessary to utilize all of these specifications in developing a particular inservice program. A procedure is developed and described by which selected specifications would be identified in order to meet the purposes of an inservice program with limited scope but with specific objectives. The identification of such specifications are referred to as "Composite Specifications for a Model Program." This process is described more fully in the Final Report. The process is based upon identifying a well defined set of goals and the target population to which these goals apply. The content of the specifications then describes operationally the program necessary to meet these goals. The various steps in order can be summarized in figure 1.

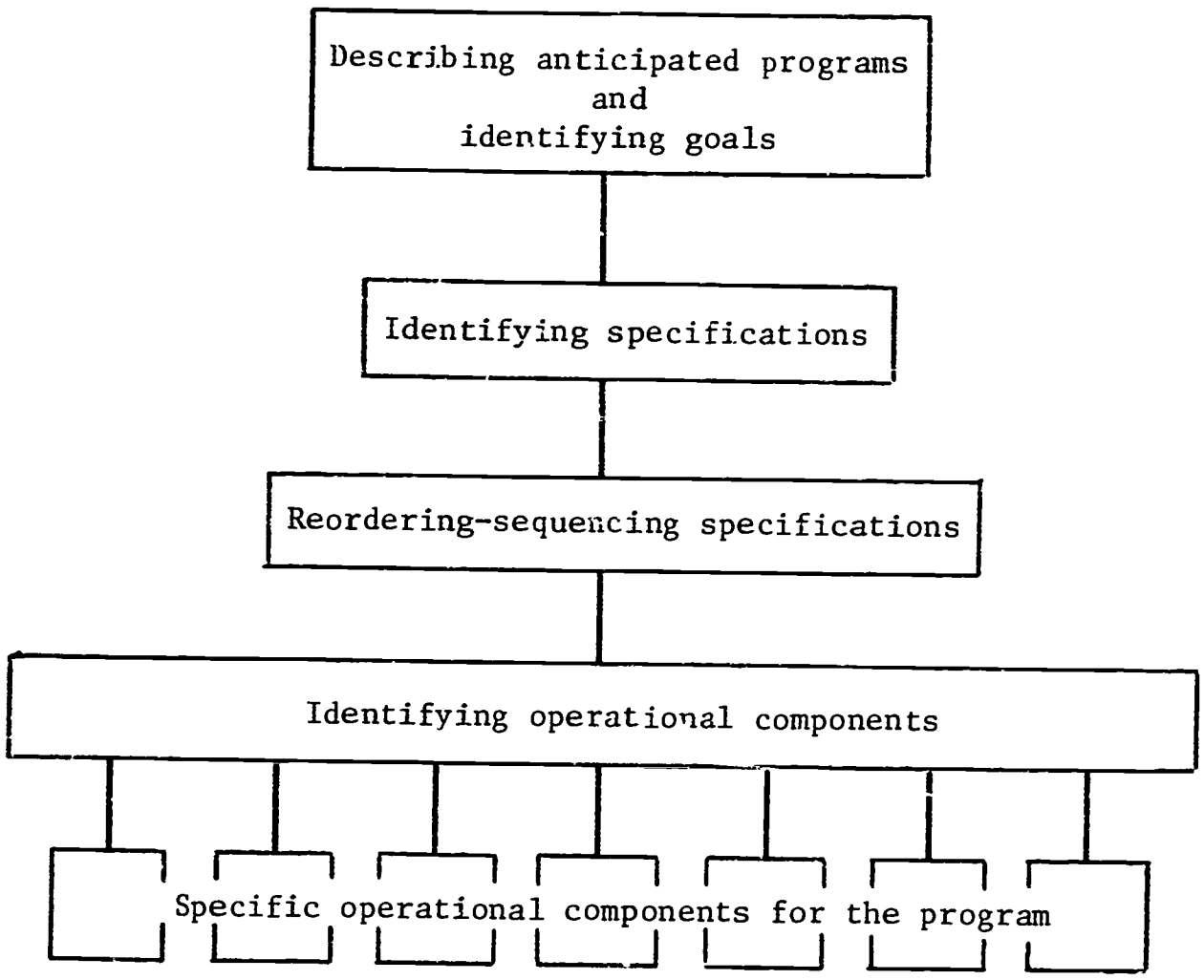

FIGURE 1

OPERATIONAL STEPS
IN PROGRAM DEVELOPMENT

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[3]Dickson, op. cit., Vol. I, pp. 137-38.

Specifications cover inservice programs for administrators as well as for prospective unit leaders and the regular classroom teacher. Inservice programs in all cases can be designed to meet the needs of a specific group. The model provides a necessary flexibility for future development of inservice programs as undergraduate programs, based on these specifications, are implemented. Correspondingly, the necessary inservice training will change.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

The faculty and staff necessary to implement the teacher education program are identified as a separate target population. A total of 449 specifications relate to the training for such university and college staff. These specifications for the most part deal with content that is now not commonly found in the repertoire of college and university teacher educators. A substantial number of these specifications deals with training for research and development activities as related to the multiunit school and educational technology. However, substantial numbers of specifications relative to this target population are found in all five contexts. Many of the specifications reflect an updating in content areas such as learning and educational sociology.

It is not necessary that all teacher educators associated with implementing this model participate in a training program to meet all 449 specifications. The comments relative to developing inservice programs for present elementary school teachers also apply here. In fact, this is a special inservice target population. Practically any professor presently on the staff of a college of education will possess one or more areas of expertise relative to these specifications. For example, an individual trained in educational research would not require additional training to meet the research methods specifications. Training programs for college and university personnel could be structured as short-term programs during the summer or a part of the academic year, or as longer, but less concentrated programs operated concurrently with their participation in a teacher education program.

EVALUATION COMPONENT

The term, "evaluation," is used in two ways in the teacher education model. One component of each specification is entitled "evaluation." This component deals specifically with procedures or materials necessary for evaluating whether the behavioral objectives of that specification have been met. This is a very specific use of evaluation, and in implementing the specifications, a teacher would be utilizing large numbers of these evaluation components. Such components are specific to the instructional task of implementing the specifications.

Evaluation is also used as a more general concept applied to continuous feedback and decisionmaking throughout the implementation of the model. In this context the purpose of evaluation is to provide information for

decisionmaking, and in order to evaluate, therefore, it is necessary to know the decisions to be served. For this purpose the evaluation design must meet the criteria of validity, reliability, and objectivity. The general evaluation designed for this model follows a single set of generalizable steps which will enable the decisionmaker to make decisions throughout the implementation of the model. Thus, evaluation is an ongoing and continuous process concurrent with implementation.

The evaluation model was developed by Professors Hammond and Stufflebeam of The Ohio State University and is basically designed after the Context, Input, Process, Product (CIPP) design. These four parts--context, input, process, and product, in essence reflect strategies within the larger evaluation design. Context evaluation provides information for planning decisions. Input evaluation provides information for structuring decisions. Process evaluation provides the information for recycling decisions. The various decisions to be made are exactly what the names imply, for example, recycling decisions are those used in determining the relation of outcomes to objectives and in determining whether to continue, terminate, or modify the activities. Applying this evaluation design to the teacher education model enables the implementer to identify and monitor the potential sources of difficulty and failure on a continuous basis. It is impossible to identify theoretically or on an a priori basis all the possible sources of difficulty, such as interpersonal relationships among staff, communication breakdowns, etc. The evaluation design not only provides for the identification of difficulties, but also for decisionmaking to circumvent and correct such difficulties. A detailed description of the evaluation design is included in the Final Report.[4]

PROGRAM MANAGEMENT

The program management relative to decisionmaking already has been discussed in the previous section. In the chapter on evaluation presented in the Final Report alluded to earlier, there is an extensive discussion of the collection, organization, and analysis of information relative to the evaluation design. The design moves through the various types of decisions and the corresponding evaluation strategies to be utilized. Except for program management through the evaluation design, the Final Report of the specifications does not contain a detailed discussion of program management. One of the major parts of a feasibility study will be to develop a program management information system. It is difficult to to develop a general system for this model since such a system will be based upon the specific data base of implementing institutions and agencies. In developing the proposal for a feasibility study, a program management information system is presented. For the details of such a system, the reader is referred to the proposal document.[5]

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[4] Ibid., pp. 209-35.

[5] George E. Dickson and others, "A Proposal To Determine Feasibility of a Comprehensive Teacher Education Program," RFP 68-10 (Toledo, Ohio: The University of Toledo, March 1969), pp. 163-76.

SUMMARY

The teacher education model developed by the consortium of Ohio universities contains 818 specifications which include in excess of 2,000 behavioral objectives. Each specification identifies the behavioral objectives. Specifications were developed within five broad contexts and apply to one or more of six target populations. The model is predicated on the assumption that the elementary school will move in a direction of team teaching, specifically with the instructional organization of the multi-unit school or a modification thereof.

Each specification is identified by number and coded according to a numerical code in terms of information contained in the specification. This coding process will enable the user of the specifications to deal with them more effectively in developing model programs. A process was developed whereby composites of specifications can be identified and programs based upon these specifications can be designed and implemented. An evaluative process was designed so that any program arranged in behavioral terms can be evaluated at a given point in time with provisions for prompt and objective feedback for program self-correction and modification. With this feature, an implementing institution can enter into new programs with confidence that if specifications are incomplete or require modification, necessary adjustments can be made through the regular course of implementing the program. Programs developed utilizing the specifications of this project will have the following characteristics:

1. The major instructional focus will be on the contexts of instructional organization and contemporary learning-teaching process.
2. Both educational technology and societal factors will receive more attention than in traditional programs.
3. There will be an emphasis on conducting and using research in the instructional setting.
4. The treatments indicate a program which is activity-centered.
5. Student involvement is equally divided between individual study and group or team experience.
6. Typical treatments provide for a progressive involvement from observation through simulated activity to direct classroom experience.
7. A wide variety of media is required to implement these programs.

Any extensive and complex composite of specifications undoubtedly has numerous strengths and some inherent difficulties at this stage of development. As a subjective judgment, the strengths of this particular composite of specifications are:

1. The position papers provide a new context for organizing struction of teacher education programs which appears to be more relevant to today's needs.

2. The composite specifications are flexible and can be organized into various programs.
3. The elementary school of the future is given extensive consideration as are the specific skills prospective teachers will need to participate successfully in the teaching profession.
4. All major target populations involved in elementary education and the preparation of elementary school teachers are considered.
5. The professional content relevant to today's society and the direction that the elementary school appears to be moving in terms of its future role in our society is included.

One apparent weakness of this model is the relatively little emphasis upon the selection of candidates for the preservice programs. Another point which does not receive a great deal of attention is the relationship between the professional training and the academic training. In fact, there is little direct specification of the programs within the academic disciplines. The implicit assumption is that adequate training in the disciplines will be provided by colleges of arts and science according to the unique situations within individual implementing institutions.

The successful implementation of this model or parts thereof will depend upon the implementing institution's commitment to make the necessary adjustments in its program to meet these specifications. Adjustments will not be limited to theoretical or philosophical viewpoints of teacher education. Rather, they will involve specific modifications to meet the behavioral objective identified in the specifications. Even for relatively modest programs that might be identified for subpopulations involving only a small number of specifications, a commitment to make such adjustments is essential.

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UNIVERSITY OF MASSACHUSETTS

A Guide
to

MODEL ELEMENTARY TEACHER EDUCATION PROGRAM

by

James M. Cooper

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UNIVERSITY OF MASSACHUSETTS

OVERVIEW

The University of Massachusetts Model Elementary Teacher Education Program (METEP) is an attempt to institutionalize change by way of a thorough analysis of educational roles, tasks, structure, and objectives. METEP uses the concept of performance criteria as a guideline for designing the program. Rather than stating trainee requirements in terms of courses, they are stated in terms of performance criteria in three major areas--human relations, behavioral skills, and subject matter knowledge. Statements of what the trainee is expected to do, under what conditions he will do it, and how he will be evaluated constitute a performance criterion. In addition, for every criterion at least two instructional alternatives are provided for learning how to meet the criterion. When the trainee meets the specified criteria requirements, he will have completed the program, regardless of the length of time enrolled.

Crucial to the implementation of a performance curriculum is an organization which gives coherence and structure to an educational program. Traditional school and credit offerings give no guidance in this regard. Systems analysis was found to offer a set of basic understandings which provide a useful and meaningful organization of the many diverse elements of a teacher education program. This approach was taken to organize, manage, and evaluate the program.

Other major concepts of the METEP include: differentiated staffing, variable entry and exit points, university commitment to its graduates beyond graduation.

PROGRAM GOALS AND RATIONALE

The University of Massachusetts program is an attempt to institutionalize change through thorough analysis of educational roles, tasks, structure, and objectives. It is based on seven overriding assumptions:

1. The role of the elementary school teacher is changing and will continue to change in the future. We must prepare teachers for change and not stability. The concepts of performance criteria, multiple instructional routes, differentiated staffing patterns, and continual inservice training programs appear to offer a meaningful approach to education in the future.
2. Specific performance criteria, based on an analysis of knowledge, skills, and attitudes in the human relations, behavioral, and content areas should be identified to provide a flexible basis for change. When the trainee meets the specified criteria requirements, he will have completed the preservice aspect of the program, regardless of the length of time enrolled. Thus, variable entry and exit points in the programs will occur.

3. Elementary school staffs will begin to differentiate their roles as teachers, thus requiring personnel with different competencies in new and different areas of specialization. Special consideration of differential staffing seems essential in the schools of the future.
4. Since there is no real evidence of the efficacy of any one major strategy of teacher training, this program includes as many widely differing overall strategies as possible in order to provide for examination of training consequences, for insights into relative training efficiencies, and for discovering relative acceptance and appreciation of the processes by trainees.
5. On the assumption not only that each trainee's strengths and weaknesses will differ, but also that they will change during the program as a desired consequence of training, one major goal is to provide continuous diagnosis of the needs of each trainee and constant evaluation of the program components designed to meet these needs. Cronbach's concept of aptitude-treatment interaction is an important research component of the program.[1]
6. As a consequence of the above goal, one of the most important emphases throughout planning will be the development of multiple program alternatives, so that there are never fewer than two alternative and equal instructional paths to the same objective.
7. In most teacher training programs, the university's commitment ceases upon graduation. The graduate rarely receives diagnostic help, but instead is merely evaluated. It is the belief of the designers of this program, on the other hand, that a teacher's training never ends, and therefore a closely knit relationship between pre- and inservice training will be developed. The resources of the university, both technological, such as video tape, and human, such as supervision, will be made available systematically to the graduate. In addition, these same resources will be made available to other teachers in the area.

SELECTION PROCEDURES

The METEP was not designed with any particular student population in mind. Any student in the university will be eligible to enroll. We will require a number of tests designed to measure certain aptitudes for research purposes, but not for screening and selection procedures. However, the model is designed so any institution can establish whatever requirements it so desires. This aspect of the program is open-ended.

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[1]Lee J. Cronbach, "How Can Instruction Be Adapted to Individual Differences?" Learning and Individual Differences, edited by Robert M. Gagne (Columbus, Ohio: (Charles E. Merrill Books, 1967), pp. 23-39.

PROFESSIONAL PRESERVICE COMPONENT

Philosophical Base

The METEP was not designed to produce teachers who hold a particular philosophy about how children should be taught or what they should learn. We hope that the program will produce individuals representing diverse philosophies. If there is any particular thread running through the program, it is that the flexible teacher, the one who has the necessary skills and knowledge to react to different situations in different ways and who has alternative means to achieve different objectives with different students under different circumstances, will be the most effective. The program is designed to achieve this flexibility.

METEP Parameters

One way of visualizing the METEP is to imagine it as a flowing stream evergrowing as it moves toward its goal. (See figure 1.) The mainstream is the METEP; the offshoots, which also are constantly growing, represent performance criteria in the various areas of competencies which a differential staff in an elementary school might possess. There is nothing fixed about these competency areas. It is expected that more competencies would be added or deleted as needed. Presently, however, these are the areas in which teachers would receive training in our program. Other institutions might define different areas of competencies which they think are more appropriate.

The areas of competencies for which performance criteria have been written are:

Cornerstone criteria

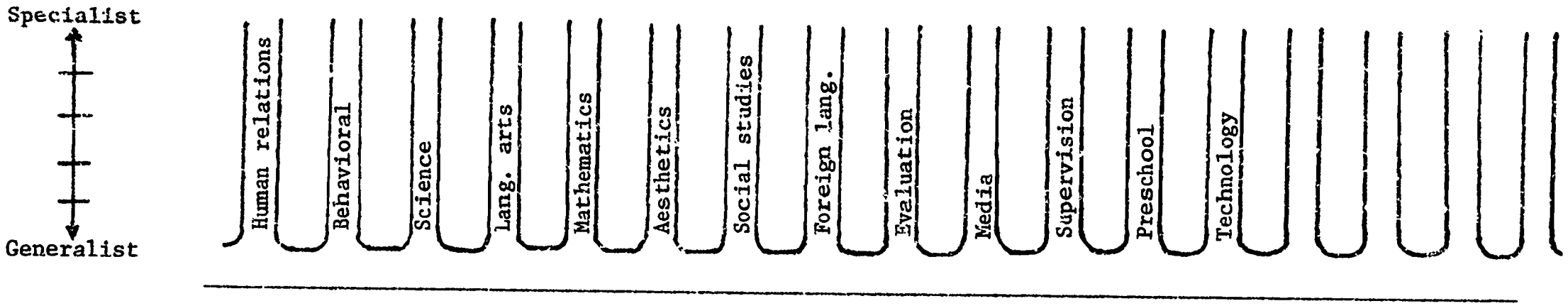
1. Human relations.
2. Behavioral skills.

Content criteria

1. Science.
2. Language arts.
3. Mathematics.
4. Aesthetics.
5. Social studies.
6. Foreign language.
7. Pre-school.

Service criteria

1. Evaluation.
2. Media.
3. Supervision.
4. Technology.



Example student profiles

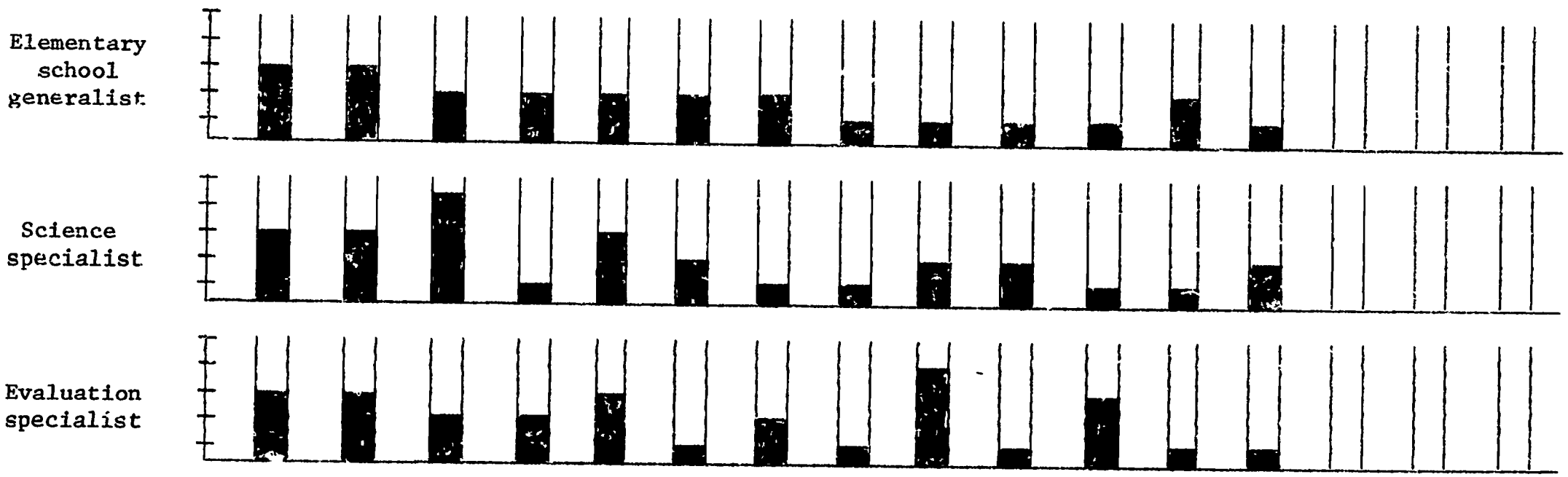


FIGURE 1

MODEL ELEMENTARY TEACHER EDUCATION PROGRAM

Cornerstone Criteria. The first two, human relations and behavioral skills, are considered to be the cornerstone areas for elementary school teachers. It is in these two competency areas that the teacher will better understand himself, others, and his relationships to others, and where he will master teaching skills to help him become an effective teacher.

Content Criteria. Science, language arts, mathematics, aesthetics, social studies, and foreign languages represent content areas which form the curricula in most elementary schools. In addition, a special program on preschool education would be part of our teacher education program drawing upon the content areas. Although these content areas now constitute a traditional elementary school curriculum, the substance of these areas have been modified to reflect the underlying principles of the METEP.

Service Criteria. The evaluation area includes performance criteria for the teacher in tests and measurements as well as skills required to make decisions on whether to implement new curricula.

The media area contains criteria from simple to complex understanding of the area of audiovisual media. The supervision area contains criteria for the effective training of supervisors in the elementary school. Criteria in the area of technology also have been written as required supplements to any of the regular areas of concentration. Since our world is increasingly a technological one, it is deemed desirable that a rudimentary knowledge of technology become a part of every teacher's training.

Specialist-Generalist. The performance criteria in each area are defined, whenever possible, in a hierarchical order from the simple to the more complex. Note in figure 1 that the words generalist and specialist appear along the vertical dimension of the figure. The teacher trainees would have the opportunity to decide if they wanted to specialize in a particular area or to be a generalist elementary school teacher with certain levels of competency in each of the areas. If a trainee elects to specialize in science, for example, he would be required to meet certain minimal criteria in the human relations and behavioral areas, a high level or criteria in the area of science, as well as defined minimal levels in all of the other areas. (See figure 1.) Requiring every teacher, whether he is a generalist or a specialist, to meet a minimal criteria level is a value judgment with which some teacher educators may not agree. The rationale for this requirement is our belief that every elementary school teacher should know at least something about the various competency areas represented by a differentiated staff, if for no other reason than to improve communication and open-mindedness among the teachers. This decision is an arbitrary one, and any institution planning to implement this model would have to decide this issue for itself.

Another arbitrary issue regards what minimal performance criteria are to be required for both generalists and specialists. These decisions must be made using the best judgment of the teacher education institution's faculty. After the program has been in operation, data will be available for determining whether the minimal levels are too high or too low and can be changed as needed.

It should be noted in figure 1 that the areas of competency are not closed figures, but are open at the top. This symbolizes the fact that in any one area a person could spend a lifetime and not be able to meet all the possible criteria which could be written as more information and skills become known and developed. It should also be noted that there are some blank off-shoots from the mainstream. These represent the other areas of competencies which can be developed as the elementary school changes.

Although the future existence of differentiated teaching staffs is one of the basic assumptions of the METEP, there has been no attempt to define specifically a differentiated staff model. Instead, the areas of competencies that might be possessed by a differentiated staff have been specified. Thus, rather than creating a model which would be only one of many possible differentiated staff models, it was decided to focus on the knowledge and skills that would be required of an elementary school staff, not the definition of the particular roles within a differentiated staff. In this way, the METEP is compatible with the principles of staff differentiation rather than being tied to any one model of staff utilization.

A Conceptual Structure for Performance Criteria

The formulation of performance criteria requires the specification of instructional and program goals in terms of behaviors to be exhibited by the trainee when instruction has been completed. Performance criteria, as we have defined them, are essentially behavioral objectives.[2] They

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[2]Example Performance Criterion

PROBING QUESTIONS

Objective: To require students to think beyond their first answer to a question.

Criterion: The teacher will microteach three five-minute sessions in which he probes students by (1) asking pupils for more information and/or more meaning, (2) requiring the pupil to justify rationally his response, (3) refocusing the pupil's or class's attention on a related issue, (4) prompting the pupil or giving him hints, (5) bringing other students into the discussion by getting them to respond to the first student's answer.

Evaluation: Supervisor will observe the lesson and categorize the probing questions in the five categories. Supervisor will judge teacher performance on whether the teacher responds in the five ways and on whether the teacher can concentrate on one student's question and answer.

Instructional Alternatives: (1) Teacher will observe a film of a model teacher asking probing questions. (2) Teacher will practice asking probing questions with just one student. (3) Teacher will practice asking probing questions with a group of 10 students.

state the behavior expected of the teacher, under what conditions the behavior will be performed, and how the behavior will be evaluated. In addition, at least two instructional alternatives are provided for each performance criterion. Careful formulation of performance criteria liberates the planners from describing the program in terms of traditional courses. Rather it is recognized that there are alternative paths and the alternative paths for meeting these criteria has been of central concern to the architects of this program.

Performance criteria have been developed in three broad conceptual areas related to teaching: (1) content knowledge, (2) behavioral skills, and (3) human relations skills. (See figure 2.)

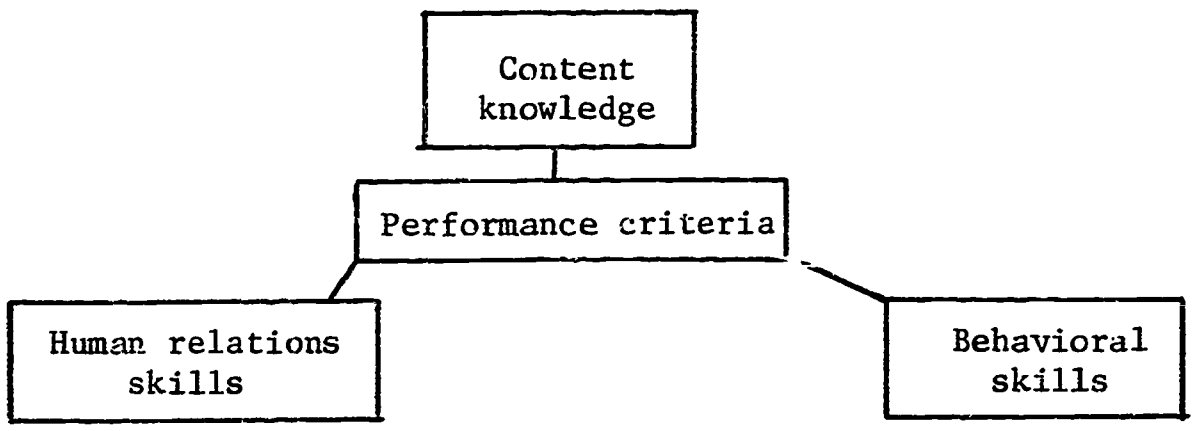

FIGURE 2

PERFORMANCE CRITERIA

Content Knowledge. The restatement of content requirements from course requirement for a specified period of time to performance criteria which emphasize the ability to perform was the major thrust in the planning stages of METEP. It is believed that recognition should be given to the fact that content knowledge is derived from many sources, formal coursework being only one.

Content knowledge is defined to include the depth and breadth of content most often seen as deriving from undergraduate liberal arts courses as well as the kind of content knowledge most often associated with that acquired within a school of education. The latter is seen as a logical extension of the former, inseparable, but focused on questions of relevance and conceptual organization for pupils at the elementary level.

Many of the proposals on performance criteria suggest new and intriguing blends of content areas. For example, the importance of human relations understandings in social studies is one such potential blend which results from a performance criteria approach. Another example is the possible relationships between aesthetics and science or language arts. It is expected that a blending of more than one content area in subject matter fields will occur more and more as the performance criteria approach develops.

Behavioral Skills. One of the basic goals of the teacher education program is the development of technical skills of teaching. The basic premise of the technical skills approach is that much of teaching consists of specific behavioral acts. If skills and behaviors which teachers perform often in

the classroom can be identified, different training protocols or established procedures and techniques can be developed in order to produce proficiency in their use. In other words, much of the complex act of teaching can be broken down into simpler, more easily trainable skills and techniques.

A training technique for developing specific teaching skills is the process known as microteaching. It exposes the trainees to variables in classroom teaching while reducing the complexity of the situation. The teacher attempting to develop a new teaching skill is not confronted with preparing a lesson plan of 45 minutes in length nor does he have to worry the teacher trainee to focus his attention on mastering a specific technique.

One of the main components of the proposed teacher education program will be the implementation of microteaching in order to train prospective teachers in the technical skills which have been identified.

The technical skills approach is not one of just mechanical competence in certain teaching skills. Along with his gaining proficiency in skills, the teacher trainee should be encouraged to become a professional decision-maker. The trainee should decide when to use which skills to meet the aims of instruction and the needs of the pupils. The teacher is the instructional manager of the classroom and, as such, must make decisions as to the appropriate method of achieving the instructional goal, when the particular method should be used, and what activities should precede and follow it. Such decisions face the professional teacher everyday, and an effective training program must help the prospective teacher become an effective decisionmaker. With performance skills clearly mastered, the teacher can be a real decisionmaker. He can focus in an effective way on such problems as the individualization of instruction and the development of students' talents and interests. He has more alternatives available to reach individuals, to motivate students, and to improve the effectiveness of his instruction.

Human Relations Skills. Human relations is not a mysterious activity. Rather it is a codifiable set of behaviors which describe what goes on inside a person or between people.

Human relations is defined as behaviors exhibited in relation to self and other individuals and relation to groups.

Thus, an individual thinking about himself or simply sitting by himself is engaging in human relations behavior. Two individuals meeting in an interpersonal interaction are engaging in human relations behaviors. School classrooms or group dynamics sessions are situations in which an awesome number of human interactions are going on. In short, any human behavior or behaviors engaged in intra- or interpersonal activities represent human relations behaviors.

Human relations has been defined in the past almost always from a value framework. Somehow, human relations is seen as a good thing. Thus, traditional definitions of human relations tend to center on what should be rather than what is. By doing so, human relations experts have tended to confuse the present with future goals. The aim in this proposal is not to avoid the

value issue of what human behavior should be, but simply to report what is actually present so that better specification of future goals may be possible.

The METEP does have many specific value commitments as to the type of human behaviors considered desirable for elementary teachers. Some of these are well known constructs such as warmth, critical thinking, openness, and consciousness of cultural differences. These concepts, however, have been defined within behavioral terms and specified so that it is possible to teach these behaviors directly instead of by admonition, example, or, as is done more commonly, by chance. Some new constructs such as attending behavior, decision process, and the physical system are introduced by adding more precise definition of human relations behaviors. Wherever possible, human relations behaviors have been organized in a hierarchical structure so that the teacher trainee increasingly learns how to integrate old behaviors into new patterns.

The METEP is interested in producing the fully human teacher, a person who meets the human criteria of warmth or human understanding, is capable of rigorous thinking, is in control of his own behavior, and is in a constant pattern of growth. These are high objectives for teacher training, but it is believed that education, psychology, philosophy, and behavioral technology are at a stage whereby the effectively trained teacher can now be a human relations expert in addition to having content knowledge and presentation skills.

A Hierarchy of Teaching Competencies Developed Through Performance Criteria

The three areas developed for performance criteria imply a hierarchy of three areas of competency necessary for superior teaching:

Necessary skills		Competency
Content knowledge	Equal	Subject matter competency
Behavioral skills plus Content knowledge	Equal	Presentation competency
Human relations skills plus Behavioral skills plus Content knowledge	Equal	Professional decisionmaking competencies

The goal of competency in the subject matter, presentation, and professional decisionmaking areas served as the guide for the construction of

METEP. Obviously, these competencies are interdependent and cumulative as are the skills and knowledge necessary to produce them. By first defining the desired performance criteria in the content, behavioral, and human relations areas, modes of instruction were designed to meet these criteria.

Subject Matter Competency. One of the major goals of teaching requires that a body of knowledge be transmitted. In order to achieve this objective, content knowledge must be assimilated into the teacher's cognitive structure. The traditional method by which the teacher trainee acquires this knowledge has been through formal lecture courses outside the school of education. It is proposed here that with effective development of performance criteria a variety of instructional modes may be utilized to meet the criteria. Content knowledge which is central to subject matter competency may be effectively acquired through closed circuit television broadcasts, programed instruction including extensive use of CAI, independent study, seminars, and formal lectures.

Presentation Competency. The possession of adequate content knowledge is a necessary but not sufficient condition for effective teaching. It is the task of the teacher to acquire the appropriate behavioral skills in order to translate the content knowledge into a teachable form. Learning theory has suggested various conditions under which the acquisition of knowledge takes place most effectively. The technical skills approach to teacher training, which was elaborated earlier, translates these principles of learning into principles of teaching. Examples of technical skills which have already been developed and are particularly relevant to the presentation of content include: set induction, closure, asking probing questions, planned repetition, and the use of examples.

Professional Decisionmaking Competency. It is our belief that one of the most crucial aspects of teaching is that of professional decisionmaking. The teacher is the decisionmaker in the classroom. In order to meet his instructional objectives, the teacher must utilize knowledge and skills from all three performance criteria areas--content, behavior, and human relations areas. He must decide what material is to be taught, how it should be taught, and what techniques should be employed. He must also consider the human variables which might affect the outcomes of his objectives. In other words, a myriad of factors must be considered by the teacher whenever he makes major decisions affecting instruction. The greater the teacher's content competency and the more presentation competencies he has, the more alternatives he has at his disposal in meeting his instructional objectives. But having content mastery and presentation mastery is not enough. The teacher must also be sensitive to the personological, psychological, and sociological variables which affect instruction. By constructing performance criteria in the content, behavioral, and human relations areas, and by formulating instructional systems by which these criteria can be met, the teacher trainee will have the prerequisite skills and knowledge necessary to make classroom decisions. A special aspect of the human relations area with implications for decisionmaking is the use of performance criteria relating to listening to others, defining the situation, and "decision process," a new approach to decisionmaking.

Besides possession of the skills and knowledge, practice in facing the situations which require these decisions is necessary. The kinds of activities which allow for this practice include: classroom simulation experiences which require teachers to face, to study, and to solve problems similar to those they will have in the classroom; microteaching and observational experiences--both live and video taped; small group work; and student teaching.

Instructional Procedures

As was stated earlier, at least two instructional alternatives are provided for each performance criterion that the trainee is required to meet. These instructional alternatives include a variety of procedures and experiences. Among these are computer-assisted instruction, simulation, teaching machines, programed instruction, video tape lectures, seminars, microteaching, classroom observations, independent study, apprenticeship teaching, roleplaying games, and sensitivity training. Through this wide variety of instructional procedures, we believe we can help individualize instruction.

Student Teaching

The area of student teaching was not dealt with in detail in METEP. There was no attempt to describe where in the program this took place. Since the program is based upon performance criteria rather than time criteria, different students will engage in practice teaching at different times.

Student teaching has long been considered the one essential ingredient in a teacher education program. Rarely has the function of student teaching been analyzed in terms of expected behavioral outcomes. What do we want the student teachers to be able to do as a result of student teaching? If we approach the area of student teaching from this standpoint, we may well find that many of the skills resulting from student teaching can actually be acquired prior to the student teaching experience through microteaching, strength training, simulation, roleplaying, and other techniques. By specifying behaviorally what we want the teacher to be able to do as a result of student teaching, we may be able to provide much more meaningful experiences both prior to and during student teaching.

We did not reach the point in our model of specifying the behavioral outcomes of the student teaching experience due to the lack of time. However, this is the direction in which we are heading.

RELATIONSHIP OF PROFESSIONAL COMPONENT TO THE ACADEMIC COMPONENT

There has been no attempt made in METEP to specify the yearly sequence of experiences of prospective teachers in the program. We do not assume, for example, that the first two or three years of an undergraduate's education will be spent in the college of arts and science , after which he will

enroll in the school of education. Instead, we propose to specify, with the assistance of faculty in the subject matter areas, the content knowledge necessary for elementary school teachers to function well in the classroom. This content knowledge will not be stated in terms of courses, but rather as performance criteria. Examples of these content criteria are given in appendices 1 and 2 of the Final Report.

Thus, a student may take certain courses in arts and science which will help him meet the specified content criteria, but the courses themselves are the instructional alternatives rather than the criteria. They are the means by which the student may achieve the criteria. If after taking a particular course in biology, for example, he cannot achieve certain criteria that the course was supposed to help him achieve, he would have other instructional alternatives available to him. The METEP is designed so other universities can accommodate their unique circumstances within the model. When particular activities would be introduced in the undergraduate program, what percentage of the total undergraduate curriculum would they comprise, and what courses outside education would be required or recommended? The METEP was designed purposely to allow other institutions to adapt the model to their own particular situations.

INSERVICE COMPONENT

Existing inservice education programs seem to be based on the belief that the completion of preservice training and bestowal of a teaching credential creates a lifetime of professional competence and that any inadequacies in a teacher's preservice training will leave a lifetime of irremediable professional handicaps. It is apparent that our present compartmentalization of pre- and inservice education must be replaced by a perspective which views the intellectual and practical development of educators as occurring along a continuum beginning with the decision to enter the teaching profession and ending only upon permanent retirement.

The METEP has developed a set of guidelines for such a preservice-inservice continuum. These guidelines are based on the use of hierarchies of performance criteria for two distinct, but interrelated purposes: (1) diagnosing individual teacher education needs and prescribing from a number of learning alternatives designed to remediate those needs, and (2) evaluating teaching competency and growth as a teacher in order to determine initial placement and career advancement within a differentiated staffing structure.

Operating within the perspective of a differentiated teaching staff structure fosters the recognition of significant distinctions among teacher roles. It is at that point that we are able to begin developing the performance-based task delineations which will provide the key to a relevant inservice education program. As differentiated staffing becomes a possibility, then carefully thought-out performance criteria for teachers become a necessity. A school which allows for the possible diversity of teacher roles is uniquely motivated and able to analyze and reformulate the criteria

by which it can judge competence in any given teaching task. With such criteria, teacher training, both at the pre- and inservice levels, becomes closely integrated with the main concern of all educators--the educational development of students.

If teacher education is reorganized so that continuous, relevant growth experiences are provided for teachers throughout their careers, then pre- and inservice education will become a part of the same continuum. It simply will not do any longer to separate preservice from inservice experiences. We must, in the process of specified teaching performance criteria, set out our priorities in such a way that the credentialing procedure becomes a formality and professional growth becomes the criterion of all training experiences. Whatever criteria we settle on for preservice programs and whatever training procedures we judge relevant at that level must be applied and extended in our inservice programs. Insofar as we insist on the distinction between pre- and inservice training techniques, we simply reveal our ignorance of systematic criteria by which we can assess the professionalism of our teachers. But as soon as we give serious attention to the development of such criteria, the distinction becomes meaningless. The point here is not that pre- and inservice training are, or should be, identical. Rather, it is that the procedures and goals of each must become specific and defensible in a way that they currently are not. We must make some tentative decisions regarding what criteria a teacher should meet before reaching a credential and what criteria should be met later as part of his inservice professional growth. With such modifiable decisions at hand, we can begin to design inservice programs which have the continuity and rationality so clearly lacking in most current approaches.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

In phase I all of the performance criteria had not been written since doing so was actually part of the phase II feasibility project. Therefore, it was impossible to make accurate estimates of the faculty and staff requirements. (A more complete curriculum composed of performance criteria and instructional alternatives has since been developed as part of the phase II project conducted at the University of Massachusetts.)

EVALUATION COMPONENT

The evaluation of the METEP program has been designed within a conceptual model developed for the program and called the evaluation skills' training program section. Since the purpose of the evaluation, the nature of its results, and the size of the program component being evaluated determine the type of evaluation required, and since several evaluation activities are required to provide the information needed for quality control of a specific program, the proposed evaluation has a multidimensional design. Evaluation activities for the METEP emit from two distinct program components, the control subsystem and the analysis subsystem.

The control subsystem will house the evaluation activities which will offer feedback information on the efficiency of the system. Since the purpose of these activities is for internal control of effectiveness, the size of the evaluation units is generally limited to individual program subsystems. The nature of the required results calls for specific data on the METEP program suitable to problemsolving decisions demanded by the individual circumstances created in program operation. These evaluation activities provide managerial data on facilities and staff as well as feedback on specific components production.

The analysis subsystem will house the evaluation activities designed to offer external information on the appropriateness and competitiveness of the overall program. These activities have been designed to develop information on the relationship of the model and its products to the world of education. By design, these activities seek generalizable results, and the unit of evaluation is the total program. Market value, validity of performance criteria, and the degree to which the program maintains social relevance and meets the current needs of education are the concern of these activities.

More details can be found in main Final Report.[3]

PROGRAM MANAGEMENT

How can teacher education best be conceptualized? We have developed many models over the years, but inevitably have returned in practice to traditional forms of teacher education. As performance criteria were developed by the project staff, it became increasingly apparent that a totally new approach to the organization of teacher training was necessary.

Systems analysis has proven to be the most useful method of organizing performance criteria. To develop a teacher (or to use the words of systems analysis, "product") of maximum effectiveness to himself and society, we must consider the many inputs and outputs of the person, of the teacher education program, and of the schools in which the teacher is eventually placed. Further, we must consider the way in which these three major components interrelate. Systems analysis provides the most comprehensive method of organizing objectives presently available.

The subsystems which compose the METEP are indicated below.

Control Subsystem

This subsystem performs several functions in maintaining the day-to-day operation of the METEP system. It is the process controller and is

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[3] Dwight Allen and James Cooper, Model Elementary Teacher Education Program, Final Report (Washington, D.C.: Government Printing Office, 1969), pp. 48-52.

responsible for insuring that the system remains in a stable state and operates in an optimum manner. It carries on a continual analysis of collected data and uses this analysis for decisionmaking. The subsystem provides immediate feedback for system control. It is concerned with the following functions:

1. Aptitude assessment.
2. Guidance.
3. Scheduling.
4. Attitude monitoring.

Administrative Subsystem

The functions performed by this subsystem include supplying materials, staff, and paraprofessionls necessary to operate the program; managing and allocating funds for operating the program; and coordinating the program with the rest of the university and with other agencies outside the university, e.g., certification agency, school districts.

Information Subsystem

The METEP will require a large amount of data collection and manipulation for system control and monitoring. Highly structured and organized methods of data storage must be used in program implementation. Information must be readily available for decisionmaking. For example, trainees must be able to reschedule an instructional alternative within a short time. This implies the status of the resources necessary, for the newly selected alternative must be determined with ease. Files must be maintained indicating the current status of all resources including staff, facilities, and equipment.

Data contained in this subsystem will involve: (1) aptitude and achievement data stored in the control subsystem, (2) sequence of learning experiences selected by each trainee to meet each performance criterion and some measure of the effectiveness of this sequence in relation to trainee's goals, (3) the cost in terms of resources, and the student and faculty time required to help each student meet each performance criterion through each instructional route, (4) system status of each trainee, i.e., what performance criteria he has met and what educational alternatives he is now engaged in for meeting which performance criteria, and (5) utilization and availability of all training resources including staff, equipment, and facilities.

Placement Subsystem

This is not completely within the bounds of the system, but it does play a very important function. Unless the product produced has a market, the system will become inoperable. Therefore, one of the important tasks of the placement subsystem will be to disseminate information about the teacher-training program and the products of that program to prospective employers. In addition, this subsystem will determine qualifications and

vocational interests of trainees, determine employment opportunities, and recommend trainees to positions.

Educator Subsystem

The educator subsystem can be segmented into two not completely distinguishable components--human and automated. Both components are responsible for a direct educational interaction with trainees. This subsystem is responsible for generation of all instructional methods used by the teacher trainees. These methods range from formal lectures to microteaching clinics. The subsystem must respond to demand changes by trainees in instructional alternatives. For example, if a trainee for good reason indicates a desire to terminate a seminar and initiate a simulation exercise, staff and equipment must be rescheduled quickly to meet this new demand. This rescheduling will be done within the constraints of the availability of resources.

Analysis Subsystem

Feedback regarding the quality, success, competency, acceptability and competitiveness of system output is provided by this subsystem. This feedback is used to add, delete, and modify performance criteria. The analysis of trainee performance and indirectly the effectiveness of performance criteria is measured using rating procedures, video tapes, archival data, and market value of trainees. Comparative analyses are made of three groups--program graduates, graduates of other teacher education programs, and the population of experienced teachers.

More information on program management components can be found in the Final Report.[4]

SUMMARY

For the reader interested in consulting the METEP Final Report, the following set of readings is suggested to obtain a capsule summary of the program:

1. Assumptions and parameters of the METEP provide an overall picture of the total proposal.[5]
2. The systems conceptualization describes how the program would function as an organizational unit.[6]
3. The material on human relations, behavioral skills, and one subject matter area of interest provides a background of information on the method of approach in applied areas.[7]
4. Concurrently with 3, the reader may wish to examine related performance criteria from the appendices with pages 89-148.

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[4] Ibid., pp. 29-48.

[5] Ibid., pp. 11-18.

[6] Ibid., pp. 27-54.

[7] Ibid., pp. 89-148.

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UNIVERSITY OF PITTSBURGH

A Guide
to

A MODEL OF TEACHER TRAINING FOR THE INDIVIDUALIZATION OF INSTRUCTION

by

Horton C. Southworth

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OVERVIEW

The University of Pittsburgh model[1] is a flexible design. Its specifications are general. It is not complete in its present form. Even when implemented, it will need constant refinement and change. However, the following aspects are cited to indicate how this model treats certain characteristics of individualized instruction:

> Individualized instruction should be commonly practiced at the college and university level.
>
> . . .This model proposes a general instructional mode for use at all levels of instruction and in all societal settings.
>
> Individualization should be practiced in a fashion that encourages every learner to be a planner, director, and assessor of his own education.
>
> . . .This model includes a definition of teacher competencies necessary for individualizing instruction with attention to (1) specifying learning goals, (2) assessing pupil achievement, (3) diagnosing learner characteristics, (4) planning long-term and short-term programs with pupils (5) helping pupils with their learning tasks, (6) directing off-task pupil behavior, (7) evaluating the learner, (8) employing teamwork, (9) enhancing self-development, and (10) instigating change.
>
> Individualized instruction is a demanding pursuit which requires the talents and energies of the entire profession. Unilateral action is unthinkable.
>
> . . .This model proposes a new coalition which includes school districts, universities, teacher organizations, the community, and state and federal agencies.
>
> . . .This model proposes that professional staffs work in teams to meet the wide range of needs of learners. New educational roles are assumed.
>
> . . .This model proposes that we learn to be effective team participants in a new coalition.

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[1] Horton C. Southworth, A Model of Teacher Training for the Individualization of Instruction, Final Report (Washington, D.C.: Government Printing Office, 1969), pp. 89-91.

. . .This model proposes a new linkage between pre- and inservice training such that inservice education becomes a part of the daily operation of the school. Staff development would be a priority consideration in each school district in the clinical network.

The model contains module examples of task analysis, mathematics, and science education as illustration of the specificity required of an implementing faculty.[2]

Individualized instruction demands a new partnership between the pupil and teacher to accommodate the human variable in learning.

. . .This model proposes that each teacher trainee initiate a process of self-development as well as professional development. Figure 1 shows the Gestalt or the component relationship for training teachers for individualized instruction.

Individualization is a process demanding continual refinement. One college faculty cannot prescribe for another institution and be faithful to the individualized concept.

. . .This model proposes a systematic feedback system of the training experience so that the process remains relevant to the needs of trainees.

Through decision analysis, each component is assessed and evaluated, not only for its own internal consistency, but for its interdisciplinary relationship and, also, for its relationship to the philosophy of the model itself.

PROGRAM GOALS AND RATIONALE

Rationale for Individualizing Instruction[3]

Any new model program must be designed for the kinds of schools that can be expected in the future and for the projected needs of the pupils as they live in the society of that time. Although it is difficult to predict how society might be in 10 or 15 years, the "minimax" process may be used to utilize the minimum amount of effort needed to maximize the chances of fulfilling needs. A minimax model would be one which allows maximum flexibility and which has continual feedback of data from students,

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[2] Ibid., GPO: pp. 105-96; ED: pp. 105-98.

[3] Horton C. Southworth, "Educational Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program for Elementary Teachers," Phase II Pittsburgh Model Feasibility Study, USOE Proposal, March 3, 1969, pp. 11-26. (Mimeo.)

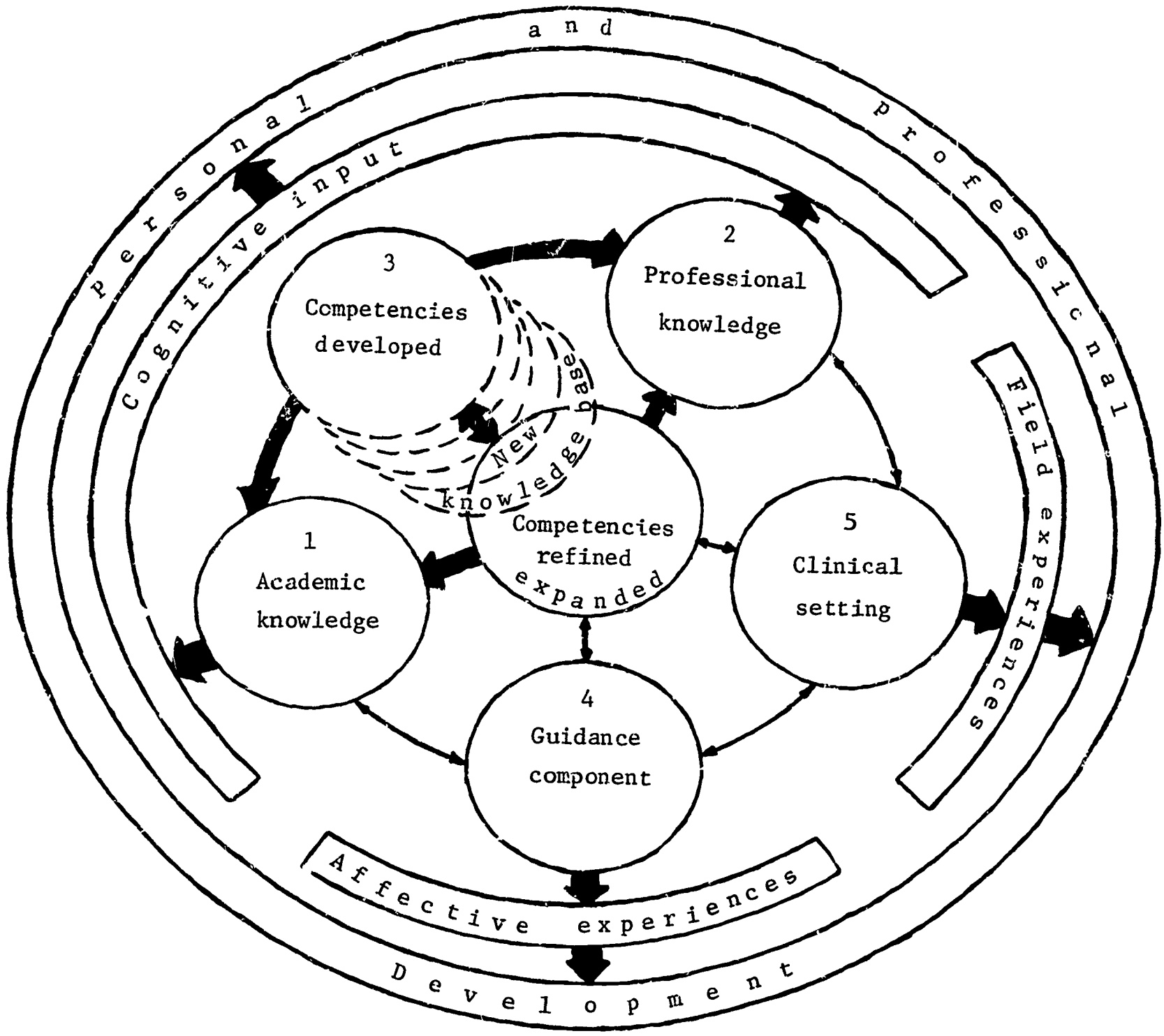

FIGURE 1

GESTALT

faculty, school settings, and community groups to be used in the revision of the program. The individualization of instruction provides this degree of flexibility and ease of revision. The model may be utilized whether schools are in pods, storefronts, home computer outlets, or whatever. Any or all aspects of the model may be revised without causing imbalance in the remainder of the system.

Present signs of alienation, rebellion, and discontent indicate a need to develop a model of education more closely linked with what we know about human nature. Although we may find that human nature has changed somewhat in the future, it seems safe to predict that this change will be less rapid than other changes in society and technology. It seems reasonable that people will be more likely to continue to support a system which treats them as people rather than as objects within the educational system. It seems likely that people would most readily support a program which is planned with them and which expects them to contribute to its revision. In a plan such as the individualized instruction plan proposed by this model, the need for external controls and stimulation will be superseded by reliance on intrinsic motivations and self-discipline.

The University of Pittsburgh design for teacher preparation has been based on three major choices, each of which may require further explication in terms of the assumptions and value stands which support the choices. These three major choices involve:

1. Individualizing instruction.
2. Utilizing the procedure of working with the learner in planning, executing, and evaluating learning experiences.
3. A specified set of goals or minimum expectations and staging requirement for reaching those goals.

The choice to individualize instruction is based on certain assumptions about the nature of the learner, the kind of climate and materials which fosters the most effective learning, and the types of skills, attitudes, and concepts will have lasting importance to the learner and to society.

The assumption is made that individualizing instruction emphasizes the human element in learning and that the individual develops self-awareness, confidence, and self-respect in a situation in which procedures are matched to his unique interests and needs.

Individualization requires more interaction between teacher and learner in terms of human factors; and "thing-oriented" experiences may be mediated through nonhuman sources, such as tapes, readings, etc. Thus, human interaction is a more personal one than in other approaches. The assumption underlying the choice of this approach would be one which assumes that individuals grow more fully when treated by others as humans, rather than as objects. (I-thou relationships.)

The rationale for the selection of the individualized approach has a great deal of support in empirical evidence gained from studies of learning.

An eclectic approach to learning studies reveals certain common findings, despite differences in learning theory. Individuals tend to learn better when they:

1. Actively participate, rather than passively receive the learning experience.
2. Have an opportunity to participate in the selection of what they learn. (This factor may involve motivational aspects in that the opportunity to choose increases the individuals sense of control and worthiness. It may also operate because individuals learn best those things they feel are significant, and they may be more likely to see the significance of the task if they choose it themselves.)
3. Have opportunity for knowledge of results very soon after the response is made (before an incompatible or erroneous response is made or repeated).
4. Experience success. (Success is most likely when the task is matched to the individual's capabilties and need for challenge.)
5. Are expected to succeed.
6. Identify with a competent model.
7. Work on a task suited to their dominant learning mode or style.
8. Work at their own pace or have a choice in the selection of pace.

These factors seem to enhance both learning and retention of what has been learned. These conditions for learning can only be met in a model which provides for individualization of instruction and which involves the learner in the decisionmaking process. It is possible for procedures to be individualized, but for teachers to do all the diagnosing and prescribing (as is the case in several of the phase I proposals). However, that does not capitalize on the motivation which tends to accrue when the individual participates in his choices.

The choice of planning with learner (rather than for) requires a great deal of trust in the learner. It also assumes that people like to work when their goals are significant and that they do not require external control and prodding in order to grow and develop. This plan also assumes that the learner will be (or become) rational and objective in analyzing his strengths and weaknesses and in choosing experiences to develop his potentials.

This model also assumes that previous experiences of learners who enter the program will have an effect on their ability to make rational choices. Thus, the model also is individualized in that those learners who require more support and restrictions on their decisionmaking exercise less responsibility at first. However, as they gain in self-awareness and in their ability to make rational choices, they will take over more and more of the responsibility for their own learning and for assisting other persons in the program. A selection criteria incorporating an assessment of previous learning experiences and evidence of self-awareness as experienced in the guidance component would be use in this model prior to full admission.

The choice of the goals of the program and the methods of achieving the goals are also based on assumptions about which kinds of knowledges and skills will have endurance value in a changing society and in a changing educational arena. The assumption is made that knowledge will continue to grow at an accelerated rate and that much of what we "know" today may be questioned or refuted. A program that can endure in this change must be one which is flexible and open-ended. The program also assumes that the individual who will best utilize change is the one who has a great deal of awareness about himself and the way he learns and has developed skills in planning and evaluation of his own learning.

Individualization of learning, in its purest sense, would imply that there would be as many sets of goals and learning procedures as there are individuals within the program. This model has been designed to individualize learning by providing for rate of learning, a choice of alternative procedures for learning, some differences in procedures to correspond with learning style, and a variety of settings for learning. However, several choices have been made, and limitations have been recognized which begin to put parameters around the individualizing process. Individualization will be limited by:

1. The choice of goals which are specified as minimum criteria for competency as a teacher.
2. Our dearth of adequate data for designing learning programs.
3. A lack of test procedures for accurately measuring some of the characteristics that we consider extremely important in facilitating growth, e.g., attitudes, self-concepts, etc.
4. The difficulty of developing adequate staging environments and logistics for supporting the requirements of the program.

Attempts have been made to prevent unnecessary encroachment by these limitations on the flexibility of the approach. Open-end alternatives are provided in which the learners may add or modify goals or design other learning procedures whenever he can adequately support the value of his new plan. Learners continually feed into the program subjective judgments on attitudes, feelings about their learning, and evaluations of their experiences. Teacher candidates are followed after their graduation and entry into teaching, and these data provide a basis for reformulation of the program. Data generated by the clinical setting as a whole would also be used in reformulating the program.

Phase I of the U.S. Office of Education (USOE) model development emphasized the need to reformulate continually the program on the basis of improvements and advances in research and practice from other sources. Phase II emphasizes, as well, the need for teachers and the clinical settingto study systematically the procedures that are used and to conduct research which will push back the confines imposed by our lack of adequate knowledge and skills. (This aspect was also emphasized in the Ohio and the Florida models.)

Individualization of instruction also provides a procedure which can be adapted to learners from a variety of backgrounds and needs. The im-

plementation of this proposal will be through a network of institutions which will primarily serve the needs of inner-city teachers, but also teachers of learners in suburban or rural poverty settings. The learner may be an elementary pupil, a teacher-candidate, or a faculty member. The competencies chosen for the proposal represent minimum requirements and could also be adjusted to preparing learners to function in a variety of settings.

Individualization of instruction may have far-reaching social implications, as well. Individualization can only occur as we develop adequate criteria for (1) identifying our knowledge base, (2) collecting data about techniques and materials, (3) analyzing and evaluating practices, and (4) systematizing our procedures for extending our body of knowledge. As we gain in skill in specifying objectives and the minimum competencies required for effectively guiding learning, we can begin to communicate with society a posture of professional accountability by which it may more adequately judge the performance of the teachers and schools. This could lead to extensive changes in the schools and better relationships with the community.

Development and Rationale of Teacher Competencies

Competencies as stated in phase I of the Pittsburgh model are very similar in essence to a number of the objectives specified by the Syracuse, Florida State, Michigan State, and Ohio models. Basic differences between the models are in terms of emphasis and the addition or variation of other competencies. One unique feature of the Pitt model is the emphasis on planning with the learner and helping the learner develop the skills and attitudes for gradually assuming responsibility for his own learning. Several models point out the value of having students work with peers in developing group skills and in assisting peers in mastery of concepts the students have already learned.

The Pitt model has been modified by the addition of a 10th competency, that of accepting responsibilities and serving as a professional leader in instigating change within the educational system. This competency was considered in the original draft of the phase I proposal, but was deleted because it did not seem to be a minimum requirement for a beginning teacher.

It is recognized that the graduates of this program will teach in a variety of settings. In order for the graduate to cope with the disparity between a more traditional school and the clinical setting in which he has had preservice experience, the teacher will need skills of group dynamics and change processes. Unless teachers are taught the skills of being a change agent, the effectiveness of the program will be diluted for we continue to produce teachers who become absorbed by a system incompatible with their skills.

The development of this competency may be completed after a period of inservice work. The plan for the development of this competency may require some control over the initial teaching year either through teacher

placement, through pairing teams of teachers, or through inservice support programs. The designers feel that it is important to prepare teacher candidates for this role. There is a reluctance to omit the competency even though we recognize that the competency may not be realized during the preservice period.

In summary, therefore, the expanded version of the teacher competencies for the model will remain much the same in wording with the addition of one competency. These competencies will be expanded considerably in details using the work of several other models. It should also be stated clearly that this expansion will include specific objectives which treat the teacher's ability to improve the pupil's competency in participating and taking responsibility for his own learning. The modified outline of teacher competencies for phase II will be as follows:

1. Specifying learner goals and/or selecting from learning goals specified by others.
2. Assessing pupil achievement of learni goals.
3. Diagnosing learner characteristics.
4. Planning long- and short-term learni ograms with pupils.
5. Guiding pupils in their learning tasks.
6. Directing off-task pupil behavior.
7. Evaluating the learner.
8. Employing team work with colleagues.
9. Enhancing self-development.
10. Serving as a professional leader and change agent in the schools.

Detailed lists of competencies can be found in the Final Report.[4]

SELECTION PROCEDURES

Admission into Education[5]

The general criteria for admission into education are the following: (1) The candidate would be invited to present evidence that he is interested in and somewhat successful in helping children and adults, (2) that he has enjoyed success and multiple interests among the academic disciplines, (c)that he has utilized the American language and communication patterns successfully, (d) that he has coped successfully with personal and social problems, (5) that he is self-assured and confident, (6) that he has good physical health, (7) that his total life pattern represents broad interests, (8) that he indicates open and acceptant attitudes plus understanding based on reliable and valid knowledge of all peoples in this society, (9) that he understands the specifications for the teacher training program and agrees to work toward mastery.

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[4]Southworth, A Model, GPO: pp. 14-27; ED: pp. 13-33.

[5]Ibid., GPO: pp. 33-34; ED: pp. 32-33.

The potential of the candidate and the nature of his initial attitudes and commitment will be very important in the admission stages of this model. In spite of much research (some very imaginative), little is validated concerning predictive criteria and their application. However, this model will be committed to the use of the professional judgment of faculty members who, in turn, are committed to the implementation of the model. The nature of individualization assumes much more personal responsibility than previously required or encouraged in a traditional teacher education program.

Improvement of teacher training rests heavily upon specific talents and personal qualities possessed by the student entering teaching as a career. To neglect or overlook talent and personal qualities would serve as an injustice to the students and to the investment in new models for teacher training. Because of the emphasis upon admission criteria, each training institution will need to renew or develop coalitions with teacher organizations, school districts, state agencies, and federal agencies to improve recruitment programs. It will be important to portray to potential teacher candidates that the role and function of the teacher are undergoing major change.

The model's program flexibility will provide for both admission and exit of trainees in several areas along the continuum according to demonstrated mastery of the academic and clinical experiences. The advantage of pre- and posttest capability will eventually provide a controlled entry and exit pattern which does not prevail in current teacher education programs. Figure 2 diagrams this admission and exit procedure.

PROFESSIONAL PRESERVICE COMPONENT

Guidance Procedure[6]

The guidance function, as presently practiced, guides the trainee through course requirements, but it does not aid in self-development. In the new model, however, guidance facilitates a more personal involvement. This is shown in the three settings outlined in figure 3. The entire process is aimed toward self-development, both professional and personal.

With this emphasis on the individual, a trainee can expect to be a partner in determining his movement through the college program. No longer will a student be exposed only to the large lecture classroom organization. Peer group interaction, independent study, small seminar group sessions, and simulated modules of instruction will aid him through his college program.

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[6]Ibid., GPO: p. 82; ED: pp. 34-35.

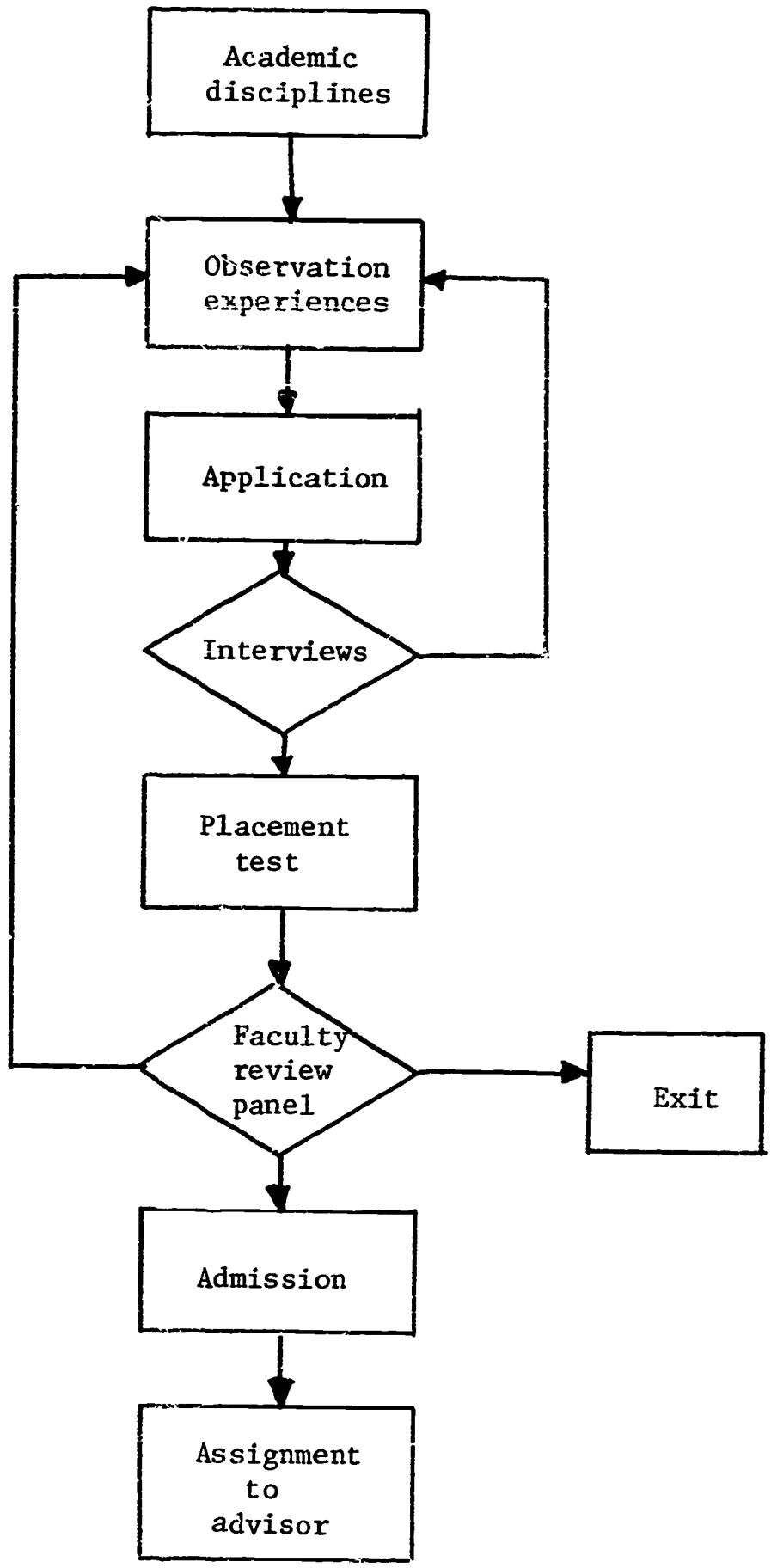

FIGURE 2

ADMISSION AND EXIT PROCEDURES
FOR PROFESSIONAL EDUCATION

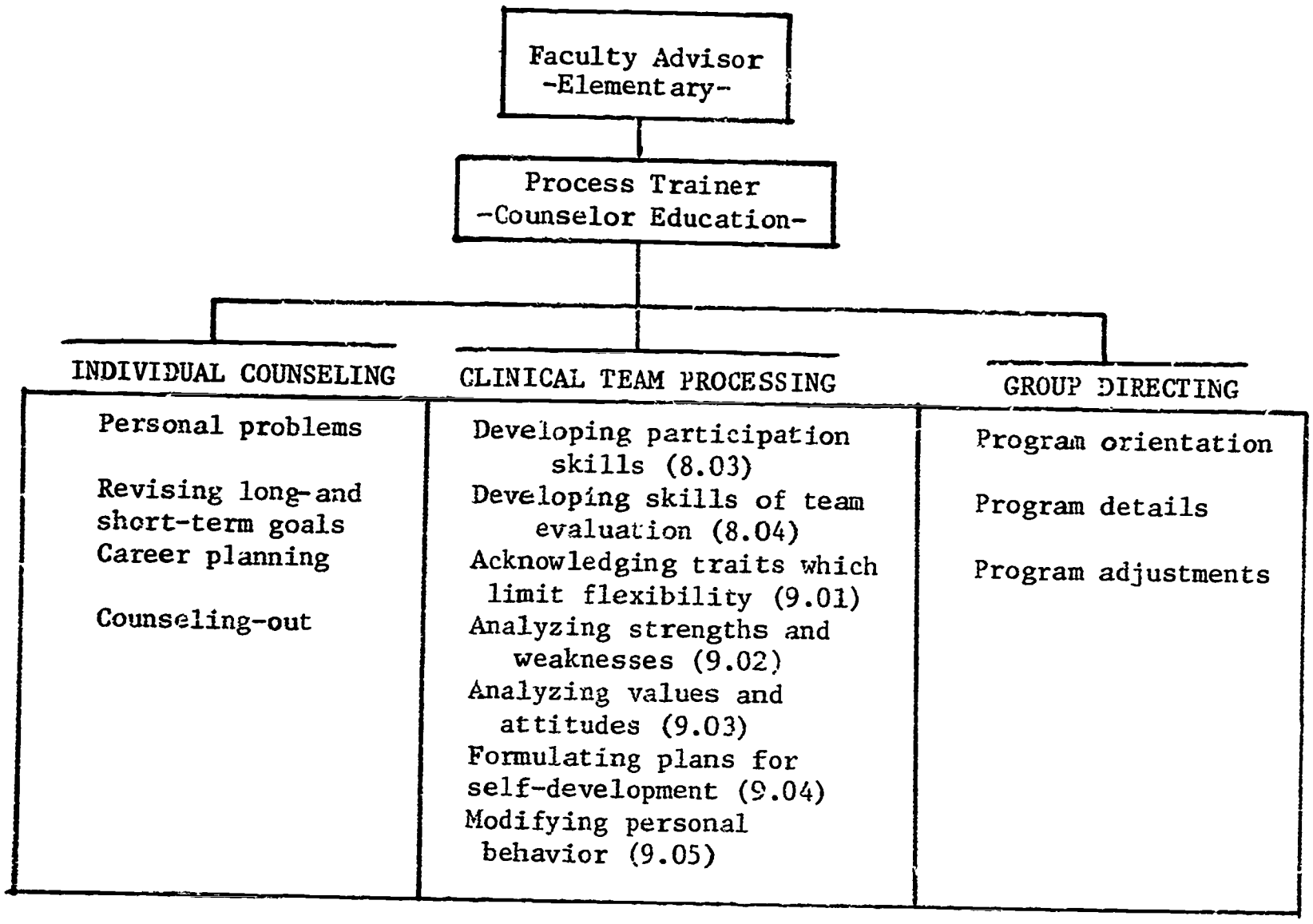

FIGURE 3

GUIDANCE PROCEDURES

Course Selection (Unit Experience)[7]

The trainee will select courses (or learning units) at four different stages according to an ordered subset of learning units desired for fulfilling the requirements for a B.A. degree in education. This subset is selected either on the basis of long-term objectives, short-term objectives in that stage, performance in the previous stage, and factors such as facilities available at school, requirements laid down by the school board, and the individual.

Figure 4 presents the total sequential movement of a teacher trainee through the four sequences of the new model, terminating at the B.A. degree in education at the completion of 32 learning units.

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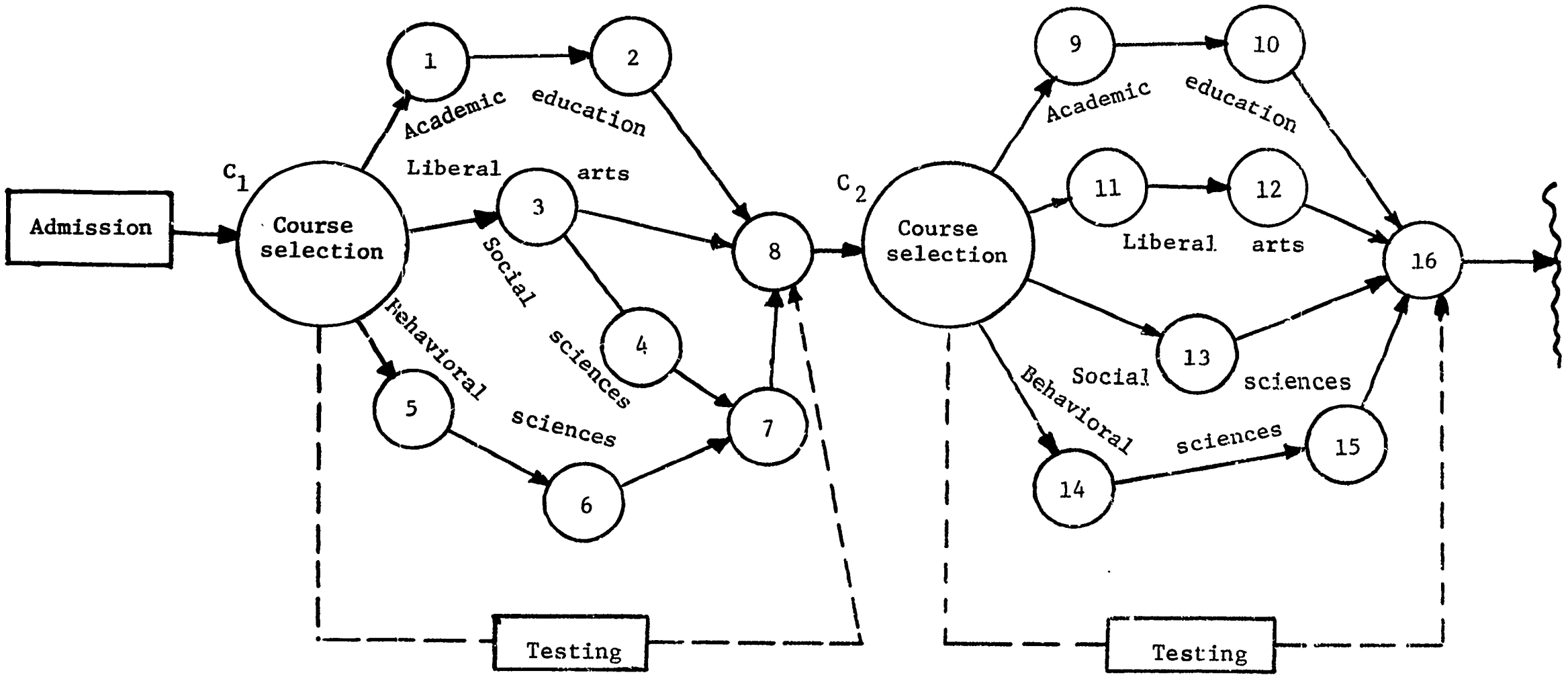
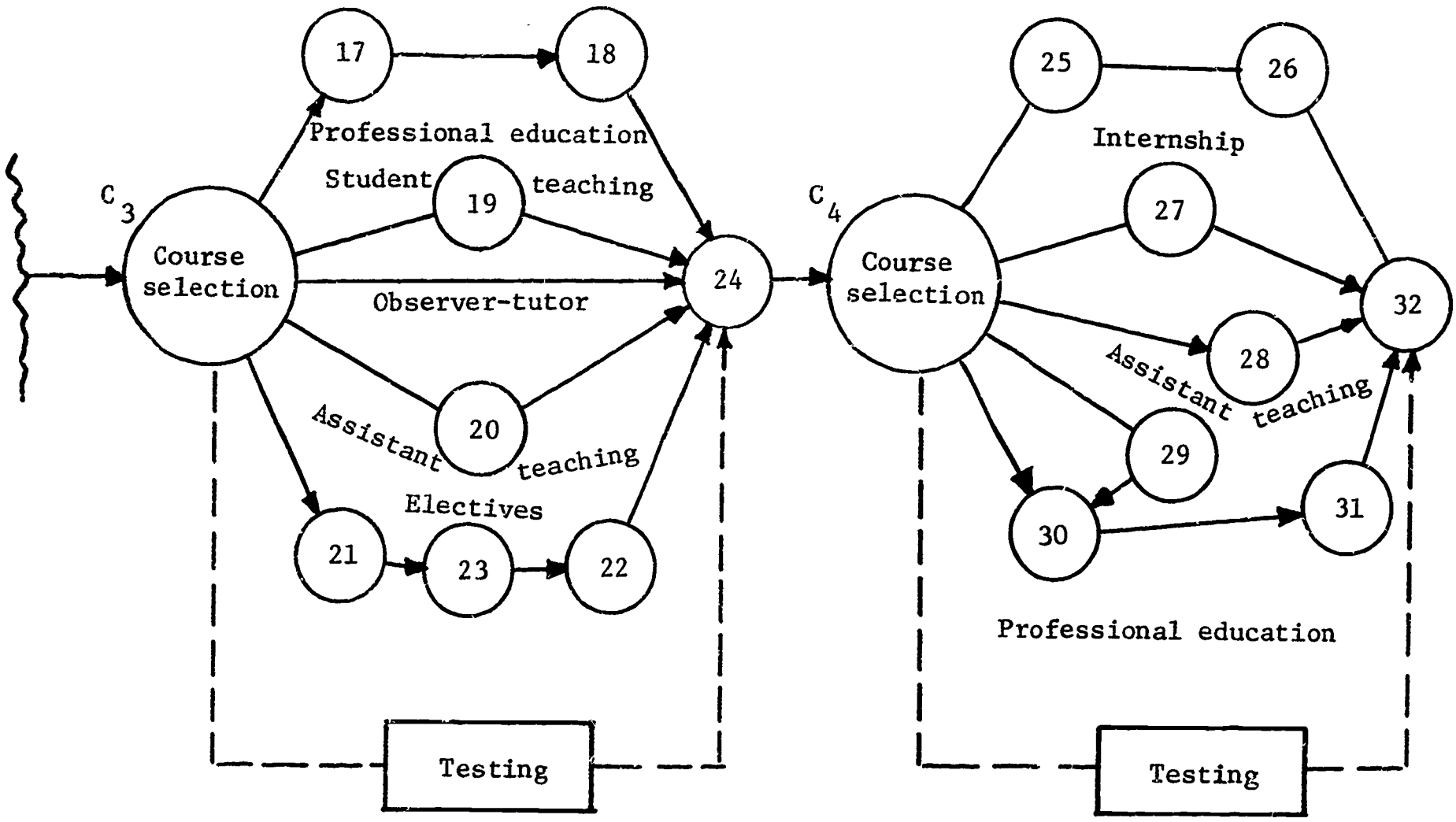
[7]Ibid., GPO: pp. 84-88; ED: pp. 36-38.



C_1, C_2: Academic learning sequences--tutorial, courses.
1, 2, through 32: Competency experience units needed for B. A. in education

FIGURE 4

INDIVIDUALIZED INSTRUCTION: TOTAL SEQUENTIAL MOVEMENT OF TRAINEE THROUGH PROGRAM (HYPOTHETICAL PLAN)



C_3, C_4: Clinical learning sequences--tutorial, clinical.
1, 2, through 32: Competency experience units needed for B. A. in education

FIGURE 4 (continued)

Following is a breakdown of the model sequence. (Additional explanation may be found in the Final Report.[8]

1. Academic Sequence--First Activities Series. The arrangement of this series offers the teacher trainee a continuous content resource in the liberal arts, behavioral sciences, and social sciences. With his adviser the trainee will select learning units in the academic disciplines as a result of personal assessment and placement tests and/or as a result of needs discovered by content tasks.
2. Clinical Sequence--Second, Third and Fourth Activities Series. During the second sequence, the trainee will be scheduled to observe and participate in the activities of the clinical setting. Data will be collected about his attitude, interrelationships, and successes as a tutor. The behavioral data and faculty judgment will form a part of the new basis for full admission into the training program.

The amount of time devoted to this segment of the program by the trainee is in direct relationship to his interest and faculty assessment. For instance, he could be trained for specific observation skills which would facilitate data collection to advance the base of knowledge about human behavior.

At the end of the trainee's second sequence, he will make application for a student teaching experience. His entry will be based upon appraisals made by his adviser and other faculty members.

During the third sequence, the traineee will serve a dual role. He will be an assistant teacher part of the time and a student teacher part of the time.

As a student teacher, 100 percent of the trainee's time will involve working with pupils for the purpose of developing his level of mastery in the competencies. He will function in a team situation supervised by clinical faculty members.

The trainee, in his role as assistant teacher, will be provided clerical experience, teacher aide experience, and tutoring experience while rendering valuable service to the clinical team.

This type of experience provides continuous contact with pupils in both small and large groups and in all phases of an elementary school program.

During the fourth sequence, pupil contact will continue. Team membership and each individual role or function will be analyzed. At this stage

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[8] Ibid., GPO: pp. 38-39; ED: pp. 37-38.

it is safe to assume some trainees will be exhibiting a great deal of competency mastery suggesting some experience in a leadership role of team or group.

At the internship level of experience, curriculum decisions, communication with parents, and other responsibilities will be added to his accountability pattern. The internship will continue until the specified degrees of mastery are achieved.

Cognitive units in liberal arts and education will continue to be scheduled by the trainee and his adviser until mastery of all required teaching competencies, in this case 32 units of learning.

In figure 4, notice the variable achievement rates between individual activity units. This defines the model's criterial nature of achievement: mastery of a unit of competency instead of the traditional time measurement. The trainee advances as soon as he masters one specified learning unit.

Figure 5 shows the competency-unit experience in detail. Twenty trainees all start toward the same specified learning goal, but they use different learning techniques and arrive at the goal at different times. Individualized instruction can be either independent study or group study.

Summing up the training so far, we have been concerned with adapting procedures for admission, guidance, and course selection for the individual. This implies the theme of the Pittsburgh model--individualized instruction.

Individualized instruction, as defined by our model, must satisfy the following criteria:

1. That trainees are able to proceed toward mastery of the instructional content at varying rates.
2. That each trainee can make regular progress toward mastery of the instructional content.
3. That the units of instruction be determined by the competencies.
4. That trainees are involved in learning which is wholly or partially self-directed and self-selected.
5. That trainees are able to play a major role in evaluating the quality, extent, and rapidity of their progress toward mastery of successive areas in the program.
6. That materials, techniques of instruction, and classroom setting (both university classroom and clinical settings) are available so that instruction can be adapted to the individual needs of the trainee.
7. That trainees are engaged in the learning process through active involvement including (1) involvement in selecting particular units to be studied, (2) involvement with pupils either through a laboratory or clinical setting, and (3) involvement in the learning process through such media as video tapes of their own performance.

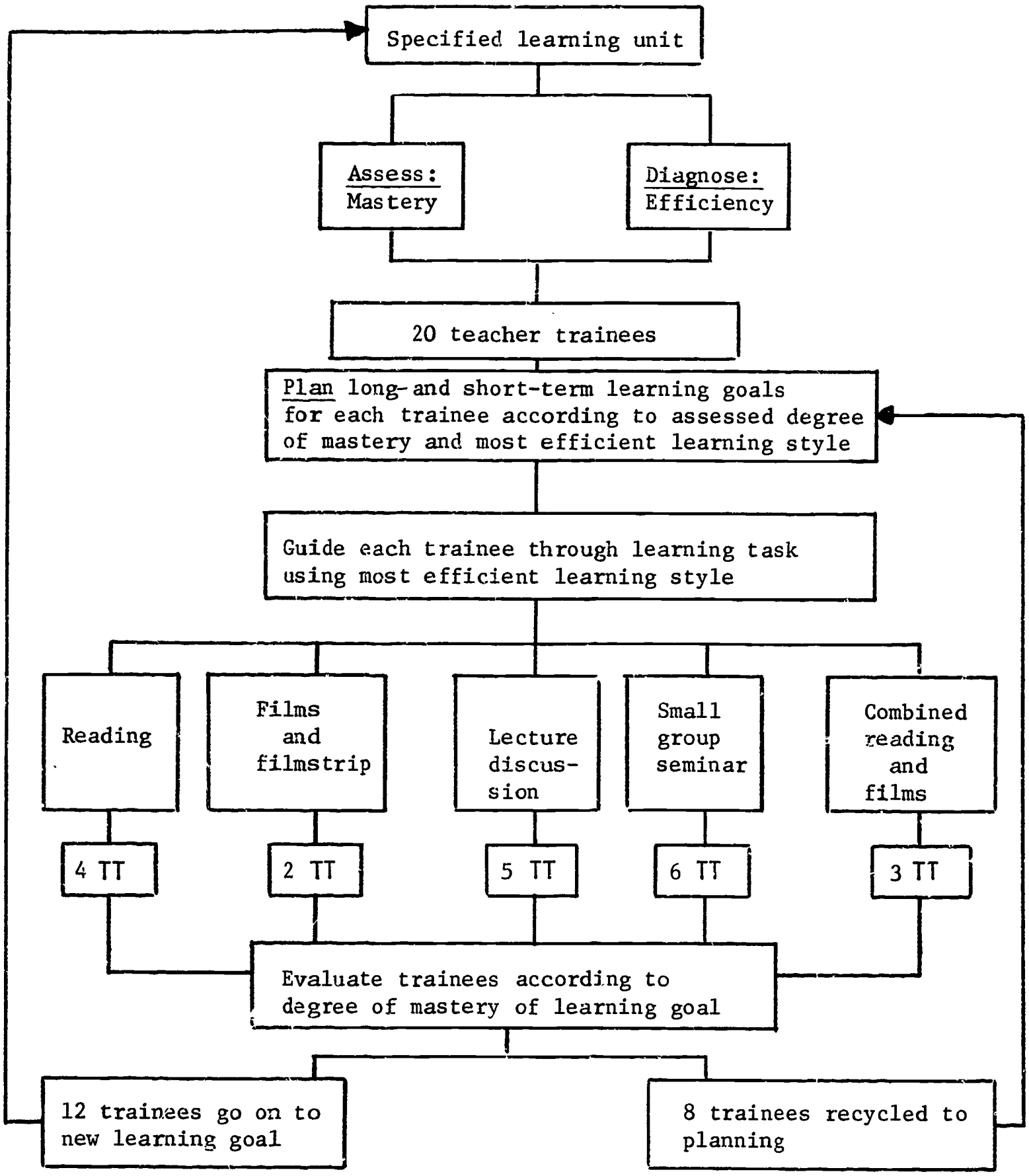

FIGURE 5

INDIVIDUALIZED INSTRUCTION COMPETENCY--UNIT EXPERIENCE[9]

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[9] Ibid., GPO: p. 89; ED: p. 88.

Group study, then, does not violate the individualized concept; in fact, awareness of self can be more easily achieved when studied in relationship to others in similar circumstances, competencies better observed and mastered when working in a group or clinical setting.

RELATIONSHIP OF PROFESSIONAL COMPONENT TO ACADEMIC COMPONENT

Self-Development and Flexibility[10]

The Pittsburgh model is an effort to design a program which emphasizes the human element in learning. Through a careful process of induction, interaction, and reflection in the admission and guidance components, the model addresses itself to the humanization of education.

A student can expect to be a partner in determining his movement through the college program. Peer group interaction, independent study, small seminar group sessions, and simulated modules of instruction will supplant large blocks of required courses.

The processes of interaction and reflection will create a greater awareness of a students' strength and weakness. Possessing this awareness and the ability to adjust accordingly will help a student develop confidence and self-respect. As the student becomes involved in determining personal direction, evaluation and assessment will stimulate alternate routes for overcoming mutually determined weaknesses. No longer will the students be shackled to predetermined courses and content outlines generally found in college bulletins. The flexibility of this program will permit course substitution as well as course elimination. The method of acquiring needed competencies will be determined by the learning style of the student.

Mastery and Efficiency

Mastery and efficiency will be serviced if the following essential aspects are provided for in the program: (1) that trainees are able to proceed toward mastery of the instructional content at varying rates; (2) that each trainee can make regular progress toward mastery of the instructional content; (3) that trainees are engaged in the learning process through active involvement including (1) involvement in selecting particular units to be studied, (2) involvement with pupils either through a laboratory or clinical setting, and (3) involvement in the learning process through such media as video tapes of their own performance; (4) that trainees are involved in learning which is self-directed and self-selected; (5) that trainees are able to play a major role in evaluating the quality, extent, and rapidity of their progress toward mastery of successive areas in the program; (6) that materials, techniques of instruction, and classroom setting (both university classrooms and clinical settings) are avail-

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[10] Ibid., GPO: p. 29; ED: p. 28.

able so that instruction can be adapted to the individual needs of the trainee; and(7) that the units of instruction be determined by the competencies rather than by the more traditional academic divisions such as psychology, sociology, or measurement.

The Pittsburgh model is an attempt to focus on people as well as content, the learner as well as instruction, and the process as well as the product.

The five requirements met by this model component are: (1) academic education, (2) professional education, (3) teacher competencies, (4) a clinical setting, and (5) a guidance component. The model follows a general plan for preparing a person to participate in activities involving human behavior. This general plan for self-development includes cognitive input, affective experience, and field experience sufficient to appraise the trainee's personal and professional development.

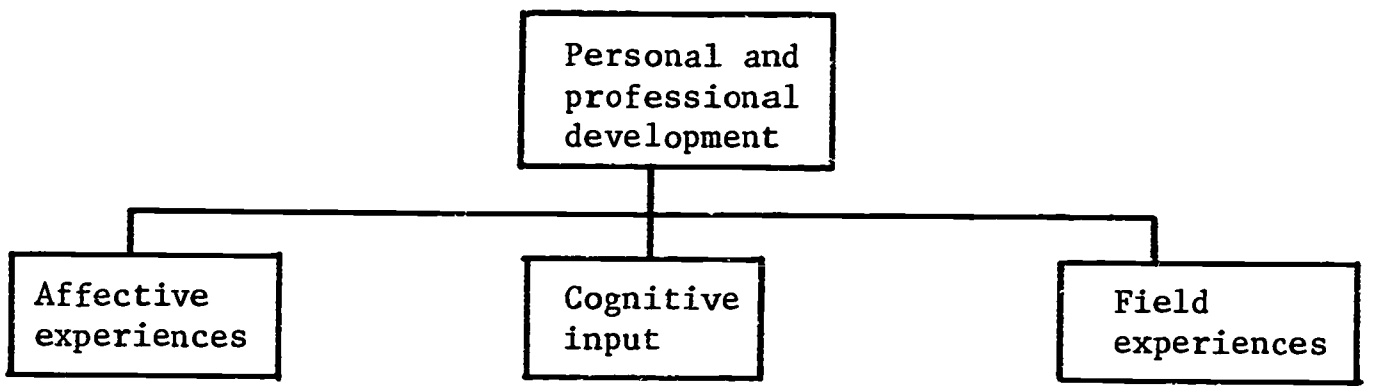

FIGURE 6

GENERAL TRAINING PLAN FOR SELF-DEVELOPMENT

Each component makes a unique contribution to the central theme of individualized instruction; major elements tend to support and enhance each other. As a student receives the input provided by the discipline, the processes treated as academic education are demonstrated. As the student attends the clinical setting, concepts of self-development and teamwork are applied. Figure 7 shows this interdisciplinary relationship of the components and table 1 explains the nature of the contributions of each component to individualization.

The Liberal Education Required in Teacher Training[11]

The rationale that support the liberal arts component in the training of teachers run through the literature in teacher education. A re-

[11]Southworth, "Educational Specifications," pp. 16-19.

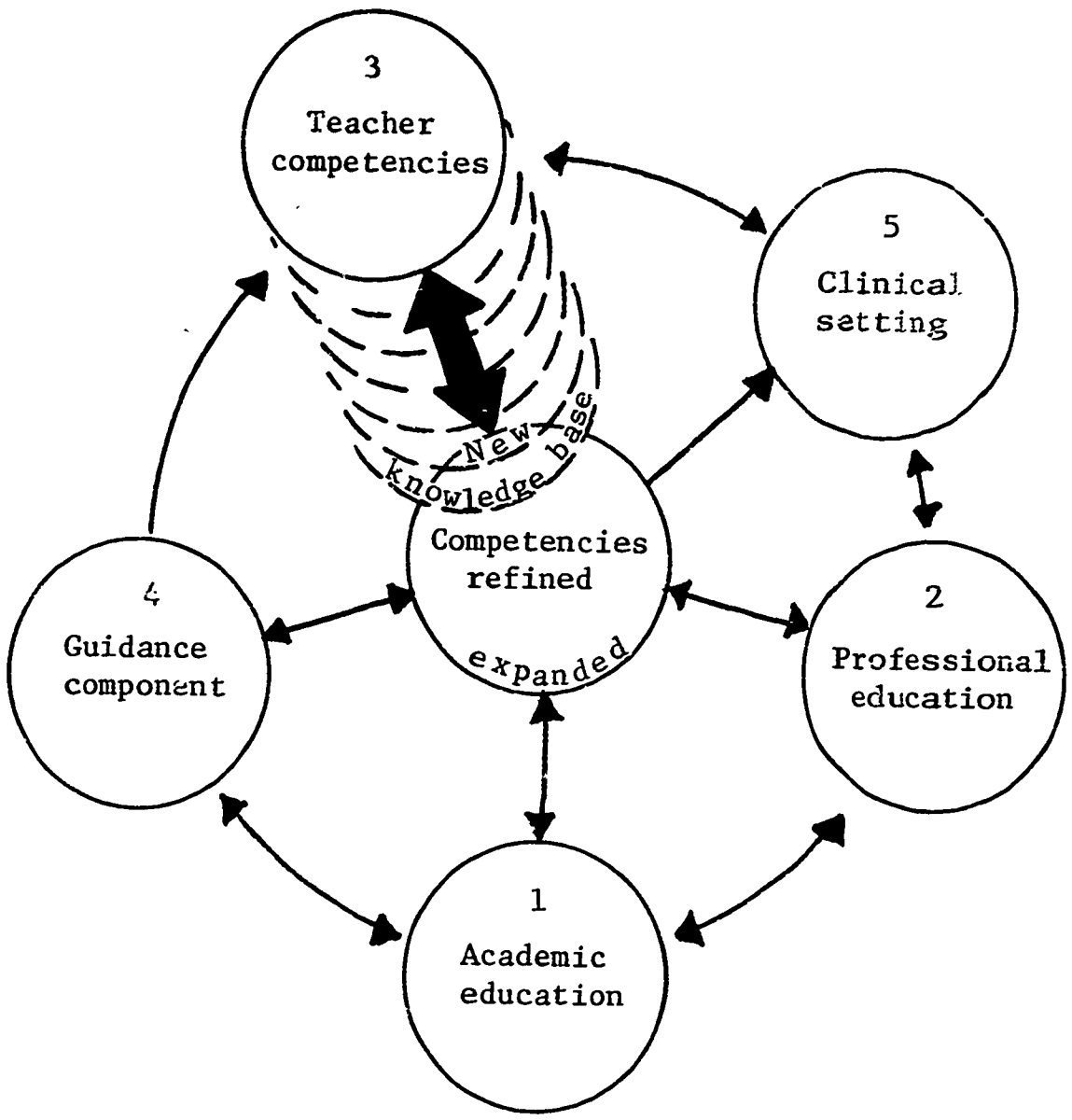

FIGURE 7

THE INTERRELATIONSHIP OF MAJOR COMPONENTS:
EXPANDING THE KNOWLEDGE BASE OF THE MODEL

TABLE I

NATURE OF THE CONTRIBUTIONS OF
EACH COMPONENT TO INDIVIDUALIZATION

Nature	Component	Definition
Cognitive input	Academic knowledge	Cultural background Liberal arts Behavioral science School in society
Cognitive input	Professional knowledge	Specifying goals Assessing achievement Diagnosing learners Learners Controlling behavior Evaluating learning
Affective experience	Guidance	Self-development Team work
Field experience	Clinical setting	Application of cognitive Input and affective experiences Refinement of ed. skills Study of the learning process

view of the USOE model teacher education programs reveals many of the same rationale supporting general education for teacher trainees. These rationale seem to fall together into three general themes: the humanizing influence of liberal education, the conceptualizing opportunities provided by the liberal arts, and the possibilities for learning modes of inquiry and processes of learning in the disciplines through the liberal arts.

A more traditional view of the humanizing influence of the liberal arts sees the student as less than complete until he has had contact with a prescribed set of bodies of knowledge. These experiences are to provide the exposure needed to be broadly educated. Another view of the humanizing influence of the liberal arts sees in the accumulated experiences of mankind a source of ideas which can serve as a medium for the development of a feeling for the humanness of man.[12] The liberal arts have the potential to reveal an "image of man" that provides the necessary schema for seeing the learner in a way that is consistent with the aims and goals of the individualization of instruction.[13] To see the liberal arts as a powerful means for helping the student realize his world in an expanded conceptual framework is to recognize the liberal arts for the important professional training that they are.[14] A long standing preoccupation with the differences between liberal and professional education has failed to provide the perspective needed to see that broad, generalizable concepts can be taught best by those who have acquired them for themselves. Individualizing instruction in the liberal arts should provide maximal conceptual meaning as the learner more closely confronts the medium of subject matter. Individualizing the process of concept formation in the liberal arts should provide a personal and transferable conceptual resource for use by the future teacher.[15]

A major mode for learning is imitation. In their preparation, teachers are taught for years by techniques that are inconsistent with the methods suggested they employ in their teaching. Through contact with the liberal arts, students can acquire the ability to use the modes of inquiry

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[12]Fred Wilhelms, "Humanization via the Curriculum," Humanizing Education, Yearbook (Washington, D.C.: Association for Supervision and Curriculum Development, 1967), pp. 27-28.

[13]James B. MacDonald, "An Image of Man: The Learner Himself," Individualized Instruction, Yearbook (Washington, D.C.: Association for Supervision and Curriculum Development, 1963), p. 29.

[14]Thomas F. Powell, "Reactions to the Liberal Arts Component," in "Specifications for a Comprehensive Undergraduate and Inservice Teacher Education Program, Evaluation of the Final Report" (Syracuse, N.Y.: Syracuse University, 1968), p. 57. (Mimeo.)

[15]Michigan State University, Behavioral Science Teacher Education Program (Washington, D.C.: Government Printing Office, 1967), Vol. 1, Section 11, p. 34.

and problemsolving peculiar to the various academic fields. The values fostered by an individualized program of instruction should be more readily internalized when the student utilizes his knowledge of the modes of inquiry. The field of education has recently acquired some theoretical tools for building into its programs this personalization, or internalization, of program values.[16]

The ComField Model Elementary Teacher Education Program prepared by the Northwest Regional Laboratory has devoted considerable attention to the internalization process as it relates to the professional competencies of that program.[17] Through the guidance component of the Pittsburgh model, the same internalization process could be applied to liberal arts education. In effect then, the liberal arts become not only a program for learning inquiry, but also a process through which inquiry can become valued.[18]

Since no teacher can gain command of more than a small fraction of existing knowledge, even in one area of the liberal arts, the required knowledge in the arts and sciences should be of the following types to achieve the purposes of general education stated previously:

> Familiarity with subareas of knowledge covered by the field, and with the general classification schema for ordering knowledge in the field
>
> Command of key concepts in the field.
>
> Knowledge of the history and development of this field.
>
> Knowledge of major modes of inquiry employed in gaining and applying knowledge within the field.
>
> Familiarity with major modes of investigation for gaining access to recorded knowledge of the field.
>
> Knowledge of interdisciplinary relationships.
>
> Knowledge of relevant materials in the field.

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[16] David R. Krathwohl and others, Taxonomy of Educational Objectives, Handbook II: Affective Domain (New York: David McKay Company, 1964), p. 29.

[17] H. Del Schalock, A Competency-Based, Field-Centered, Systems Approach to Elementary Teacher Education (Washington, D.C.: Government Printing Office, 1969), pp. 92, ff.

[18] Southworth, A Model, p. 8.

INSERVICE COMPONENT

Clinical Settings for Teacher Training[19]

Clinical settings for training are required to link pre- and inservice programs for teachers. The clinical setting cannot be established without a new coalition between colleges, schools, teacher organizations, and state or federal agencies. The relationship between theory and practice can achieve some consistency when teacher training coalitions establish environments for training that truly represent the most explicit behavior models and techniques desired in pushing teaching to new levels of performance. Inservice retraining of teachers must become a professional obligation of the school district, teacher organization, and the related agencies of government. It must be cast in closer proximity to solution of problems in education. A clinical setting must feature service to children, training for teachers, and extension of the knowledge base for teaching. In the case of individualization of instruction, it must provide a curriculum and materials to support this philosophy of organization for learning.

The clinical environment[20] in teacher education serves three distinct functions: (1) a service function to the children or youth being educated, (2) a teaching function for both the students preparing to enter teaching and experienced teachers in residence for retraining, and (3) a research function to serve teacher education and the supporting school districts through directed observations, recorded data about selected human behavior, controlled development of materials, and deliberate evaluation procedures.

Few adequately developed clinical environments presently exist in teacher education. Very few feature a thematic approach whereby a university and school district, with full support from teacher organizations, the community, and federal and state agencies, have established an individualized school setting for teacher training, curriculum refinement, materials development, systematic behavior analysis, and evaluation.

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[19] Ibid., GPO: pp. 40-41; ED: pp. 39-40.

[20] Clinical environment refers to all of the situations, places or settings in which a prospective teacher learns about instruction through teaching children, being taught, simulating teaching, or through carrying out such instruction-related activities with pupils, parents, or colleagues as materials development, materials and method testing, conferring about pupil growth, or curriculum designing. Usually the clinical environment for this model is a school building, encompassing all of its parts and facilities. Additional explanation may be found in Ibid., GPO: pp. 41-47 and pp. 58-60 and ED: pp. 39-40 and 57-59.

The clinical settings need to accommodate all the preservice roles including observer, tutor, assistant teacher, student teacher, and intern teacher. Importantly, the inservice dimension of teacher education will receive greater priority in more visible and carefully established environments. Experienced teachers will be assigned in residence for varying periods of time in order to facilitate their training to new tasks or differentiated roles. University graduate credit or competency experiences would be designed for the clinical setting. A cooperating school district and the representative teacher organizations will need to agree upon personnel policies which will permit the reassignment of faculty for training purposes. Whenever possible, retraining of teachers will be done in teams. Team training implies experiences which would adequately prepare personnel to function effectively together in differentiated roles.

Tutors, observers, student teachers, and assistant teachers will be involved in the clinical settings for varying periods dependent upon individual progress. Each role should contribute to a professional team serving children. Consistent models of exemplary behavior, technique, materials, and evaluation would form the clinical curriculum. The opportunities to practice would be available throughout an undergraduate program. Student teachers will participate as team members with different team members monitoring their performance. Teaching interns could be utilized in settings outside the clinical buildings only as part of a carefully designed and balanced program. The traditional (1:1) student teacher-cooperating teacher model lacks relevance in an era of the differentiated staff. New teacher candidates will be exposed to many models of teacher-learner behavior. The assorted roles of tutor, observer, assistant, student, and intern provide more potential for versatility and mastery than in traditional training settings.

A clinical teaching staff will be cooperatively selected by the school district and university partners in the teacher education coalition. The resident staff will be of permanent composition blended with teachers there for brief tours of assistant teaching as they complete short-course retraining. Assignment to the resident staff will be recognized monetarily and designated by teacher education as of prime importance. Tours of three or more years in the clinical setting will ensure continuity of program. Whole faculties could be retrained by selective residence within the clinical environment over a period of time. The relevancy of training will be carefully designed, controlled, and measured in such settings.

The clinical environment of identification represents a major decision in the implementation of this model.

The nature of the school district, university, teacher organization, community, and state-federal coalition is based on certain specific factors. Since an effective clinical setting is so important, arrangements must include the following points:

1. Demonstration of the philosophic and operational compatibility among the coalition members.

2. Agreement between the parties such that the roles are clearly identified in conjunction with the responsibilities.
3. Evidence from the school district regarding its support of efforts in teacher education, including budgetary commitments, program developments, and proposed plans.
4. Indication that the teaching faculty has appraised its attitude toward the development of a clinical setting.
5. Delineation of the manner in which the community has been informed regarding the concept of a clinical setting in education.
6. Periodic assessment of the operation to include university personnel, school district administrators, teachers, students, and parents.
7. Development of communication techniques in order to facilitate a free-flow of information regarding the operation of the program.

FACULTY REQUIREMENTS AND STAFF UTILIZATION

Faculty Instructional Modes[21]

A major revision of instructional patterns throughout education has been overdue. It seems likely that the proposed model will facilitate developing more effective teaching methods in higher education. In the past, individualization was treated by most teacher educators at the knowledge or cognitive level. Many years of discussion about the concept resulted in few acceptable models. However, the proposed plan for individualization at the teacher education level is founded on strategies directed toward student internalization--the major process of the affective domain.[22] As internalization develops, the student attends to phenomena, responds to them, values them, and conceptualizes them. In this manner, he becomes an advocate of individualization. Thus, while individualization requires certain teacher knowledge with regard to specifying, appraising, and planning, the operation and implementation of these competencies also relies heavily on the process of internalization by students. In brief, the student must first experience his own learning in an individualized pattern before he can practice the art. Therefore, the faculty in higher education cannot continue using teaching techniques which are inconsistent with the principles of individualization if the operation and implementation of this concept is its real concern.

The proposed instructional mode for university faculty includes six process as described in the following and shown in figure 8:

1. Specifying learning goals. The higher education faculty must specify learning outcomes in terms of manageable and observable behavior to--

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[21] Ibid., GPO: pp. 47-49; ED: pp. 46-48.

[22] Krathwohl, op. cit., p. 44.

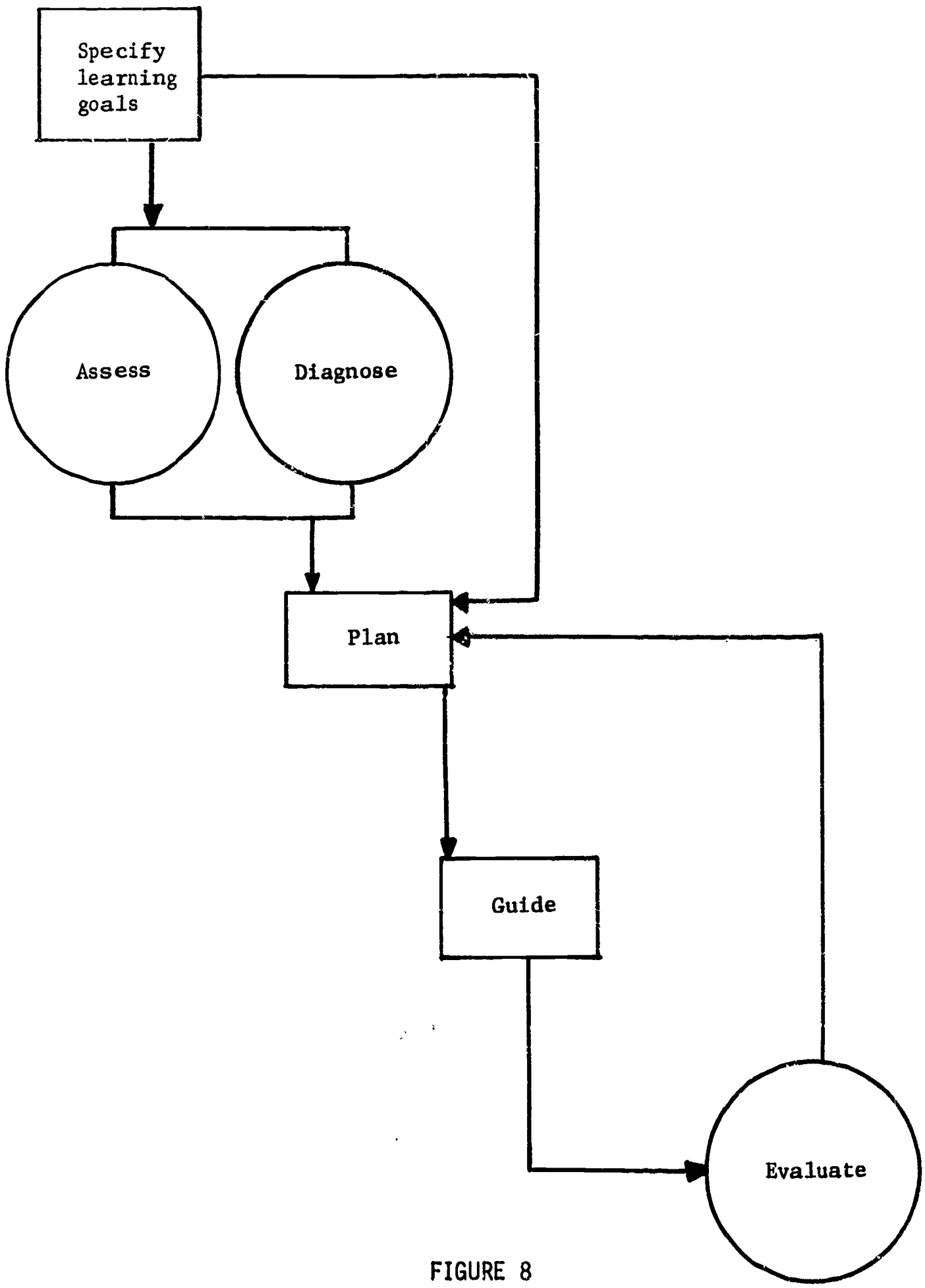

FIGURE 8

FACULTY-TRAINEE INSTRUCTIONAL MODE

2. Assess student achievement of learning goals, which suggests and indicates various degrees of sophistication regarding the learning outcomes.
3. Diagnosing learner characteristics is necessary for creating the most efficient means of mastering the learner outcomes, and--
4. Planning long-and short-term learning programs with students. Planning is done cooperatively with the student, utilizing data from numbers two (2) and three(3).
5. Guiding students with their learning tasks implies aiding the student in his endeavor to achieve mastery of the learning outcomes. Help can fall into many categories--material location, problem identifications, problem clarification, direction, etc.
6. Evaluating the learner is done, naturally, in terms of the specific learning outcomes previously identified. The results of the evaluation then determines the new learning outcomes.

Developing the Professional Knowledge Base for Teaching[23]

If education is to become a science as well as an art, then educators at all levels must identify new modes of clinical decisionmaking or regularize old ones. In 1969 American education still finds too many beginning teachers having to rediscover simple truths, to refute a few myths, and remediate the stand-up, talk-at teacher model which dominates most of the society. The "profession"[24] has not evidenced those signs of maturity which include consistent efforts to (1) identify its knowledge base,(2) collect data about its techniques and materials,(3) analyze and evaluate its practices, and(4) systematize its procedures for extending a body of principles, strategies, and understandings of itself.

In the search for a conceptual framework and for modes of inquiry for extending the knowledge base, the student will have been provided contact with the liberal arts and those academic fields, including the behavioral sciences, which provide the cognitive base for the teaching profession. The clinical setting provides the context in which the cognitive base can be applied to the problems and issues arising from instructional decisionmaking. To study and receive feedback about instructional decisions, the practitioner[25] must have a supportive clinical team[26] consisting of educators, academicians, and instructional assistants to allow reflection on the decisionmaking process.

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[23]Southworth, "Educational Specifications," pp. 20-27.

[24]Professional and profession are enclosed in quotes throughout to indicate a state of becomingness.

[25]Practitioner in this sense refers to the classroom teacher or the teacher education student in the clinical setting, either of which may be extending their own or the professions's knowledge base.

[26]For a further definition of the term "clinical team," refer to Southworth. A Model, p. 100.

As the practitioner selects "concepts, intellectual processes, and the emotional ingredients[27] which reflect an instructional decision, "an opportunity is provided for the analysis of behavior which will expand the knowledge base of the teacher. As the educator-researcher-teacher-academician team oversee this process, new testable theory will be generated by the decision-treatment-evaluation cycle.[28] (See figure 9.) The clinical data generated through this cycle are artifacts in the system, not a product in any sense. In effect, it instigates and perpetuates the examination of professional decisionmaking as a rational process. The procedure establishes the hypothetical nature of professional methodology and involves the practitioner in its evaluation and refinement.

As the practitioner gives evidence of being able to cope with the decisionmaking process, these successful experiences will provide feedback for beginning the process again. When the practitioner is unable to cope with the process, it will be necessary to return to the knowledge base for additional cognitive input or to a guidance function which will provide the necessary insights to return to the instructional issue or problem that is unsolved. Translated into action, this means a continuous process of retraining of teachers.

Restructuring the liberal arts component[29] should proceed early in the model implementation. The array of strategies which could be employed in the restructuring process are unlimited. The authors of this model place emphasis upon a design that utilizes the criteria which follow: (1) that both the school of education and the academic department involved in the restructuring recognize the need for program regeneration, (2) that individualization must be understood and agreed to as the theme permeating the new organization, (3) that sufficient budget, personnel, and time be assigned to the restructuring process in order to facilitate the development of instructional units and instructional modes needed for this model, (4) that means of evaluation and feedback be established to ensure continued relevancy of the program, (5) that the relationship of each academic discipline to the total program be recognized early in their individual program, and (6) that the restructuring process be examined continuously in order to judge it as a way of establishing the grand design for restructuring the institution.

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[27]Elmer R. Smith, "The Learning Essentials," Teacher Education (New York: Harper and Row, 1962), p. 68.

[28]Michigan State University, op. cit., p. 8, ff., provides a model of this cycle and its contribution to the practitioner's and profession's knowledge base.

[29]Southworth, "Educational Specifications," p. 19.

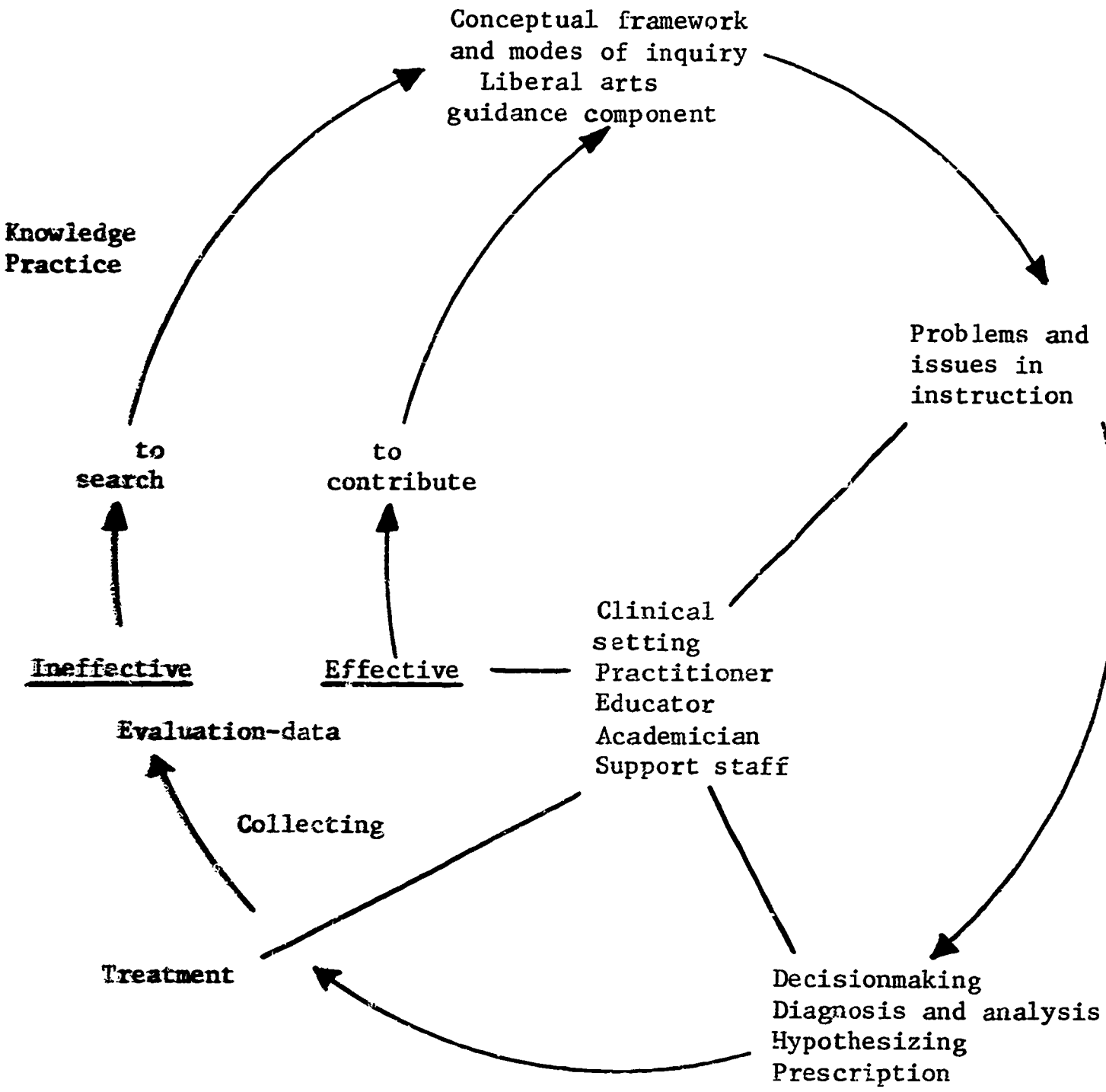

FIGURE 9

EXTENDING THE KNOWLEDGE BASE FOR TEACHING[30]

[30]Michigan State University, op.cit., Vol. 1, Section 2, p. 34.

EVALUATION COMPONENT

Evaluation Questions for the Teacher Training Model[31]

The teacher education program which has been outlined in the Pittsburgh model shall be evaluated for two purposes: (1) to provide information for guiding and improving the program as it develops and (2) to provide a comprehensive assessment of the program. These two aspects of evaluation are formative and summative evaluation after Scriven's explication in "Methodology of Evaluation."[32]

Both formative and summative evaluation require that each dimension of the individualized teacher education project be assessed. These dimensions consist of (1) the aims or criteria of the program, (2) the plan or procedures for the program, (3) the implementation or operation of the program, and (4) the end results of the program, i.e., the degree to which the program permits the achievement of the objectives.

The evaluation of the Pittsburgh model will provide data to answer the following types of questions relating to an individualized teacher training program:

1. Are all the competencies needed in teaching clearly stated in terms of the desired outcomes?
2. Does the list of competencies exhaust all the needed competencies for the teacher of the future?
3. Are there provisions for the manner in which the students shall work to develop these competencies: the materials used, the degree of proficiency required for various competencies, the application of knowledge, the determination of prerequisite skills needed for certain competencies, the ordering of competencies, and the arrangement of the competencies into units of workable size?
4. How does the plan incorporate the elements of individualization into the teacher training program so that teachers will be trained in the same manner that they will eventually instruct children? In what manner will the trainee diagnosis take place? What type of testing procedures will be used for this? What provisions will be made for the use of diagnostic testing procedures in assigning units of work to the trainees? Is every unit planned with alternate

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[31]Southworth, A Model, GPO: pp. 65-69; ED: pp. 64-68.

[32]Michael Scriven, "The Methodology of Evaluation," Perspectives of Curriculum Evaluation, Edited by R. E. Stake (Chicago: Rand McNally and Co., 1967).

instructional paths, materials, and technology? What provisions are made for the continuous monitoring and assessment of student progress?

5. What forms of environments are accessible to the trainees for individualizing instruction?
6. Is the plan developed in sufficent detail so that it can be implemented?
7. Is the plan appropriate to the characteristics (age, previous instruction, etc.) of the trainees?
8. Does the plan account for the variation of events which might require modification of the plan?
9. Does the theoretical study of professional education and the academic disciplines blend with application of learning throughout the entire training program?

Implementation

The way in which the program actually operates must be assessed in terms of the viability and efficiency with which the plan is followed and the criteria are met. In asking whether the operation of the plan fits the plan and stated criteria, the following types of questions need to be answered in order to establish the strong points of the program and modify the limitations of the program as it operates:

1. Are the behavioral objectives for competencies stated unambiguously so that professor, trainees, test writers, or curriculum developers can use them with clarity?
2. Is there empirical evidence that the objectives are in requisite order?
3. Is there empirical evidence that the objectives are grouped into units of appropriate size?
4. Are the objectives and units such that there are no gaps? or overlapping steps in the ordering of the objectives and units?
5. Is there evidence of the validity and reliability of the various diagnostic tests used in the program? This includes both written tests and various performance tests during clinical experiences.
6. How do the procedures for administering tests and scoring procedures operate?
7. Is there evidence that the tests provide information that the trainee can use to monitor his own progress?
8. Is there evidence that the materials used are appropriate and easily accessible to the trainee?
9. To what degree does individualization take place during the program? Are there alternate routes or types of instructional materials, or arrangements by which the trainee can proceed at variable rates?
10. What type of staff training is required to operationalize the program?

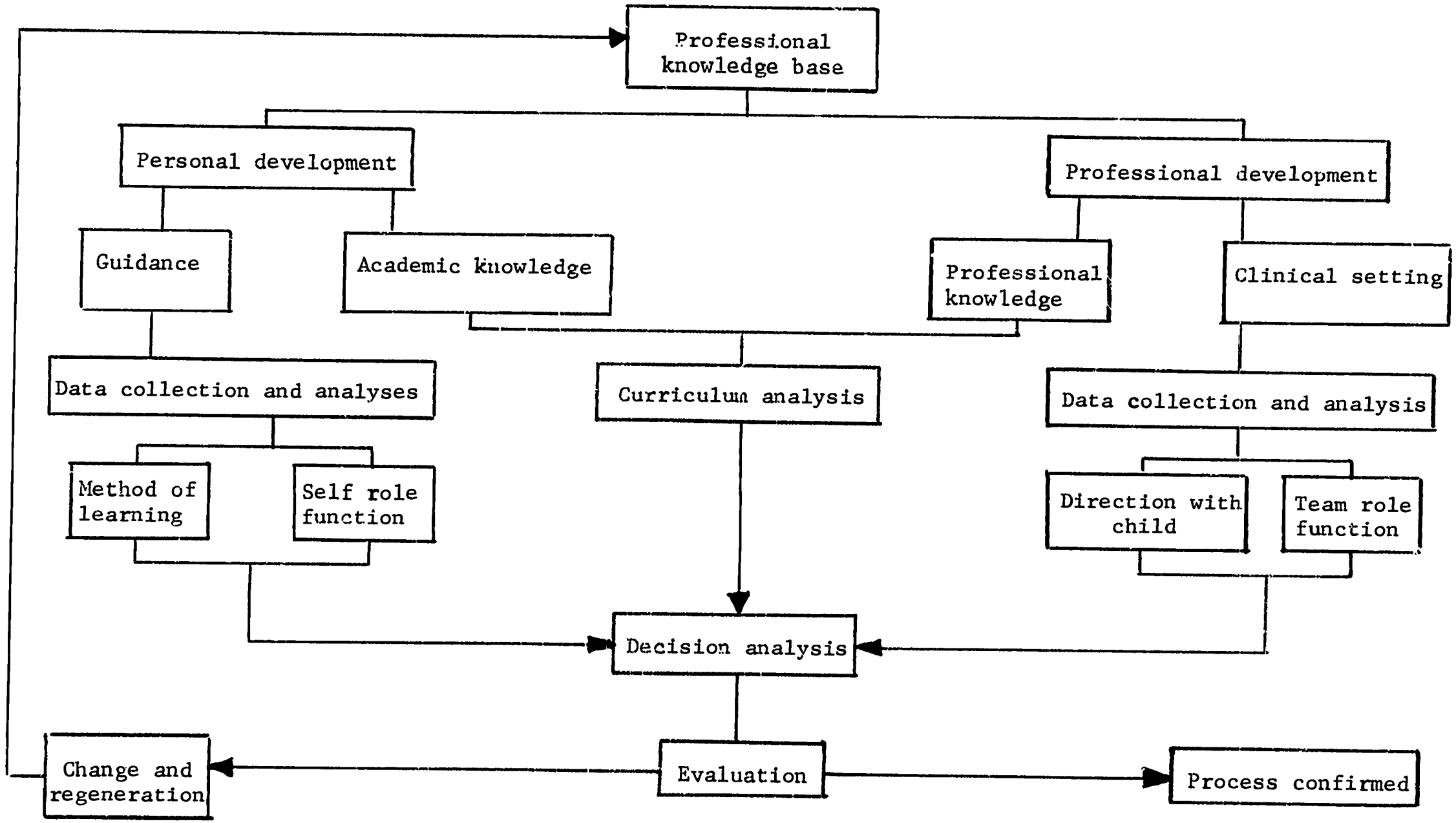

FIGURE 10

PROGRAM REGENERATION SYSTEM

Assessment

Finally, the outcomes of the program in terms of trainee performance will be evaluated to judge the extent to which the teacher training program does prepare trainees to effect various competencies required. This will require data to show:

1. Measures of the trainees' performance in the classroom in the differentiated teacher roles that they may be expected to undertake.
2. Measures of the effectiveness of various diagnostic procedures and materials for improving student performance.
3. Data to show variation in instructional materials and routes.
4. Data to show variation in instructional rates.
5. Followup studies on the work of trainees in teaching once they have completed the program.

The types of questions listed for the planning, operation, and assessment of the teacher training program can be answered at various points in time during the program's development in order to improve the program's operation.

The information also can be combined with all information available regarding the project for summative evaluation. However, the data will be gathered by continual monitoring and assessment at all phases of the program development in order to correct problem areas and to provide a record of program progress and change. Figure 10 shows this continual monitoring process operating within the new model.

Through decision analysis, each component is assessed and evaluated, not only for its own internal consistency, but for its interdisciplinary relationship to the philosophy of the model itself.

PROGRAM MANAGEMENT

Educational reform of the recent past has been analyzed from at least two points of view--as products or as processes. The proposed products of this model will probably be examined in depth. However, the authors believe that the procedures by which this model is implemented, i.e., the process of change, also should be studied.

Much advice is presently available from those who have encountered problems in change. In the text, Innovation in Education,[33] Matthew Miles makes the following observation:

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[33]Matthew B. Miles, editor, Innovation in Education (New York: Teachers College Press, Teachers College, Columbia University, 1964), p. 635.

"...Educational innovations are almost never installed on their merits. Characteristics of the local system, of the innovating person or group, and of other relevant groups often outweigh the impact of what the innovation is."

If one abides by this judgment, the Pittsburgh model or any other design is not likely to be effectively introduced without a substantial analysis of the present state of affairs. Examination of such functions are as the communication patterns in a system, and the decisionmaking process should precede the enactment of elaborate plans of action.

The implementor will establish the structure for all teacher training components and coordinate the resulting relationships. A system of management will evolve as the faculty pilot parts of components and establish evaluation procedures.

Management[34] is identified and defined as a set of functions that is the necessary support system of the teacher training program. The designers list the following functions:

1. Planning and development.
2. Financing.
3. Operations maintenance.
4. Information.
5. Communication.
6. Evaluation.
7. Reformulation of program.

The functions of management utilize human energy, time, material, facilities, and data resources in attempting to achieve the component objectives which have been clarified in this proposal.

The administration of an individualized teacher training program, one only reaching 40 percent of total individualization, will demand new strategies from department chairmen and college faculty. Certainly, the monopoly of superior management systems in government, industry, and the defense establishment will continue until teacher education personnel begin the interface with the so-called experts.

Any implemention of this model will need research support in the careful specification of learning goals, task analysis, and systematic evaluation of the model components. The relationship will not be an easy one between the research-oriented faculty and the operationally oriented faculty. It would be safe to state at least three major problems encumber the dialogue: (1) a common language does not exist, (2) respect between research and teacher education has not developed, and (3) approaches to

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[34]Southworth, "Educational Specifications," p. 35.

thought, process, and problemsolving are not initially compatible or congruent.

When a university decides to implement the University of Pittsburgh model, a series of events must occur. Table 2 illustrates this process in 10 steps.[35]

SUMMARY[36]

Individualized instruction has been an ageless dream of the schools of America. The years of effort and dialogue have resulted in very few plans and operations of this idea which could withstand rigorous examination. Through the years, this dream has turned into a dilemma as teachers have been urged by many to individualize programs only to be confronted with the reality of a training lag, an economic restriction, and an operational void which exists because so few acceptable models of this concept are available.

The central theme of the new model for teacher training is individualized instruction. A general definition of individualization is as follows: Individualized instruction consists of planning and conducting, with each pupil, programs of study and day-to-day lessons that are tailormade to suit his learning requirements and his characteristics as a learner. This definition focuses on instructional planning with and for each individual student before teaching him, then teaching him according to the plan. Most educators mistakenly define individualization in terms of the setting within which learning takes place, limiting it to tutorial instruction or independent study.

Group teaching can also be a part of individualized programs. Whenever, at the same time, two or more pupils are ready to study the same task in a like way through group presentation or discussion, it is proper for the teacher to assemble and teach them as a group. This is very different from most instruction today where plans are made for the group as a whole and where instuction pays limited attention to individual differences among pupils in the group. It has been assumed by the authors of this proposal that principles of individualized instruction should be used throughout the educational experience. Thus, while this model is specifically addressed to the preparation of teachers for levels of instruction within an elementary school, it is applicable to other levels.

Several chronic problems of education are directly related to the issues

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[35]Southworth, A Model, GPO: pp. 63-65; ED: pp. 62-64.

[36]Ibid., GPO: pp. 70-72; ED: pp. 69-71.

TABLE 2

STEPS TO IMPLEMENTATION
OF THE UNIVERSITY OF PITTSBURGH MODEL

1. Selection of model	The institution has decided to implement the University of Pittsburgh model.
2. Faculty, students, and facilities assessed	Capabilities of faculty, students, and facilities are assessed with regard to the model requirements.
3. Resource capabilities	Conclusion is reached regarding capabilities of all resources.
4. Goals of overall program	Long-term goals are specified such that these goals are consistent with resource capabilities.
5. Immediate or intermediate objectives	Short-term goals are specifically identified with regard to facilities, material and techniques, management, and faculty.
6. Acquire new resources	Short-term goals are realized as new resources are acquired.
7. Orientation of faculty, conventional and new courses, and clinical settings	The system has the capability to induct students after faculty orientation has occurred, courses have been evaluated and reformed, and clinical settings have been identified.
8. Recruitment	Students are urged to apply for admission.
9. Assessment of resource and student capability	Resources such as faculty, facility, and material are available. Student capabilities are also assessed.
10. Admission	Students are admitted on the basis of system and student capability.

of individualized instruction and teacher preparation. Paramount among these concerns is inservice education. Slowly, we are coming to acknowledge the obsolescence in our skills to individualize instruction. The programs of the past have been futile. In the future, we will find a new approach as training, self-development, and self-renewal become features of the daily operation of the school. This model proposes a way of preparing new professionals and upgrading the licensed practitioners to individualize instruction.

Individualized instruction is the central theme of the University of Pittsburgh model. In preparing the plan, we intended to be clear that while such individualized programs as IPI, PEP, and PLAN have been cited in the text, the Pittsburgh model is not a teacher training program only for that form of individualization.

In a general sense, the proposed program is quite similar to many existing plans. The student will continue in liberal arts study for the first part of his preparation. The remainder of his program will consist of several experiences in a school setting.

Major differences exist between conventional teacher education programs and the proposed model. An illustration of this point would be the matter of program flexibility--a critically important trait of individualized instruction. In the Pittsburgh model, this attribute will be evident as a student obtains the liberal arts input because instructional modes will be used which allow for different rates and styles of learning. Flexibility also will be obvious as students assume more responsibility for making decisions about their training. Flexibility will be noted in program planning. No longer will courses be offered with vague descriptions regarding purpose and goals. Smaller, more precise units of instruction will be used, and students will have a greater opportunity to tailor the program according to their needs. This trait also will be visible during student teaching and interning for these experiences also will be adjusted to the individual.

Flexibility is a discernible trait of the proposed instructional mode. Individualized instruction as herein proposed begins with an appraisal of the learner. Instruction is then adapted to the individual. Within a reasonably short time, the effectiveness of that treatment is judged for the purpose of adjusting activities to the learner once more. This cycle, which is brief, in time, appears as an appropriate plan for individualizing instruction.

Flexibility is carefully linked to self-development which is another unique feature of the Pittsburgh model. The adjustments previously cited in program and instruction enable self-development in a gross manner. However, underlying this focus is the reasonable assumption that students will relate to pupils in a more helpful manner if the preparation period is marked by accepting and helping behavior by the faculty.

Self-development has another dimension. It will be noticeable in the prolonged attention to group process in the model. By this technique, the student will learn how to help others identify personal strengths and weaknesses. In so doing, students will gain new insights into their own behavior.

The teacher educators who prepared this model believe that individualized instruction is a means to a more significant goal. It will be a useful means only if it helps each child in his quest for identity. This is an endeavor of the highest priority. It is an endeavor which cannot rely totally on good equipment and material. It is an endeavor which progresses on the basis of human relationships. Thus, the teacher, or the student of teaching, must be prepared to fill this critical role. This is the contribution of self-development. For as the teacher knows himself, he will be better equipped to help others know themselves.

Learning in the fashion of the Pittsburgh model also is marked by the concepts of mastery and efficiency. With regard to mastery, the trainee will be expected to demonstrate that learning goals have been met. Movement to another set of goals will be predicated on previous indications of mastery. However, mastery will not imply rigid standards of performance for all trainees.

Efficiency is related to the flexibility feature. In relation to efficiency, the program will be adjusted to accommodate individuals in terms of what they know, how they learn, and what they select to learn. Thus, a flexible program is essential if learning efficiency is to be recognized.

Individualized instruction is a demanding pursuit which requires the talents and support of the entire profession. Unilateral institutional action is unthinkable as a solution to teacher training problems in America.

Individualization is understood to mean planning with, therefore, one institution may not prescribe explicitly for another. Each implementing faculty must study and refine components according to the unique factors integral to its setting.

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SECOND-DAY INTERACTION
OF THE WRITERS' GROUP

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*For purposes of this publication, the participants' comments have been edited and excerpted.

WRITERS' CONFERENCE
SECOND-DAY INTERACTION

BURDIN:

What is your general assessment of all the models?

COOPER:

Probably the greatest across-the-board weakness of all the models is the [imbalance] of attention [paid to] the preservice [level]. In most models...it was much easier to specify the programs from a preservice point of view. The inservice [level] was a lot foggier--the situations presented were unique, and the individuals were varied. It was very hard to describe in advance an attack on the inservice component. That was my impression.

BURDIN:

Most of the federal programs to-date focus on graduate programs, so this [the emphasis on preservice education] strikes me as an interesting departure from the earlier emphasis on graduate schools. Maybe this [departure] is a good antidote to what some people would say was an over-focus upon graduate programs.

JOHNSON:

We wanted to do an excellent job, and we started at the beginning. Some of us in the program that I represent began the professional program much earlier.

.....

If we are capable--and I think the model will do it--of producing a better elementary teacher, the bachelor's degree is equivalent to the master's degree of today. Once we started making specifications which we called teacher performance behavior, we realized that it [the professional program] can't be done in the first two years. You can't do it all in the first four years.

There's another question, too, in relation to preservice. Specifically, it is the practicality of the inservice program on a large scale. I'm particularly thinking of some of the larger institutions. It boggles the mind to think of a comprehensive inservice program for the graduates of Michigan State University....The logistics and manpower necessary seem to be fantastic. I don't know how it could be done on a large-scale basis.

.....

BURDIN:

What can be expected of the B.A. degree graduate--under present programs and under the models?

HOUSTON:

Isn't our problem here one of definition of what the bachelor's degree is? For example, Charlie [Johnson] could be including an internship which might go beyond what you're thinking about, or he might not be including the internship as part of this transition to teaching.

JOHNSON:

I still think that we can expect a lot more of this graduate at the end of the equivalent of four years--whatever the time is--than we would normally expect of one out of the present program, or a lot of effort has been wasted.

.....

DODL:

I'm going to respond to this thing about finishing the typical bachelor's degree, also. I think our model is a little different here. We removed all intern and student teaching experiences from the preservice phase entirely, which may not be a different kind of venture at some other institutions, but it was a different one for our particular state and our particular institution. To the extent that these people will not have had a continuing kind of inschool experience prior to actually going out into what we call an inservice kind of relationship, it would be different, and they would not have had some of the experiences they might have in a traditional program. On the other hand, we fully expect them to be far better equipped in certain teaching skills....

JOHNSON:

Ours [program] is just the opposite. We can start people right out of high school as paraprofessionals taking course work concurrently in the liberal arts. We increased, practically tripled, the amount of time that they get in laboratory experience. We have increased it in bits and pieces. All experiences with children go along with instruction, not just in some long capstone experience. We haven't limited them in terms of weeks. We say approximately six weeks, or whatever is needed. Some may need 12 weeks.

PANELIST:

I'm asking out of ignorance, Chuck [Charles Johnson], but can a person test ahead of these lower level performances of experience?

JOHNSON:

Yes, any time. Everything is on a proficiency module basis. Everything is preceded by some form of pretest. Now that doesn't mean paper-and-pencil pretests always. It can be a performance scale. In other words, you can chop your way right through until you find you can't perform and need the experience to perform. And that's where you begin.

SCHALOCK:

One of the inconsistencies that hangs me up in this whole discussion is hearing you say what you just said, and yet your earlier comments were all linked to degree programs. We just had to resolve that kind of incongruity, and we did it in a simple-minded kind of way. That way is

simply to unhinge, unlink preparation from degree programs. Degree programs are institutional issues. They don't necessarily have anything to do with the ability to teach. In the Northwest model if you meet the criteria, you are able to move into a real live classroom situation with supervision by the time you are a freshman. Or you may stay either in the laboratory or on the faculty for eight years.

.....

We found that a lot of the specifications that we developed for preservice also apply to inservice, mainly because teachers just haven't had this kind of experience. The fact that this is true doesn't mean that they go through the same type of program.

.....

BURDIN:

How realistic are the models' emphasis on inservice programs?

COOPER:

How realistic is it that the institutions are going to provide inservice training for the graduates of their programs that are within a particular geographic area? How realistic is it that you are going to have the faculty? That you are going to have the personnel to provide a meaningful inservice program for the graduates of your programs? This is what I saw as the major weakness [of the models], almost universally. There wasn't this emphasis, which then led me to think that perhaps this was an unrealistic expectation on the part of the U.S. Office of Education. The specifications were really designed for preservice and inservice. We've talked about specifications, the follow-up graduates, and what kind of training for inservice. But do we have the personnel for follow-through? Can we do it?

JOHNSON:

Feasibility is what we want to look into. This whole thing has moved us much closer to providing these kinds of inservice experiences. I know on our part it has forced us to come to grips with creating living new institutions, and really a new institution, when you come right down to it, of trainers, of teachers--people out in the field who become a major part of the training institution....

BURDIN:

How should a relevant inservice program be envisioned?

SCHALOCK:

One of the things the Pittsburgh model speaks to has a lot of relevance. That is, if you try to forecast what the world of education is going to look like out there--in another five, 10, 20 years--one forecast is... that there are going to be pretty comprehensive instructional systems to be managed by teachers. Now, if that is right, inservice education takes on one whale of a different kind of connotation than going out teaching them about Flanders interaction system. The whole design of an inservice teacher education program is going to have to build around training re-

lative to the demands of specific sets of instructional operations....Individually Prescribed Instruction [IPI] is the kind of prototype I'm thinking of. You don't just bring people in, give them two weeks of training in that thing and say, "Go home and do." It's not that way. There really is need for a long-term, on-site supervisory type of linking.

.....

It's more than just the old notion of the supervisor, where you squint over somebody's shoulder and watch him function. Rather, the role of that instructional agent will be as precise and demanding, both in terms of instruction and assessment, as will be the requirements in the preservice program. To prepare those people in the schools to assume that kind of instructional function is equivalent in scope, mass, and complexity to the preservice program. Secondly, once you get those people who are competent, and you have that kind of mechanism and organization built into public schools, then the public schools are pretty well equipped to handle the inservice program themselves. They'll do their own training. I think that's the way it's going to go. I just don't think that the magnanimity of universities is such, nor the resource space such, that they're going to attend to that stuff. I'm not even sure the political structure in colleges and public schools would let them anyway.

.....

.....

BURDIN:

What new arrangements are needed for functional preservice and inservice programs?

SOUTHWORTH:

...I think we're talking about either new agencies or new coalitions which are going to have to link with universities differently than before. People can't come back to the school at night to take three credits or go back to summer school for six credits. I think what we're talking about is creating new kinds of environmental settings where preservice and inservice goes on the year 'round. I think we're making a drastic mistake if we don't take the teacher organizations and administrative organizations along with us in this. It's got to become a professional base rather than somebody doing a service for somebody else in a producer-consumer relationship. I think we'll probably address ourselves more directly to the kind of coalition that is needed to support preservice and inservice without lengthy elaboration of different sets of competencies that might be needed.

However, if we go into individualization, this means massive retraining of people, even to support team teaching and ungradedness. We still don't see enough examples of things being done well. I think it can't be done on the college campus, and it's not going to be done in the laboratory school. We're talking about a new kind of coalition which creates new kinds of settings which have preservice and inservice capabilities.

WEBER:

In the writing of our phase II proposal, we envisioned protocooperation. We've pretty much said that the task of educating teachers at the preservice and inservice levels is more than a joining of simply a college or university. And this is why we've heavily involved public schools, regional educational laboratories, and educational industries in this kind of venture. I think this is the kind of agency that is going to be primarily concerned with the inservice program. It's more than a person running back to campus for three credits on Tuesday afternoon at 4 o'clock.

.....

BURDIN:

In what way does the profession certify proficiency as teachers? How are preservice and inservice programs related to certification?

JOHNSON:

I don't think we can just throw certification out. Somebody's going to have to, for several years to come, declare when a person is ready for whatever level of service in education he is: paraprofessional, general professional, or specialist level. Our thinking has been that this would be a cooperative endeavor, and it still could rest officially in the state departments of education. We set up reciprocal commitments with them and with the university. They are not going to throw bachelor's, associate's or master's degrees away, but we find they are very ready to listen. The president of the university, vice-president in charge of instruction, and board of regents are very happy and pleased to say, "Surely, it is possible to determine the proficiency equivalent to any course in the university system. We will help you define what makes a person who has the equivalent of the associate's degree. If you can give us that person, and he can show those proficiencies, we will give him that degree." The same thing goes for the bachelor's degree. And the master's degree sort of falls in between. We have not decided what to do with that for we felt a need for a higher level than what in the past has been the master's degree....We've also felt that you have to have scholarships. We coped with this by talking with people on campus. They said that you can't award scholarships on the basis of grades if you aren't going to give them grades. But it could be done on the basis of their achievement and their rate of progress. In this way, the ones who move the most rapidly are the most capable, and we might possibly see a way of putting our scholarships into their hands.

.....

For the first time, no one can accuse teacher education of not having a substantive, substantial content. I think these projects, more than anything I've seen anywhere, bring out the substantive content. But I don't think we've addressed the whole problem of inservice training. I feel very emphatically that the inservice component belonged in the specifications, and it was not the function of the people who wrote the specifications to spell out how the people would deal with that particular specification.

BURDIN:

What are some aspects of proficiency to which preparation must be addressed?

SCHALOCK:

.....

Each decision point of a teacher's day has a bunch of variables mixed up in it. Some of the variables are what outcomes he's working for with what kind of kid--and that means learning style, background information, and all the rest--and in what kind of a context. His decision always has to take those three points of reference so that he selects out instructional strategy and the content to link onto that strategy to make a difference. Now, the thing that really hangs me up is that those three things keep shifting on him all the time he's moving around the classroom. He's got 30, 40 little heads that look different. More than that, the instructional materials that he has available to make choices from are always changing. As you move through time, the objectives change, and the kids change, and all the rest. The thing that puzzles me is what to give the teacher to let him hang onto or to let him utilize functionally in that decisionmaking context? There should be some kind of decisionmaking principles some place in the world which speak to those linkages.

If you speak of competence as knowing what kids are like, independently, what classes of outcomes to work toward, independently, and what instructional strategies are, independently, then you're not talking about competence. That's merely mastery of subject matter. Competency to me, definitionally and operationally, is being able to make the mix of those things at key decision points and to function in a given way that's appropriate to the mix.

.....

HOUSTON:

We know very little about learning, or what improves learning. What can the teacher do to improve learning? What can a teacher education program do to help a teacher to be able to help a youngster to learn? This is a very complex arena.

SCHALOCK:

I don't deny that. I understand all that. But I have one simple problem. The effectiveness of a teacher, at least on one major dimension, depends on whether or not he brings about what he intends to bring about in kids. Are his treatment conditions effective? Does he do what he says he's going to do? Now, I don't care how much a doctor knows about how my blood system works. The question is: When that starts to foul up, does he behave in ways that unfouls it? Or when I get pneumonia, does he give me the right pill? The question is: Is the treatment effective? The issue that I think we are moving towards is: Can teachers behave effectively? Can they bring about the outcomes that are supposed to come about? My only argument is that if you give a physician knowledge about a six-month exposure to five different drugs, and you make no linkage between the

drugs and that which they are related to--in terms of what they will bring about--then I don't have any confidence in that physician's ability using wisely drug "A" to treat circumstance "X." You see physicians dip into large jars of pills, and if that jar doesn't work, fine, he'll dip into the next one. I don't have much confidence in him.

And that's my anxiety about teachers. We teach them about Flanders, we teach them about children, and we sort of never make the linkage between all that stuff. We say, "Go make the mix; go try it out." Either you'll find out whether you're successful, or we'll tell you if you are successful, or maybe nobody ever cares. Kids are just going to go on anyhow. That's my anxiety. What does it mean to us?

JOHNSON:

I think you said that what we've done in preparing these performance specifications or behavioral objectives is that we haven't gone for enough. I think what you're asking for is something more than we have. I don't see anything wrong with the substitute of declarations that we have. But I do see this as a problem. One way that many of us have talked about it has been in terms of a longitudinal follow-up--where we see the teacher in practice on the job--and we evaluate the total operation of teaching.

SCHALOCK:

The words sound good, but "total operation?" What does it mean? For instance, we look at the children in the classroom. This has got to be a part of the long-term follow-up.

.....

WEBER:

I presently have the situation in which some of the teachers of the traditional programs are successful, effective teachers, and some of them are not. So how do you begin to diagnose your programs in terms of what it is they can and cannot do? I hear you asking for something different than simply sharpening up behavioral objectives. I hear you saying: Let's not forget that when we're talking about behavioral objectives, we have to look at kids. Let's look at them within the context of the situation, the content, the social milieu, and all the variables.

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It might be a better measure of successfulness than of effectiveness.

.....

SCHALOCK:

I've come to believe, in a nutshell, that whereas the cultural anthropologist made us terribly aware of something called cultural relativity, I'm now coming to understand in my own head that you can only look at teacher's effectiveness in terms of contextual relevance. That is a terribly complex

piece of world out there. But a decision at a point in time is only the appropriate decision relative to the mix that the teacher's in. And that's a complex mix. Now, to me that doesn't mean you get squishy-squashy about the criterion's effectiveness. You don't have to do that. It's just that you have criteria of judging effectiveness that are appropriate to the context. You have an infinite array of contexts, so it gets kind of tough. Still, reasonable criteria for judging effectiveness just must be contextually defined. Otherwise, I think we're whipped.

FATTU:

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We'll never get precise precision, but we can become more precise than we are now. You want to play God, really, the way you were mentioning that you want to do everything for everybody. You want to be able to predict not only what the immediate consequences will be, but also their long-term implications. A realistic professional point of view would be to deal with the situation at the present time in the fashion that would be most effective. The procedure should be plain and effective and not try to cover everything in the life span of that individual and say, "Now, this event is going to have implications in 20 years and then in 30 years and so on." That's completely unrealistic. What you have to do is to focus on a few things, and this is one of the virtues of the proposals. I'd like to see that focus developed in greater depth and spelled out at greater length. I think your qualifications are useful, but they seem to me to belong, in many cases, in the realm of theology rather than in the realm of science.

SCHALOCK:

In a way I think Nick [Fattu] is way off base.

ENGBRETSON:

I don't understand what Nick is saying. We've had 40 years of research as to what's going on in the classroom, and we don't really know, and we know we don't know. Nick is saying let's take what we now know and apply it and eventually develop increasing proficiency.....

FATTU:

.....

All I was saying was, concentrate on a few things that you can do well, for example, behavioral outcomes and learning. I think you can define the learning outcomes that could be reasonably expected from a set of activities, both in the short-term and long-term. You can proceed to assess the extent to which this has been attained. According to Del's [Schalock] conceptualization, I would see this as irrelevant because he would be interested in all the contextual variations even in terms of what will these people do 20 years hence. Will they riot? Will they undertake a complete revolution? I'm merely trying to interpret what Bill [Engbretson] was saying. It seems to me the path is pretty clear there. You focus on a few things that you can do, and you do them much better and conceptualize them more clearly.

.....

JOHNSON:

...If these objectives aren't producing effects on kids that are desirable, then there's something wrong with these objectives. It's just as simple as that. I would say that we could begin to get data immediately when we see these youngsters in the classrooms. And that's one reason I think it's essential that we have early opportunity for these teachers in preparation to be working with children and to be observed in their operation. We can look right back, and we can tell almost immediately. Again, speaking of a specific model that is broken up into blocks--in the second block, out of about 20 blocks of operations, they begin working in a classroom situation to be observed to see what they learned in the first block. And at that point you can revise the first block.

.....

BURDIN:

How are behavioral objectives established?

JOHNSON:

...We went to every department. Each department had to come up with a group of objectives, for instance, those who are working on math education. We had quite a time with the math education faculty because it didn't want to work from the standpoint of the functional use of numbers in society. It calls that social science, the telling of time, and so on, that kind of stuff. We had a little go-round. In reading, we found conflicts, but the faculty finally come up with some objectives. Again, these were not specific enough for us, but it was the best we could do in eight months of operation--to get them down on paper and say that they needed refinement. In our plans for implementation these objectives are going to go right straight back to the original groups to be reworked. But if you'll look in our procedures part, you see a flow diagram of operation.

.....

BURDIN:

To what extent can you specify teacher behaviors based upon presumed accomplishments of children and youth without destroying the uniqueness of the teacher? To what extent is the effectiveness of the teacher a consequence of what he or she <u>is</u> rather than what he or she <u>does?</u> I'm thinking of Combs' concept that the effectiveness of the teacher is the consequence of what the teacher is rather than what he does. Are we going almost to the point of precision with regard to the uniqueness of the teacher? As I look at all your characteristics, I'm trying to see how you maintain the uniqueness of the teacher based upon his perceptions and all sorts of factors, and at the same time, help the teacher exercise his uniqueness within these broader frameworks. *In other words, how do you relate the teacher's uniqueness to the models' prescribed proficiences?*

SCHALOCK:

It depends on how you want to conceptualize that. It's not a simple answer. I'll give you the model we finally had to solve. If you look at teacher behavior, sort of in the center of things, and the mix that he's in as an objective he's working for, and the materials he's got to use and rely upon, and the learner characteristics (how old, how bright, what background, etc.), and then the setting (big groups, small groups, etc.)--that's the mix of things he's got to work with. Where does he as a person come in? Well, this little line could be the line intersecting all these things; he is a screen. He as a person provides the screen between. He gives the interpretation of those learner characteristics which may or may not be congruent with somebody else's perception. He also does the screening both in selection of objectives as well as how he interprets them. So personality wise he is a screen between all kinds of mixes. I get fuzzy when you get much past that because he still has to behave. His behavior is a junction of these variables out there, and they are interpreted by his own particular set of screens.

Now, it is even further complicated because the kid is also a screen in the middle. The kid perceives these objectives. He perceives the setting. He perceives his own characteristics. Somehow, those things have to interact in the whole mix. On the one hand, if you want to do serious study of the whole business of the relationship between teacher performance and learner outcomes, you can sort of hold out, at one level, the teacher as a person. It is true he has made choices as to what contexts he is in, what objectives he's going to sort out, which kids he attends to--all that kind of stuff. But that doesn't prevent you from asking what the relationship is between his behavior and those outcomes. You can turn the thing around if you want to and ask, "Given the teacher with this kind of characteristics, how does he perceive that situation?" You can make the focus on either end. Does that make sense?

JOHNSON:

I think people are likely to accuse the models though as being sterile in this concern, especially those people who give a quick reading or hearing about what we're doing. They're very likely to say, "Well, you're taking all the human qualities away from the teacher, and you're using machines and making teachers into machines." We're not intending to do it, and I don't think there's one of us here who has put anything like that in. As I read them, people are likely to do the same thing as they've done to IPI, you know. You get this all the time. It's well worth our saying here, going on record, that there was no intent to do anything but increase the effectiveness of the teacher from a human interrelation, interaction standpoint.

COOPER:

I get hung up on this kind of discussion, too, because I think it has to be separated into what Philip Jackson calls the preactive stage of teaching vs. the active stage of teaching. I become more and more convinced that the deliberate decisionmaking process occurs so often in this preactive stage where there is time to think out, to plot strategies, to diagnose, to think about how you're going to treat this particular individual, and to decide what you're going to do with him. We're trying to build up a repertoire of skills, techniques, and various other things on the part of the teacher. But in the active or the interactive stage where the teacher is interacting with the students in the class, it's really a response. There's not enough time to think about these things.

I think the teacher does a lot of things unconsciously. He reacts in certain ways. A deliberate decisionmaking process isn't as valid or appropriate in that circumstance as in the preactive stage. Let me give an illustration. At Stanford we were very concerned with the technical skills of teaching in the microteaching situation. We developed a number of different skills. And the rationale, as it was being developed, was that what we were doing was providing the teacher with a repertoire of skills which the teacher could then call upon as he saw fit, depending on the circumstances, what the needs of the students were, what his objectives were--asking probing questions, higher order questions, reinforcement techniques, use of style, stimulating during the stimulus situation--as if this were a deliberate thought process on the teacher's part. I thought this way for a good while. Then I begin to think that the only way these skills were going to be truly effective was if the teacher had practiced them often enough so that he responded a certain way spontaneously, that when something happened he responded a certain way because he realized spontaneously that this was what was necessary. He didn't go through it by thinking, "The kid is doing this, let's see, I should probably ask him a probing question at this point, and I want to reinforce that behavior because I think it will probably increase..." The teacher doesn't go through this kind of a thought process. It is an interacting-reacting kind of process. I think as far as those kinds of technical skills are concerned--and I hold this out as a hypothesis--that only by practicing them to a great extent would you no longer have to think about asking probing questions. The situation occurs, and it triggers off your asking that kind of a question, or you reinforce the student. Only after practicing enough times will the teacher acquire behavior on a subconscious level where he reacts automatically because he recognizes that a situation exists where a certain kind of reaction is necessary. So I make that decisionmaking process which I think occurs on the preactive stage. On the active stage there isn't time for it. If you give the teacher enough circumstances in which he has acquired the skill, where he doesn't have to think about what he is going to do, such that these things are part of him, then he will exhibit these skills. But if he hasn't acquired these skills so that they are really a part of him, part of his "natural" style, then he won't display these skills.

.....

SCHALOCK:

I want to add a footnote to the question on teacher personality and take a slightly different tact. We were pretty concerned about this business of personalizing or individualizing or a least making what happens in teacher education programs relevant to the people who are going through them. Since writing that, we pushed it a lot further and have come to a position which teachers and college people and students find comfortable. To maximize operationally this kind of personal relevance means that there has to be an opportunity for the students in the program. Secondly, there obviously needs to be opportunity within limits, at least, for students to negotiate that which they will take in the program. Now that they just aren't going to learn those 19,000 objectives, they have to have a chance to negotiate what's relevant to them in terms of where they're headed. Thirdly, we are committed to the belief that they also have to negotiate the context in which they are going to demonstrate competence. They're going to say, "I'll show you this competence with inner-city kids who are 7-years-old in this kind of context." Now, at first, it's just show it to me generally. They've got to negotiate the context to demonstrate their competence. Lastly, they even have to negotiate the indicators that they're willing to buy as evidence of their competence. It isn't a negotiated process, but we're saying, "If you want to maximize the relevance of the whole business to the people going through it, you just have to let them make known that which makes sense to them on all these dimensions. So to us operationally this is what personalization is starting to mean. All this is backed up against a real major thrust to do two things: to give them some kind of insights of themselves as people against which to make these other judgments meaningful and to make a real, concerted effort to let them put together a teaching style that is idiosyncratic, but sufficiently internalized....That whole list of things is our operational definition of what it means to personalize or individualize a program. Without any of those, everything becomes kind of meaningless, just a bunch of words.

ENGBRETSON:

Responding to what teachers do reflexively in terms of what your're discussing--tying it back to what we said before--doesn't really lead to a reaction sort of teaching and an action teaching.

.....

SCHALOCK:

Actually, it is a circular process that goes all the way through the inservice program. What you're really saying is that in analysis you destroy the duality of the flux, but what he's doing is making an analysis of the project. They really are of a piece. It could be just a time-line, time-dimension consciousness factor, too. You might go through the same decisionmaking process that isn't necessarily fully conscious and the time dimension is split-second.

.....

It isn't consciousness in what you do, but in what you have internalized. That is the word I was missing when I was talking before. It is really what kinds of behaviors you have internalized, the kinds of response. If you internalize many more types of behaviors, then your flexibility as a teacher has increased. You're going to be able to respond to different situations which are of a wider repertoire.

.....

BURDIN:

Now that the models are completed, where do we go next?

SCHALOCK:

I really view the models personally as means to ends and not as ends. In a sense they are temporary ends in themselves. But the real value, I firmly believe, is that they are means to many alternatives.

.....

SOUTHWORTH:

One of the agreements that we came to in visitations from the USOE was that we would try to work separately in the first round. But I was encouraged that there would be some inner relationships between the model builders so that we could speed up the process and accelerate the ideas-exchange across America. A number of things that USOE and ERIC are stimulating is the dissemination of these as baseline ideas from which we must go on and build teacher education changes of the '70's. But to let the eight, or how many ever are funded in this next round [phase II], work in isolation again for another seven or eight months is losing valuable time. This has got to go on immediately. We've got to start helping others in regions to begin thinking. There are a lot of people ready, but they don't think they want to make the plunge, or they don't think they've got the capability to make the kind of link that Cleveland State and Pitt have made in the last few months. I think this linkage is healthy because we can grow together. We're going to go on whether the U.S. Office funds us or not because we're equally committed to trying to come up with some new patterns of working with teacher education in two major middle-size cities in the next few years. So I think we have to break out of the isolation pattern that we've functioned with before, and that we have to have some exchanges back and forth.

Other schools asked about our [Pittsburgh] program, also. Some even had some faculty members who wanted to come to work with us.

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I think to really move ahead in any way, we're going to have to involve the publishing and the educational medias industry and so forth, and I think that presently many agencies are a little reluctant to go ahead with developing materials and related content because of the various restrictions they have on copyrights and so forth, in connection with the USOE. There's a question about salability and the copyright holdings, etc., of materials that would be developed out of these specifications. Our model, and I think this should be true of all of them, could not be implemented very effectively unless quite an amount of new materials is developed.

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BURDIN:

What are the long-range implications of the models?

SCHALOCK:

I'd like to propose that...we convene a seminar which would focus on papers by members of this group to explore the long-range conceptual, theoretical, methodological, practical implications of all these features. The product would be threefold: (1) there would be a publication coming out of that, (2) there would be the growth and understanding of us from the interaction, and (3) if we structured it right, there could be a major treatment within the production projections for the discipline. What are some of the next steps, and what are some vehicles and means, or what have you to come up with next? There is a concern about the growth of knowledge from here on, you know. This could be done for a minimal amount of money--a $10,000 contract could handle that, and out of it comes a major publication that extends the models. It pools our wisdom and our understanding at this point in time and pushes us to extrapolate and go on.

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The importance and timeliness of that conference would be appropriate for early '70. We're going to have to do a lot of digging and a lot of talking in the next few months, funded or not. The appropriate time would be January or February 1970. These teams are going to continue functioning, and we're going to be getting at some of these nitty-gritty issues.

.....

I think that delving into the feasibility of the models pressed all of us into some very deep thinking.

ENGBRETSON:

I think there is an argument here for the establishment of a kind of a Brookhaven laboratory in the business of studying the teacher. That's one

point we talked about this noon. The other one was...the need for the development of teacher protocol materials on a national base. If you remove the commonalities of these nine models, the descriptions of the behavioral tasks, and so forth, you can find something that would lead you to the conclusion that teacher education materials have to be developed. It seems to me rather redundant to develop them by publication houses in New York or Chicago, or to have some place to prepare a new book on teacher education or to have 10 or 15 or 20 institutions each prepare materials. We've been doing this kind of thing for 10 years now with videotape recordings, but nobody's really brought them together, critically analyzed them from a variety of bases, and developed some kind of rationale for saying, "This does this kind of thing," and then actually testing it out in a scientific manner in different settings in elementary teacher preparation around the country. So I think there is a massive call for development of materials for teacher preparation programs. We tried, and Smith, and others, I think, did an excellent job in Teachers for the Real World. We tried to make a case for one kind of rationale and for one kind of proposal for the preparation of learning materials for teacher education.

.....

BURDIN:

What information is needed in the models?

FATTU:

It seems to me the ERIC Clearinghouse could serve a very useful function in this respect by getting all the materials that are available in the dimension of the nine plans and having these in a form that could be given to people who exhibit an interest. Because, first of all, you can't study a plan if you don't have any information, and there is, of course, the document itself and all these other documents that we should produce. There are documents that each institution has produced in order to disseminate the messages that it had to its clientele.

It seems to me the proper repository for these would be right here with ERIC. Inquiries should be addressed to individual model builders for a model, or for some phase of a model that he was particularly interested in pursuing. The general over-all study would begin by knowing what materials are available, what related materials are available. This, I think, the people who developed the models in the first place could supply.

In addition to that, it would seem to me, there are some people who went ahead to build models on their own. I can think of two conspicuous examples. Certainly, models are not limited to the nine that are in this series. And those, too, that is the new models, might also be part of the ERIC repository. There ought to be a source where people can turn and say, "This is where I can find out what is most nearly current in this particular field at this time." The other thing is, of course, speaking from experience, that the documents themselves take considerable effort and time unless you have a

formal organization. You don't go through that very easily. I presume that the System Development Corporation will try to address itself in its summary materials to the problem I'm raising now. How do you inform people in the field in general about these developments in more than a superficial way, in a way that is understandable to them, and in a way that, I would hope, would arouse their curiosity and make them want to go deeper into these developments. So, I think, the function of stimulating interest might be another kind of effort that might be a part of ERIC.

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BURDIN:

What conditions are needed to create institutional change?

SCHALOCK:

Joel [Burdin], you asked what are the principles. I can't make these principles. I can sort of have an intuitive feeling for the necessary conditions, and they're sort of mundane. One simple condition is that the people who sit down to work on these things together somehow have to have a reason for being there. You know that's a people kind of comment. But people really have to want to be there for some reason. Another necessary condition is that I think that somebody has to be there who can help with the information-giving or interpreting business. Another necessary condition is that sometime very quickly some kind of leadership has got to emerge. And by that I mean somebody who can do two kinds of things: one, keep the whole business moving on a task-oriented line and that means writing things, bringing comments back to the issue, and God knows what else; and secondly, the leadership being sensitive to the political realities and feeling realities involved.

There is another kind of necessary condition that sort of happens to be around, I think. All of these models call for allegiance with many institutions.

.....

Those necessary conditions are there. I don't know what the mix is going to be, but with any less than those four, it's not going to get very far. With those four you can move a long way. They are simple kinds of necessary things. There is one other thing that they should not do. I have found a few situations where the dean or the president assigns someone to look into it, and the person isn't terribly enthusiastic about having much change of program. In other words, putting it positively, only people who enthusiastically endorse the notion of improvement and change should be selected from these institutions to participate. You get somebody who says, "Well, I've got to do it, will you please send me a copy." You might as well save your postage.

.....

JOHNSON:

I'm saying that it [making these models operative] doesn't look as dismal to me. I'm still optimistic that we can do it. I don't want to get discouraged about it....I would like to attempt it, you see, now that we're getting into feasibility study. But when you tak. the components,...there's a certain basic chassis here that is essential to make the vehicle run, and it would seem as if we are adding things to it. There are certain essentials that have to be there to keep it going, and there are some extras on top of it. When we start feeding this cost data into the machine, and we start pushing other buttons and ask, "Well, if we leave out so-and-so, what would it be in sustained operation? If we leave out this, what would it be? If we increase our number of students, we include more institutions?" I think we might come out with some answers on that where we wouldn't be as--in other words, I don't like the discouraging tone that this isn't feasible until we've studied whether it is or not.

.....

It's going to cost a lot to develop and implement. Now, we were talking about sustained operation....There's another aspect of the models though, I think--that these institutions can benefit from a lot of the principles that went into some of the development. To give a specific example, some of the model builders thought there would be alternative instruction routes for the achievement of some of these specifications. Some of these behavioral objectives operate under that kind of principle. This opens up a lot of possibilities in terms of individualized instruction....You also run into the problem of many specifications. The specific things in these models would be developed by unique individuals with certain kinds of capabilities. You're not going to find all these unique individuals with unique capabilities in institutions. You've got a problem as to whether or not the specific kind of instructional content being specified in these models is going to be available. Are you going to have the manpower, the resources with this capability to do this? It may be that you will have to substitute other kinds of things. You may be limited in terms of what you have on your faculty.

BURDIN:

What would you see institutions doing in terms of study, adaptation, and adoption? Are you talking about a year or five years or 10 years?

....

JOHNSON:

Oh, no, I don't think it's that long-range. You know, I think a year's fine for going through the models and seeing what aspects of them are applicable. They [institutions] know what their capabilities are, they know what their faculties are, what their resources are. And I think they can put together elements of this. Maybe we need to break down aspects of the program that we think they could take on, that might be applicable. That gets into

problem two. Most of the models were developed on the systems approach. One aspect cannot be pulled out without affecting the entire system.

As long as you maintain the notion though that the models are heuristic and that adoption is probably not in order in most instances, we can think a great benefit is going to come from them. One other thing: I would advise starting with a freshman class and not instituting the whole program, the whole four-year program. Complete the cycle of your sophomore and junior and senior classes under the old program. You have to begin with a group that is interested in implementing this within the college. It may be a very small group that is interested in some of the aspects of all nine models. The alert administrator will take advantage of those interests, try to cultivate them, and make the materials available to them.

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THE INDEX

ABOUT THE INDEX

Each important word and idea on each page of this Guide is found in the index. Those using the index will thus uncover references ranging in length from one word to paragraphs or pages. The word-by-word indexing was done because the purpose of this publication (and hence the purpose of this index) is to guide the user to the more complete discussions in the Final Reports of the models. In other words, one word on one page of this report is often only an indicator of an explanation found in a Final Report. Once the user locates the section in which the word or idea appears in this report, he can turn to the same section in a Final Report for more complete information.

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