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ABSTRACT

The focus of this speech is a description of the process by which the National Institute of Education (NIE) will plan its research efforts in the area of teaching and curriculum. The first section of the document argues that the current relationship between funding agencies and researchers could be made more efficient if four essential types of activities were to occur: (a) goals and general priorities of the funding agent should be established; (b) specific objectives and strategies should be developed; (c) individual projects should meet criteria of internal quality as well as criteria which require that one project relate to others in a cumulative fashion; and (d) all projects, strategies, and objectives should be disseminated in public documents. The second section describes an alternative approach to the relationship between funding agencies and researchers which has four elements: specifying major problems, obtaining simultaneous input from field researchers regarding possible projects, establishing alternative strategies for attaining goals, and communicating alternative strategies. The final section of the document describes one phase of NIE's planning efforts--the National Conference on Research on Teaching, which was designed to solicit input from field researchers. (HMD)

NEW DIRECTIONS FOR RESEARCH ON EDUCATION PERSONNEL

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Speech given before American Educational Research Association Convention in Chicago, Illinois, April 14-18, 1974.

The purpose of this conference is to focus on the question of: "What are the things that teachers do which make a difference for children?" This question is reasonable. Our business is helping children; however, as unreasonable as it may seem, the quantity of research which links teacher training and teacher performance with child performance is limited; some would say, nonexistant. The National Institute of Education (NIE) plans to ask this question repeatedly, over the next several years in its Program on Teaching and Curriculum. In asking this question, we hope to examine many of the assumptions underlying competency based teacher education and licensing.

In the pages which follow, the process by which the NIE will plan its research efforts in this area will be described. The first section argues that the current relationship between funding agencies and researchers could be made more efficient. The second section describes how to establish a more efficient relationship between researchers and funding sources. And the third section describes one phase of NIE's planning efforts - the National Conference on the Research on Teaching.

While these efforts are more broadly focused than the issues related to competency - based licensing and certification, parts of this effort will obviously be relevent to the primary concerns of this National Conference on the Assessment of Competency based Teacher Education and Licensing.

I. THE RATIONALE FOR DEVELOPMENT OF A RESEARCH PLAN

The purpose of this section is to describe the efforts of the National Institute of Education to create a relationship between itself as a funding agent and the research and development community. While the focus is on NIE and its relationship, the principles apply to the more general issue of the relationship between any funding agent and its constituency.

The assumption underlying this discussion is that relationships between funding sources and researchers, especially in the social sciences, are ready to become more efficient, that such more efficient relationships will improve the impact of social science research on contemporary problems, and that improved relationship will also enhance the image of the social sciences as an effective tool for attacking social problems. It is NIE's premise in this planning conference that a major path toward improving efficiency will result from improving the ability of researchers and funding sources to develop research plans.

The Current Relationship Between Most Funding Agencies and Their Related Research Communities

At present, the process for funding education research is as follows. The researcher develops proposals in isolation from the funding source. Proposals are sent to several funding sources where some rather abstract objectives seem consistent with the intent of the investigator. If a source finds something interesting in the proposal, a peer panel is usually assigned (a) to assess its internal quality and (b) to consider the merits of the proposal as it relates to some "field". Finally a set of the most highly rated projects are matched against a budget, a budget usually determined prior to the submission of ideas.

Several sources of inefficiency can be seen here. The first is the problem of not knowing where to send a proposal. The second is that, even if the appropriate funding source is found, it is necessary not only that the general content of a proposal be adequate, but that the proposal emphasis be related to the primary concerns of the funding source. Often, the proposal is wide of the mark at the time of the evaluation. The third source of inefficiency is that a collection of good proposals which add up to a program strategy must often be arbitrarily cut because a budgeting level was set prior to establishing the strategies for attaining the goals of the funding source.

The efficiency and effectiveness can be improved if four essential types of activities occur:

- The abstract goals and general priorities of the funding agent should be established.
- Specific objectives and strategies should be developed.
- Individual projects being funded should meet criteria of internal quality as well as criteria which require that one project relate to others in a cumulative fashion.
- All projects, strategies, and objectives should be disseminated in public documents so that public recommendations and budget allocations come before the actual funding.

It will be productive to consider the parameters of these activities.

1. Establishing Goals and Priorities

How carefully are the objectives of a funding agency stated? Let us consider, for example, the legislative mandate of an organization such as the National Institute of Education. It is broadly stated. The authorizing legislation asks the NIE to:

- Help solve or alleviate the problems of, and achieve the objectives of American education
- Advance the practice of education as an art, science, and profession
- Strengthen the scientific and technological foundations cf education

- Build an effective education research and development system.

Many education research sources, especially private sources, do not often define goals beyond the abstract level of a mandate. The Institute has recognized this problem. Therefore, one of the initial major actions of the National Council on Education Research (NIE's policy-making body) was to increase the specificity of NIE's mandate by identifying priority areas.

The priorities focus the work of the Institute in five areas:

- Essential Skills -- investigating ways to aid all children in obtaining skills essential to function in society. Initial emphasis will be placed on reading. ($11 million)
- Productivity -- ensuring the Nation's continued ability to meet its commitment to quality education at a price it can afford through improvements in the productivity and efficiency of the education system. ($16.5 million)
- Education and Work -- improving our understanding of the relationship between education and work, and improving career access and progression. ($21.3 million)
- Problem-solving -- accumulating the knowledge and experience necessary to assist State Education agencies, communities, and their local schools to build the capacity to address local problems and adapt solutions suited to local needs.($8.6 million)
- Diversity -- improving our understanding of individual and group differences in learning styles, needs, and preferences and developing programs that take those differences into account. ($20.3 million)

While these priorities reflect progress toward specificity, the statements describe only the general character of NIE's concerns; they do not articulate the essential character of the problems being attacked by the funding source.

2. Developing Strategies

Funding agencies seldom articulate strategies for achieving their objectives or provide a rationale for the strategy adopted. It is exceptional to find a strategy clearly articulated in advance of making funding decisions. This point can be illustrated in some of the major curricula development efforts. These efforts have led to the question of what to do next. There is some skepticism about the extent to which the national curriculum efforts such as "new math" provided children with a new mathematic understanding and skills.

Assuming the skepticism is reasonable, researchers have considered three general strategies regarding what to do next. One strategy is to do nothing: If the outcomes are uncertain, let us no longer support large curriculum efforts; let us focus our efforts, for example, on helping teachers to develop their own curriculum. A second general strategy is based on the argument that such projects may not have really been well implemented in classrooms. Teacher training may have been inadequate. Materials may not have been sufficiently prepared. The issue becomes the process of implementation. A third strategy is based on the arguments that we really do not have measurement devices which are sensitive to such a sophisticated curricula variation. This problem is essentially one of measurement. This third strategy argues that measurement issues must be given high priority.

While this is not an elegant illustration, it indicates how a public airing of one or more strategies would be helpful in getting the field of researchers to debate a common issue. And when a strategy is selected, knowledge of that strategy would improve the efficiency of the relationship between researchers and the funding source.

3. Evaluating and Interrelating Research Proposals

The third activity which should occur in developing plans is the development of strategies for evaluating research projects and proposals as to their (a) internal quality or logic; and (b) the extent to which one project relates fruitfully to other projects.

The first criterion has had primacy. The quality of the internal logic, design, analytic strategy, etc. provides the essential basics for project evaluation. But there should be a second criterion.

The second criterion receives notice but rarely any systematic analysis. Any evaluation of the degree to which projects are cumulative is usually left to those who review the literature, and such reviews are properly suspect. It is even difficult to organize symposia that put together projects that are additive or produce a substantial mass of information related to a topic. Without a cross-project analysis, prior to funding, a cumulative impact is left to chance. There is the continuing assumption that if a project is intelligently designed and is funded, that project will somehow complement the next project funded. Even more optimistically, it is often assumed that, when all the projects are completed, the magnitude of some major problem will be reduced.

4. <u>Communicating Projects, Strategies, and Objectives</u>

The fourth and last activity needed is communication to make certain that a research plan exists which can define the relationship between funding agencies and their research communites. Sufficient and timely information regarding the objectives, strategies, and evaluation procedures of a research agenda is seldom available. There have been few, if any, instances in social science research where a public debate about the essential elements of a research agenda has occurred prior to funding. Although a catalogue of funded projects is usually available, it is rarely possible to obtain a catalogue of proposed projects

II. ESTABLISHMENT OF AN ALTERNATIVE RELATIONSHIP

It is possible to create a relationship between funding agencies and their related research communities based on the foregoing four kinds of initiatives. An approach is being tested in the Program on Teaching and Curriculum (directed by Garry L. McDaniels) and in the Essential Skills Program (directed by Marshall Smith) at the National Institute of Education. After the general approach is described, the specific initiatives being taken will be presented. The general approach has four elements: (a) specifying major problems, (b) obtaining simultaneous input from field researchers regarding possible projects, (c) establishing alternative strategies for attaining goals, and (d) communicating alternative strategies with project recommendations.

1. Specifying Major Problems

Instead of having the funding agency identify major problems at a broad or abstract level, the agency must force concrete definition of problems. A Federal funding agency cannot remain at the general level of the goals of the authorizing legislation just as the private foundation cannot effectively use the broad goals identified in its request to the Internal Revenue Service for tax exempt status. Also, if the character of the problems are not fully described, it is also rather difficult to assess the accomplishments of the effort.

2. Obtaining Simultaneous Input from Field Researchers

Investigators are storehouses of project ideas. As time and conditions allow, an idea is selected, refined and sent to a funding source by an investigator. Three problems result:

- The ideas are sent from different people at different times
- It is difficult to relate projects across agencies and foundations

.. Each person's proposal is developed in a time lag from the recent work of other investigators; therefore, he may plow the same ground. If cross-project analysis is to be possible, it is essential that simultaneous input from field researchers be achieved.

3. Establishing Alternative Strategies

Not only must the input from field researchers be obtained simultaneously, it must also be obtained in a manner which identifies the intellectual and administrative relationships among projects. The development of a plan requires that the potential research ideas be organized into a logical agenda. Further, the organization should demonstrate how the projects relate to achievement of an objective worthy of public or other support.

4. Communicating with the Research and Development Public

Finally, the steps described above provide information to be communicated to the research and development public. Much of that public will be informed as a result of having been a part of the process. The remainder will have the time required for receiving and analyzing the pertinent documents.

III. THE NATIONAL CONFERENCE ON STUDIES IN TEACHING

To further clarify the implications of these elements, the steps being taken in the Program on Teaching and Curriculum will be described. In regard to specification of major problems, the staff is meeting with students, teachers, administrators, teachers in colleges of education, etc. -- to get a summary of problem statements. These problem statements will serve as a charge to the researchers who will make project recommendations during the planning conference. Perhaps, it would be ideal to have everone meet simultaneously. Such a meeting would, however, require a quota system for representation of the relevant groups. The result would be huge working sessions that would be impossible to manage.

To obtain simultaneous input from field researchers, the present conference has been planned. To establish the organizational framework for the development of the plan, the panel chairmen will spend several weeks in making a separate analysis of subject area objectives, in cooperation with the conference participants. During the conference the participants will refine those approaches, identify possible areas of research to implement the approaches, and specify the research projects which should be considered by the Agency.

Finally, to communicate these proceedings, several steps will be taken. First, all participants will leave the conference with complete volumes of panel suggestions. These will be edited for minor errors and sent to the Government Printing Office for printing and distribution. The analyses by the NIE which result in strategy recommendations will be available for general distribution at the end of August, 1974. The logistics of printing and distribution have been established.

IV. SUBSTANTIVE FORM OF THE PANELS

Preliminary discussion by NIE staff and consultants since August 1973 has yielded a formulation of the substantive structure of the conference -- and the consequent foci of its ten panels. In part, this structure is based on a categorization of major concerns in the career of the teacher: (a) Recruitment, Selection, and Retention; (b) Training, Performance, and Effectiveness; and (c) Utilization. In addition, three overarching concerns of all R&D in teaching will be taken into account by panels on Personnel Roles in New Instructional Systems, Research Methodology, and Theory Development. Thus, the Conference will consist of the following panels:

1. Panel on Teacher Recruitment, Selection, and Retention

2-6. Panels on Teacher Training, Performance, and Effectiveness

   2. Panel on Teaching as Human Interaction
   3. Panel on Behavior Analysis in Education
   4. Panel on Teaching as Skill Performance
   5. Panel on Teaching as a Logical and Linguistic Process
   6. Panel on Teaching as Clinical Information Processing

7. Panel on Teacher Utilization

8. Panel on Personnel Roles in New Educational Systems

9. Panel on Research Methodology

In the following paragraphs, each of these panels is briefly characterized.

1. Panel 1 on Teacher Recruitment, Selection and Retention

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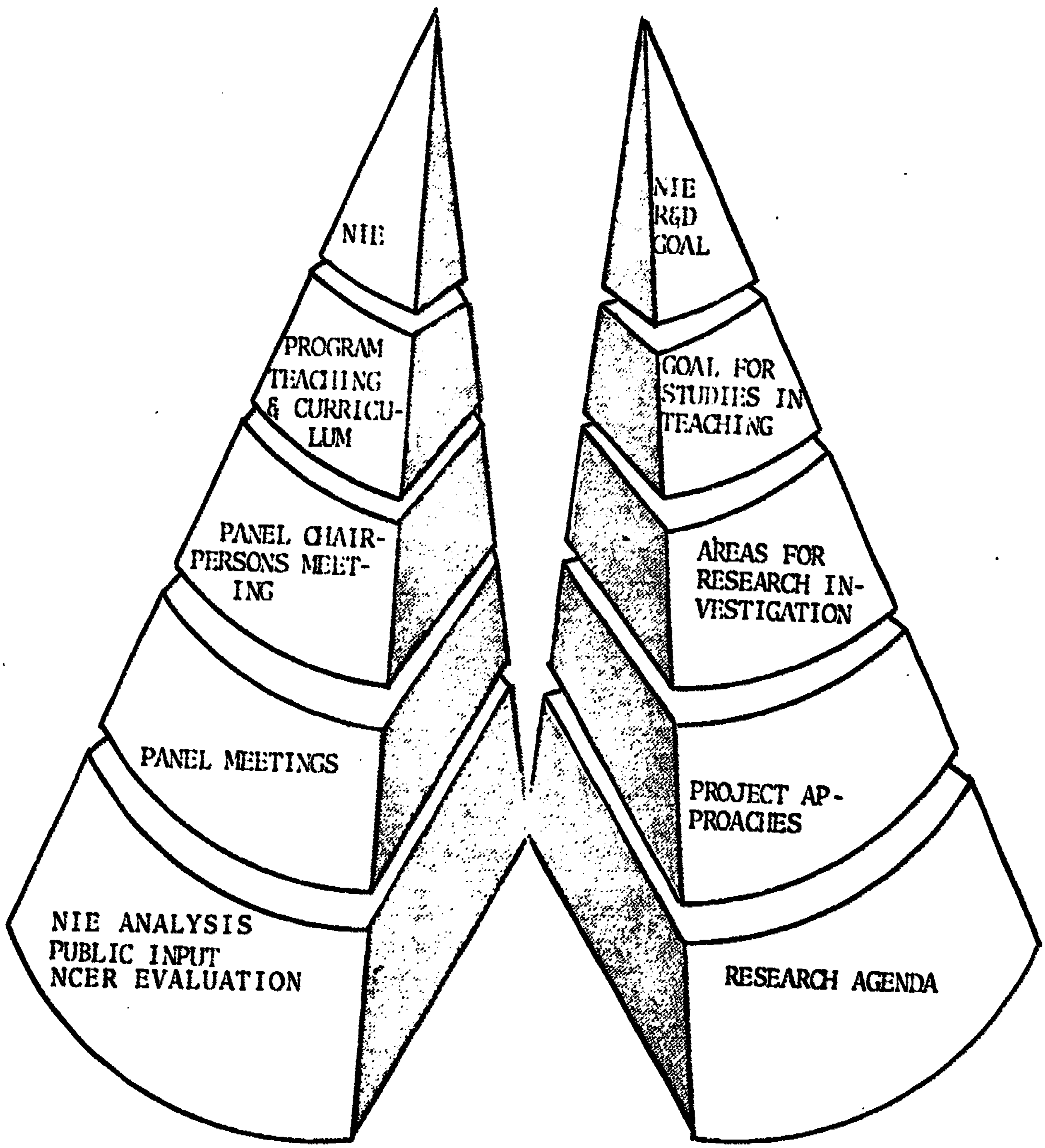
NIE
PROGRAM TEACHING & CURRICU-LUM
PANEL CHAIR-PERSONS MEET-ING
PANEL MEETINGS
NIE ANALYSIS
PUBLIC INPUT
NCER EVALUATION
NIE R&D GOAL
GOAL FOR STUDIES IN TEACHING
AREAS FOR RESEARCH IN-VESTIGATION
PROJECT AP-PROACHES
RESEARCH AGENDA

2. <u>Panel 2 on Teaching as Human Interaction</u>

Many studies have dealt with observed human interaction (either live or recorded) as independent and dependent variables. In some cases, observations of human interaction have been made m merely to describe differences between kinds of teachers in various settings and contexts. These studies have been reviewed in several monogrphs. This approach has been the most frequently used in research on teaching during the past two decades.

To review the current state of this approach, to lay out the most promising next steps (such as projects on taxonomies of teacher behavior, chains and patterns of teacher and student moves, computerized storage and analysis, and archival banks of videotaped interaction records), and to formulate those projects in optimally definite terms -- these illustrate the tasks that can be undertaken by a panel in this highly cultivated but far from exhausted field.

3. <u>Panel on Behavior Analysis in Education</u>

Somewhat more recently, but with equal vigor and productivity, the behavior analysis in education approach has been applied to the improvement of teacher training, performance, and effectiveness.

The success of teacher training and especially of classroom management by these methods has been frequently reported. Thus, this thriving line of attack on several important problems in teaching and teacher training merits the attention of a panel.

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*Research and development on teacher training, performance. and effectiveness deals with teacher variables (teacher characteristics and behaviors) in either or both of two ways: (a) as dependent variables (with teacher training methods serving as independent variables), and (b) as independent variables (with effects on students serving as dependent variables). Work in this area has been based on a number of paradigms, each relatively independent. Hence, several corresponding panels (2-6) will work here.

Training is construed to embrace socialization processes that imbue the trainee with the values and norms of the profession. It includes both pre-service and in-service training. These panels will emphasize aspects of training that require practice, i.e., training intended to provide "knowledge how," not merely "knowledge that." The panels will be encouraged to develop new paradigms, cutting across or departing radically from present ones.

- be concerned with planning R&D on devising, validating, and installing methods for improving formal and informal decisions at various points in a teacher's career:

    (a) admission to a teacher education program,
    (b) retention in the program,
    (c) admission to student teaching or internship,
    (d) graduation from the program,
    (e) certification or licensure,
    (f) employment by a school system,
    (g) granting tenure, and
    (h) promotion in rank and pay.

The classical paradigm in R&D on recruitment, selection and retention consists of identifying criteria, selecting potential predictors of those criteria, and determining empirically their precitive validity. The Panel will accordingly pay much attention to the matters of criteria, predictors, and ways of basing decisions on their relationships. The criterion problem will entail consideration of competency assessment and teacher evaluation procedures.

The Panel will also deal with self-selection -- ways in which persons are attracted toward or away from teaching, i.e., the occupational choice and attrition processes. It will examine the social class, ethnic, and other origins of teachers and the differences these make. It will also deal with the possibility that success in a training program is more a function of the program than of the candidate and his characteristics.

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This panel might seek to increase the attention already being given to private events and cognitive processes. It could advance the effort to apply behavior analysis in education to the achievement of humanistic educational objectives. It could consider studying the effect of students on teachers through the cues provided by students, perceived by teachers, and responded to by teachers, and thus the ways in which students may reinforce teachers' responses.

Questions have been raised about the morality of "controlling" behavior through behavior modification methods. Hence, this panel may undertake to address such ethical issues.

4. Panel 4 on Teaching as Skill Performance

During the past decade, an analytic approach to the training and evaluation of teachers has frequently been adopted. In such an approach, teaching is broken down into component skills, such as questioning, explaining, listening, and reinforcing. Little concensus has been reached on what skills should be identified. But the approach itself has flourished, lying at the basis of such innovations as micro-teaching and Minicourses, in which teachers are trained in only one or a few skills at a time.

The analytic approach has also led to the movement to develop teacher-training products. Such products call upon the trainee to practice a given skill, in addition to reading, listening, or watching material about the skill. Hundreds of such products have been developed and catalogued, in part as a response to the nationwide attempt to make teacher.training and evaluation "performance-based." Their promise will be realized, however, only to the degree that they benefit from further research and development. The analyses should become more valid, logically and psychologically.

5. Panel 5 on Teaching as a Logical and Linguistic Process

Studies of linguistic and logical aspects of classroom interaction here andin England have varied widely in the particular aspects of language studied, the kinds of classrooms selected for research, and the methods used for data collection and analysis.

Aspects of language studied have included the logical operations engaged in by teachers and pupils; the types of pedagogical "moves" in the classroom interaction "game" and their distribution among teachers and pupils; formal speech registers used in the school, as contrasted with the home, and their various special characteristics in various school subjects; and the sociolinguistic rules operating in the classroom seen as a special setting for face-to-face interaction.

Most research has been conducted in teacher-structured recitations, less in small-group and pupil-led discussions and group projects. Many researchers have assumed a set of norms governing classroom interaction that is shared by all participants; others have deliberately worked in multi-ethnic settings and considered variations in these norms as a special problem for analysis.

On the basis of this previous research acitivity, this panel will undertake to formulate the direction in which research should move to provide improved understanding of logical and linguistic phenomena in classroom settings and the ways in which that understanding might be used to improve the teacher's work.

6. Panel 6 on Teaching as Clinical Information Processing

This panel should be concerned with the thought processes that precede the teacher's choices of action. How teachers think, make judgements, size up situations, plan and react to unanticipated contingencies -- all these should be of concern here. Thus, this panel would be concerned with the study of teaching as thinking, problem-solving, judgement, and decision-making. It might also consider the value of a clinical (possibly anthropological) approach to research on teaching. Studies of the teacher as clinician would be concerned with the way in which theory, although it does not prescribe for practice, nonetheless informs practice.

The diagnostic approach to teaching and teacher preparation would also be concerned with the teacher's expectations. Such expectations have been found to influence not the student's intelligence, as was once claimed, but teacher behavior, teacher-student interaction, student motivation, and student achievement of the objectives at which instruction is aimed. This panel should, therefore, give attention to the determiners and effects of teachers' expectations concerning students in various categories (sexes, races, ethnic groups, age levels, etc.).

7. Panel 7 on Teacher Utilization

After teachers have been selected and trained, they go to work in a school which is part of a school system. What happens to hem in the months and years of their work in the school obviously influences greatly the ways in which they teach, feel and, what is most important, influence their students.

The term utilization is used to refer to the ways in which teachers are required or permitted to work by the administrative, organizational, and physical environment that their school and school system provide. The many new ways of "utilizing" teachers in this sense include team-teaching, teacher aids, nongraded classrooms, schools without walls between classes, accountability laws, mandated teacher evaluation systems, voucher plans, teacher centers, flexible scheduling, and differentiated staffing. How is academic labor divided? What are the causes and effects of what is often considered to be a low level of collegiality in elementary and secondary schools? Should utilization variables be used in studies of school outcomes so that their value can be assessed? Can relationships between schools be arranged so as to improve teaching and inservice teacher-education?

Sociologists, school administrators and teacher's organizations have been especially active in developing and analyzing innovations in teacher utilization. The Panel here should contain representatives of these groups.

8. Panel 8 on Personnel Roles in New Instructional Systems

Some writers regard the traditional classroom organization of the school and the teacher's role in that classroom as moribund. During the next two or three decades, the presently prevalent arrangements will be supplanted by what are now regarded as revolutionary new arrangements. The new schools will incorporate instructional systems that fully exploit the potentialities of computers, television, and various other products of recent technology.

The role of the teacher will change in correspondingly radical ways. In some views, the teacher will have much less to do with the intricacies of facilitating achievement of cognitive objectives, because computer-assisted instruction will carry much more of that burden. Instruction will be more more effectively adapted to the needs and capabilities of each individual student.

Such individualization will adjust the pace, the occasions, the initial phases, the remedial efforts, and the media or methods of instruction so as to optimize learning of the individual student. Beyond these kinds of adjustment, the new systems will adapt the subject-matter presentations to the individual's aptitudes, learning styles, attitudes, preferred types of reinforcement, and immediate past history of responses. They will also use new approaches to the evaluation and grading of student achievement, turning more to "criterion referenced" approaches. In turn, these approaches will lead to the objective of greatly increasing, indeed maximizing, the percentage of students that master all aspects of all their courses. Such "mastery" ideals will be achieved much more abundantly in the new instructional systems.

What will be the teacher's role in the new systems of instruction? Will the teacher become less the curriculum planner, the diagnostician and prescriber, the evaluator? Will the teacher become more group process facilitator, the mediator of emotional responses, the model for moral and aesthetic development?

This panel will develop approaches to the research and development that will provide bases for predicting and optimizing the roles of various kinds of persons in the new instructional systems. Basing its work on a variety of conceptions of the new systems, the panel will explore and formulate proposals for ways of making the emergence of the roles as efficient and rational as possible.

9. Panel 9 on Research Methodology

As in most fields of the behavioral sciences, methodology in R&D on teaching, of the kinds with which Panels 1-8 are concerned, has suffered from inadequate standards of validity.

The primary purpose of the panel on methodology is to identify methodological problems which appear crucial to the successful completion of research on teaching. The panel should produce a series of brief descriptions of such problems that can be integrated into one component of a directed research program. The results of the directed research program component are to be methodological developments that are applied in the sense that they are of clear utility for research on teaching. It is also hoped that the directed research efforts will contribute to the more general field of psychometrics.

There are a number of methodological problems which need further attention and that relate directly to the value of research on teaching. In the area of measurement there is a need for better understanding of the properties of existing measures of independent and dependent variables commonly used in past research. Such difficult problems as measuring the quality of a teacher (in several respects and across several situations) require new instrument construction. There is also a need for improved understanding of existing design and analysis strategies that would increase the utility of future research.

The Panel on Methodology will concern itself with both types of problems with emphasis on the latter. In addition, it may call for a sampling survey of the methodological problems and errors in the recent literature on R&D on teaching. The finding of the survey might lead the way to preparing a set of methodological standards and guidelines for research and development in teaching. If they proved effective, such standards and guidelines would raise substantially the validity of the work of the next decade. They would also enhance materially the degree to which research findings would become comparable across studies, so that future reviews of the literature would be able to accumulate results in valid ways. Of course, at the same time it is necessary to remain sensitive to the ideal that methodology should be uniquely well suited to the particular investigation. Therefore, it would also be useful to develop methods for synthesizing results from studies having different methodologies.

V. SUMMARY

This, then, is the strategy being tested by the NIE to increase the impact of the research on teaching. If the strategy is only marginally successful, we should more a long way toward providing the data needed to answer the question: "What are the things which teachers do which make a difference for children?"