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ABSTRACT

High-priority mission areas concerning schools are identified that are appropriate for research and development centers supported by the National Institute of Education (NIE). This draft summary report to the director of NIE focuses on the study of schooling, including subject content, teachers and their preparation, school organization and improvement, instructional processes, and the experiences and accomplishments of diverse groups of students. Attention is also focused on center functions, organizational forms that a center might take, and the feasibility of centers that are designed to meet each mission. It is noted that in addition to focusing on research, the university-based centers would act as a clearinghouse for all research dealing with its mission. Additional center functions would include: producing research reports, disseminating findings at conferences, developing educational offerings related to the work of the center, and initiating research proposals and plans. The detailed mission statements, which include research objectives, potential research topics, and their rationale, are provided for eight research centers focusing on the following areas: school quality and improvement, special populations, school subjects, instructional processes, school personnel, secondary schools, social processes and outcomes, and school indicators. (SW)

Research in Pursuit of Excellence: Report of the Study Group on Schooling

(DRAFT)

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Report of the Center Study Group on Schooling

1. The Study Group and Its Purpose

The Study Group on Schooling was created by the National Institute of Education to summarize the kinds of missions that NIE-supported research centers should have. Its work was conducted during August and September 1983. Members of the Study Group are listed in the Appendix attached.

Under its charter, the Study Group's main purpose is to identify high-priority mission areas to which NIE-supported research centers should dedicate serious attention. The mission statements created by the Group are to cover research objectives, potential research topics, and their rationale. Beyond this, Groups were asked to address additional functions of centers for particular missions, organizational forms that a center or centers might take, and some appraisal of the feasibility of centers that are designed to meet each mission.

2. Major Information Sources

The Study Group relied heavily on the following sources of information.

Expertise of Group members was crucial. The Study Group on Schooling includes researchers, directors of independent organizations designed to assess research needs and to translate research into action, and representatives of a state credentialling agency and a nonprofit educational research organization, teachers and former teachers, and a university administrator.

A second major information source encompassed intensive summaries of major research projects and initiatives suppoted by the National Institute of Education and others.

There was substantial followup with NIE staff and management following the Study Group meetings to clarify data and pursue detailed questions. The written material made available to the Group included summaries of NIE-supported research in areas related to teaching, learning, reading, cognitive processes, methods and evaluation, and others.

To assure that other public interests were served well, the Group also relied heavily on several other sources of information:

- Congressional testimony, notably various Committee hearings on Laboratories and Centers.
- Reports of the Department of Education's Office of Inspector General and other investigatory bodies and committees that have intensively reviewed the performance of existing laboratories and centers.
- Reports of conferences and committees on special related topics, e.g., NIE's Conference on Teacher Shortages, the Commission on Excellence.

A list of references to documents reviewed by the Group is given in the Appendix.

3. An Overview of Center Missions

The National Commission on Excellence recommendations included four categories: Content, Institutional Expectations, Instructional Time, and Teaching. They urged more content of higher quality and complexity for more students; the raising of expectations to make our educational institutions more effective as organizations; the more effective use of the time available in the school day and year, and the increase of such time whenever possible; and the improved recruitment, preparation, and working conditions for school personnel. The centers we have proposed will pursue missions closely aligned with those areas of recommendation.

Intelligent practice and policy must rest on knowledge — accurate knowledge of current conditions; discovery of powerful principles of teaching, learning, leadership and curriculum; and understanding alternative approaches to the solution of problems. The centers we propose will contribute to development of the knowledge needed to implement the Commission recommendations critically and effectively.

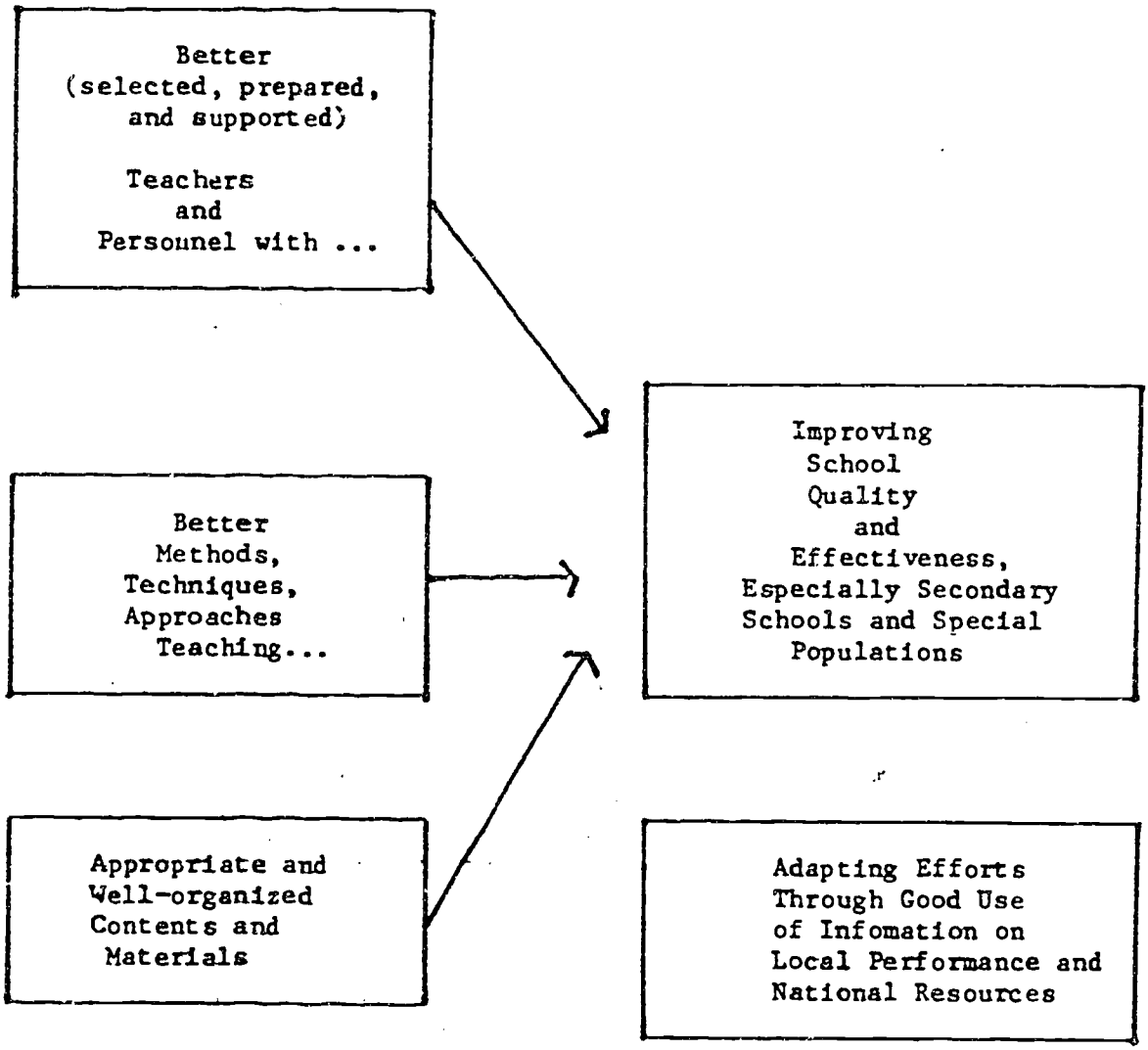
Our focus is on the Study of Schooling. Schooling and its ingredients/essential features — subject content, teachers and their preparation, school organization and improvement, the processes of instruction themselves, and the experiences and accomplishments of diverse groups of students as they attend (or drop out of) schools are the heart of the educational enterprise. The variety of educational policies, financing schemes, and administrative alternatives gain meaning only as they make a difference for the quality of teaching and learning in our schools. Better knowledge of human development and learning in particular areas is useful, as it guides what is taught and how it is learned within schoolrooms.

Ultimately, the research program of NIE will be of national value when it yields understanding of how to improve the quality of schools, the appropriateness of content, the effectiveness of teaching, and the achievement of excellence by all students. The missions of the centers we propose should focus on precisely those understandings. Each mission addresses key problems of schooling that would not be pursued by other research supporting agencies. Each mission deliberately and explicitly addresses the central challenge of schooling, especially for areas often underserved or distressed: (1) What are the qualities of good schools and how can more schools reach high quality? (2) Who should teach and how should they be educated? (3) What subjects are being taught and how can their quality be raised? (4) What methods are most effective for teaching the basic subjects to many kinds of pupils? (5) How can tests be improved to provide a better basis for the evaluation of student and school performances? (6) How can special problems be addressed teaching special populations, teaching in the secondary schools to guide policy and practice?

The improvement of practice and policy for education rests, at least in part, on our ability to gain certain kinds of knowledge: understanding the characteristics of good schools and the conditions for making all sorts of schools better; identifying who should be recruited into teaching and how an outstanding teaching force can be trained and supported; knowing what is taught in our schools, why it is important and how it can change; developing effective methods of teaching more subject matter more successfully to larger and more diverse members of youngsters; and creating powerful ways to monitor the quality of learning and teaching.

FIGURE 1

Relations Among Proposed Centers for Research on Schooling



4. Detailed Mission Statements

Center for The Study of School Quality and Improvement

Mission Statement

The Center for the Study of School Quality and Improvement will have as its broad mission to facilitate and assess the impact of educational practices designed to improve the quality of schools. This mission can be divided into three sub-areas: (1) to conduct basic and applied research on school organization at the elementary and secondary levels with a special emphasis on exemplary schools, (2) to conduct basic and applied research on school organization as it relates to student achievement, and (3) to conduct basic and applied research on the implementation of practices used to improve the quality of schools.

Background and Rationale

In response to the numerous reports which have been critical of public education, educators, policymakers, and practitioners have increasingly expressed concern with the "achievement of excellence in education." Teacher merit pay, increased academic standards, and new technology are just a few of the topics currently being touted as fertile grounds for possible reforms to the current educational system. Many school districts throughout the nation are increasing graduation requirements, establishing computer literacy curricula, and implementing school improvement designs in their attempts to improve the quality of schooling.

The adoption of any of these reforms will have significant impacts on schools as organizations. The questions then become: How do we direct this impact on a national scale, and how do we assess it? The proposed center will address these concerns through a research agenda focused on issues related to school quality and improvement.

Some federally funded R&D centers have been criticized for not producing enough relevant, timely, and practical information for practitioners to use. Some centers were also criticized for not obtaining sufficient input from practitioners on topics and designs of research (Division of Performance Management Systems, 1983). The topics and research ideas outlined on school organization and improvement are extremely significant, timely, and of importance to practitioners. Moreover, many practitioners in school districts across the nation are already conducting school improvement programs of some type and could become active participants in the R&D process rather than passive recipients of information.

Leadership at the national level needs to be provided to:

1. Capitalize on this opportunity for collaboration and exchange between researchers and practitioners nationwide. Both parties share a common interest in improving the quality of schools.

2. Ensure that cumulative, large-scale, interdisciplinary research programs on school organization and improvement be conducted and maintained.

3. Develop products where appropriate, and disseminate the research findings and products nationally (Final Report of the Panel for the Review of Labs and Centers [1980?]).

Literature Review

What knowledge currently exists concerning the organization of schools and school improvement and what more do we need to know?

The research on effective schools is one area that has provided information which indicates that schools can be organized to improve student achievement in basic skills. For the most part, this research has focused on instructional effectiveness at the elementary level in low-income and minority populations. Thus, generalizability to other school populations and the secondary schools is limited.

Instructional effectiveness has been measured using standardized achievement tests. There are several difficulties with this approach. One limitation is the definition of what constitutes an effective school. An effective school might be one that is rated exceptional by the parents and community, a school where student enrollment is maintained or increased over a period of time, or a school that over time has significantly reduced the numbers of students who drop out. These alternative conceptualizations have been omitted from this research area. Secondly, there is little or no consensus on how to identify or measure instructionally effective schools. Some researchers have used the proportion of students within a school scoring

at or above the national median as an indication of effectiveness. Others have analyzed trends in achievement at a particular grade over time or achievement gains by a particular group of students. (See Rowan, Bossert, and Dwyer, 1983, for a review of the methodology used to assess instructionally effective schools.)

A third limitation is that an effective school has been defined exclusively from the account of increases in instructional effectiveness where the initial level of student achievement is at the bottom of the achievement score distribution. There is some research which suggests that differential organizational patterns exist in effective schools where the initial achievement level is in the middle of the achievement score distribution (Lightfoot and Jackson).

Despite these limitations and many others not addressed here, standardized achievement test scores remain as a commonly used indicator of the instructional effectiveness of elementary schools.

Given the various methods and limitations of assessing instructional effectiveness, there is some agreement concerning what constitutes the basic components of those schools identified as effective. There is little agreement, however, on the exact definition of these constructs. There have been several recent critical reviews of the effective schools research which present in some detail the conceptual and methodological limitations of this research area. (See Purkey and Smith, 1983; MacKenzie, 1983; and Rowan, Bossert, and Dwyer, 1983, for a critical review of the research on effective schools). Although some of these issues will be addressed in the remaining

discussion, this brief review will focus on what we "tentatively" know about effective school organizations and where there are gaps in our knowledge base.

For purposes of simplification, the components commonly found in effective schools can be considered in three general areas: leadership, instructional organization, and academic orientation. Schools are complex organizations (dynamic social systems) made up of interrelated factors; thus, in actuality these components are interdependent and interactive. Although much of the discussion is based on our knowledge of effective elementary schools, these components may also serve as a basis for the study of school organization at the secondary level. However, we recognize that there are fundamental differences in the nature of these components for the two types of school organizations.

Leadership

Numerous studies have indicated the importance of the principal's leadership in accounting for high reading achievement in elementary schools. Few studies, however, have gone beyond the mere identification of this factor and a superficial description of what it means. Instructional leadership can be considered as a set of attitudes, activities, and behaviors which facilitate effective teaching behaviors and support teacher efforts to improve. There are specific support functions that must be provided by principals in order for effective practices to implemented and institutionalized (Carnine, Gersten, and Green, 1982). Additional research, however, is needed to document and explicate these critical principal behaviors in effective elementary and secondary schools.

The conceptualization of the construct of leadership needs to be expanded to include other sources of leadership, both within and outside of the school. For example, very little is known about the behaviors or support functions of vice principals, department heads, supervisors, specialists, or about the informal leadership that may be derived from a core group of teachers within the school. Does this type of leadership have an impact on schoolwide achievement? If so, what are the processes and conditions which might facilitate this type of leadership? Outside of the school, district-level support is an underlying component of school improvement that is necessary but not often studied. There are few, if any, studies concerning how district practices influence school-level organization and practices. Many school districts have implemented school improvement efforts, and descriptions and assessments of the process and outcomes of these efforts ar needed.

Instructional Organization

A second set of variables generally reported in the research on effective schools can be subsumed under the category of instructional organization. Some of the commonly reported variables in this category are the coordination of instructional programs, decision making and information flow, monitoring of student progress and teacher performance, a deliberate plan for improving achievement, clearly articulated goals, and a schoolwide emphasis on basic and higher-order cognitive skills.

One critical gap in the research in this area is how these school-wide organization variables influence such classroom variables as academic engaged time, pacing, grouping, content covered, and other classroom-level organizational variables found to affect student achievement.

A second area where our knowledge base is inadequate is in the content/curriculum of effective schools. Most of the research on instructional organization has focused on the management and structural aspects of instruction. If research is to be of use in school improvement efforts, then we must know what is taught and in what sequence as well as the structural elements.

This area of study is a particularly relevant focus for research on instructional organization at the secondary level. Very little is known about the content and sequence of courses in secondary schools. An additional research question applicable to both elementary and secondary schools might be how teachers plan and coordinate curricula both within and across grade levels.

Academic Orientation

The third and final set of variables reported in research on effective schools can be categorized as academic orientation. Several studies have indicated that high, positive teachers' and principals' expectations for student progress, visible rewards for achievement, collegial relationships, and order and discipline are common characteristics in effective schools.

Very little is known about the origin and process of how academic orientation evolves. More research is needed to determine the conditions under which this factor can be maintained or increased. For example, can a school have an academic orientation without some critical amount of support from the principal? There has been some research on the importance of faculty work norms, and collegiality in school improvement research (Little). What mechanisms exist for engendering commitment among the faculty?

Other research questions of interest might include: What is the relationship between school instructional organization and academic orientation? How does school academic orientation influence teacher beliefs and practices? A positive school learning climate has been found to be related to student achievement (Brookover et al., 1979). However, it is unclear whether a positive learning climate causes high school wide achievement or if the direction of causality is reversed.

In summary, the research area on effective schools has provided necessary but not sufficient information needed to alter the quality of schools. The research informs us of what factors exist in effective schools, but the "how" and "why" remain to be explained. Additional research is needed which focuses on:

1. the interactions and causal links between various components of effective schools;

2. the explanation of how these components effect the process of teaching and learning to influence student achievement;

3. the process by which schools increase, decrease, or maintain effectiveness over a period of time; and

4. the actual implementation and effects of school improvement programs.

Center for the Improvement of Schooling for Special Populations

Mission

The mission of this center will be to conduct a research program on educational practices that enhance the intellectual growth and academic development of special-population students. These are students for whom schools have proven minimally effective. They are for the most part the children of the poor and include groups such as native Americans, Black Americans, Hispanics, and other language-minority students. Continued failure to educate these groups not only impose limits on their development, but, ultimately, they damage the economic and political health of the total societ

The center's research will include studies on the development of literacy and mathematics, as well as research on other aspects of schooling, such as the development of school ethos, interpersonal communication, self-reflection motivation, and social awareness. The primary research emphasis will be on the improvement of schooling in the service of academic excellence for these youngsters. This means studies that not only examine in detail teaching and learning environments, but also apply research findings in actual school contexts to produce change.

Background and Rationale

Students from special populations are at risk educationally. Achievement levels are low; dropout rates are high. (See, e.g., Macias, 1982.)

Practitioners and policymakers are at a loss. They seek new knowledge to become more effective with 'special needs" populations. These students' schooling experiences have rarely been studied directly in the last decade's programs of research on the improvement of schooling. Only a handful of projects at NIE centers and laboratories have studied these children's education. In a recent NIE-sponsored conference summarizing a decade of research on teaching, only a few papers mentioned such students; none addressed their pedagogical needs directly (Elementary School Journal, 1983).

The pressing needs of these students for an effective education and the lack of existing research knowledge useful to practitioners combine to establish a significant problem area for research and development. Consequently, the focus of this center is to develop a systematic research program on educational practices that promote excellence in the achievement and development of special population students. The products of this research are intended to help educators improve the quality of schools in these diverse and demanding settings.

Brief Review of Current Literature

Recent studies of schooling show that educational practices have differential consequences for students of different characteristics. These studies suggest that it is not simply student background characteristics that determine their school experiences and outcomes; it is not only a matter of the student working hard at succeeding. Everyday educational practices play

an active role in determining the nature of schooling and the progress of students. Mehan, Hertweck, and Meihls (1983) have summarized studies that show that the day-to-day practices of schooling make available differential educational opportunities and experiences for different students. These studies examined, for example, the organization and focus of instruction for different ability groups (Eder, 1981; McDermott, 1976), the educational consequences of tracking (Rosenbaum, 1976) and labeling (Mercer, 1974), and the relationship between counseling procedures and career choices (Erickson and Shultz, 1982).

These studies identify mechanisms that explain the relationship between students' background characteristics and academic outcomes. They show that educational practices interact with the students' characteristics and lead to decisions about students that affect their opportunities and success in schools. In short, the specific nature of educational practices matter in determining students' educational opportunities, experiences, and outcomes. However, most of the research mentioned above has identified and clarified pedagogical problems but has not provided concrete solutions. Moreover, previous research explains why special-population students fail to get opportunities to study important topics; they teach us little about successful approaches to teaching these students once opportunities are provided.

The beginnings of that research exist, and much more is needed. A related body of research has combined information gained from close observations of classroom lessons with knowledge derived from observations of students in nonschool contexts to implement effective change. These studies view the

students' background and lifestyles, not as a hindrance to educational advancement, but as a powerful resource for improving schooling. Thus, they analyze the student's cultural practices in a variety of school and nonschool contexts to identify domains of competence that are potentially relevant for schooling. Working in collaboaration with practitioners, researchers then apply their knowledge of educational and cultural practices to organize learning environments that build on the students' talents and skills. An example of this work is the research of Brice Heath (1981, 1982). On preschool and secondary level schooling, she used patterns of questioning in the community and community literacy events to improve instruction in preschool and secondary school classrooms. Other examples of research along these lines are available (e.g., Au, 1980, Morris and Louis, 1983). These studies combine the analysis of community events with the analysis of educational practices. Clearly, community information rarely enters classrooms directly. Its use in classrooms in mediated through existing instructional practices. The specific organization of instruction facilitates or impedes the use of community information to produce change.

Research Questions

The research program will address questions such as the following:

(1) What educational practices hinder or promote intellectual growth and academic excellence for special-population students?

(2) What principles underlie effective pedagogy for these diverse groups of students?

(3) What is the relationship among different aspects of schooling (e.g., classroom practice, school climate, counseling services, school administration, and how does this relationship influence the nature of school?

(4) How can schools capitalize on the language and lifestyle of these students to organize effective instruction?

(5) How can schools establish links with communities that create reciprocal partnerships for the benefit of schooling?

Center for the Study of School Subjects

Mission:

The Center will conduct descriptive, interpretive, analytic, and experimental research on what is taught in schools. The focus will be on the bodies of knowledge, sets of skills, ideas, and concepts that comprise programs of study in elementary and secondary schools. The intent will be to examine the collective nature, thrust, and impact of these, rather than to investigate specific content areas separately.

Research will be undertaken on current practices, assessing their implications and consequences for all segments of the school population -- students, teachers, administrators, and specialized staff. The Center also will formulate and carry out experimental, innovative curricular activities, weigh their influence on the process and quality of schooling, and evaluate their merits and benefits.

Background and Rationale:

School improvement efforts have focused cyclically on one or another of the twin components of instruction—the what and how, the content and process of teaching. The reform movement of the 1950's invested in discipline-based curriculum development under the direction of subject-matter specialists; efforts in the 1960's shifted to the study of teaching in search of instructional techniques and strategies that would prove effective across a range of subject content.

The 1980's promise a return to a curricular focus on school improvement efforts, and indeed, we have already seen a number of distinguished reports urging general adoption of a variety of core subjects. School policymakers at various levels are going to need help with the decisions they will be making. The Center for the Study of Curriculum will provide systematic study of the several kinds of questions which decisionmakers must confront in dealing with issues of content.

Research Questions

There is pressing need for descriptive information about what is taught in schools, particularly at the secondary level. Ther is virtually no systematic and accurate information available on the number and nature of different course offerings, their distribution along the traditional disciplines, and their accessibility to different groups of students. Illustrative research questions in the area are:

- What are content differences among the major tracks within schools?
- What are content differences among student assignments and experiences within a single classroom?
- What are content differences within and among school districts?
- What are the similarities and differences in the content of similarly labeled courses?

Current curricular practices need to be understood from the perpsective of the several groups affected by these. Students, teachers, and administrators experience the curriculum in unique ways. Responsive questions are:

- What are the curricular sequences experienced by individual students during the course of a school day?
- What combination of courses are students taking during the school year?
- What is the pattern and range of content assignments secondary school teachers have during a school day, week, year?

To indicate the range of additional questions germane to such a Center, an illustrative sample follows:

- What presuppositions—empirical and valuational—undergird existing curricular arrangements?
- What are the various kinds of implications of curricular arrangements: e.g., to what kinds of knowledge products do they lead and which do they close off to learners?
- What is the point of what we are teaching? What should students be learning, from the standpoints of national needs? The nature of the disciplines? Curriculum theory? Developmental theory?
- How are curricular decisions made? By what process or mechanisms? What is the kind and degree of input of the federal government, state governments, local districts, parents, teachers, students, "ancillary structures" (e.g., accreditation agencies, textbooks)?
- How should curricular decisions be made?
- How is curriculum evaluated? How should it be evaluated?
- What combination of subjects are best studied together? What common concepts, metaphors, and associations do they make possible?

- What curricular offerings contribute most to the development of higher-level intellectual processes?
- How do the particular kinds of content learnings of today's students compare with the kinds of learning of previous generations of students? How do the current learnings of our students compare with those of Japanese, Russian, English, and German students?

Center for the Study of Instructional Processes

Mission

The mission is to conduct basic and applied research on the instructional processes commonly used in elementary and secondary classrooms. Instructional processes are the approaches, methods, activities, and planned experiences that teachers use to impart knowledge and develop skills: lecturing and presenting information; demonstrating skills and procedures; asking questions and giving feedback; conducting drill, recitation, and discussion activities; introducing seatwork and homework assignments; monitoring performance on those assignments, diagnosing learning problems, and providing corrective feedback or reteaching; helping students to integrate and apply their learning through research projects, performances, and other creative or integrative activities.

Background and Rationale

After decades of frustration, researchers studying teaching have achieved important breakthroughs in recent years. This is not evident in "process-product" or "teacher effects" research that teachers, and not just curriculum materials and students themselves, affect students' achievement. Some teachers are more successful than others in producing student achievement, and certain classroom conditions and teaching behaviors are associated with their success (Brophy, 1979; Good, 1979; Medley, 1977; Rosenshine, 1979). These include the following:

- Student opportunity to learn academic content or skills (which is determined by teachers' allocation of classroom time to academic activities).

- Student time spent engaged in appropriate academic activities (which is determined by teachers' knowledge about their students' academic abilities and needs, and also by teachers' classroom organization and management skills).
- Student time spent being actively instructed by the teacher (as opposed to being expected to learn on one's own through exposure to curriculum materials and exercises).
- Student opportunity to practice and receive corrective feedback.

These and related findings (mostly correlational, but partly experimental) constitute a small but growing knowledge base that teachers and teacher educators can draw upon in transforming teaching into (partly) an applied science in addition to an art. Research linking teacher behavior to student outcomes cannot yield direct prescriptions for practice, because such prescriptions must reflect both policy decisions about priorities among potentially desirable outcomes and teachers' professional decisions about which instructional principles apply to the present academic objectives and how these principles must be adapted to the students' particular needs. Such research <u>can</u>, however, develop information about which instructional principles are relevant to which instructional situtations, and about the advantages or tradeoffs involved in opting for one rather than another. Indeed, such research <u>must</u> be done if teachers' instructional decisionmaking and behavior are to be based on established empirical facts rather than untested theory. Thus, the advances of the last 15 years are encouraging.

They have come about because of several developments in the conceptualization and conduct of research on teaching. First, researchers began to pay serious attention to achievement and other student outcomes in assessing teaching effectiveness. Second, supplementing an earlier concentration on studying learning from text or from experimental manipulations in laboratory settings, researchers began to study learning in classrooms and to focus on the behavior of teachers. Third, measurement of teacher behavior progressed from global ratings of general traits to more objective coding of specific behavior by trained observers using systematically developed instruments. Fourth, attention shifted from the affective aspects of teacher-student interaction to the instructional aspects--the activities of teachers that are most directly related to accomplishment of the instructional objectives. Finally, researchers began to exert more control over the contexts (grade level, subject matter, etc.) within which their data were collected, so that data from different classrooms become more directly comparable, and findings more clearly interpretable.

The result of these developments has been that significant research attention has finally begun to focus on what should have been of major concern all along: the instructional processes that teachers rely on in their everyday work. The recent progress noted above is gratifying, but it is only a beginning. So far, process-outcome research has concentrated on instruction in basic skill sn the primary grades, using end-of-year performance on standardized tests as the achievement criterion. Attention needs to be focused on issues of instructional effectiveness in the upper elementary and secondary grades, on the full range of academic subject matter, and on instructional objectives

that transcend subject matter (i.e., fostering skills in metacognitive awareness, problem analysis, or evaluation of one's own work) or require assessment devices other than standardized tests.

Another limitation of existing research linking teacher behavior to student achievement is that most of the findings concern quantity of instruction—differences in exposure to content due to differences in teachers' managerial skills and time spent actively instructing the students. Attention also needs to be focused on quality of instruction—differences in the appropriateness, efficiency, or value of instructional process that occur under comparable conditions.

Research Questions

The Center for Study of Instructional Processes is needed to spearhead and coordinate future development of research linking instructional processes to their outcomes. Its research will be designed to deepen our understanding of what these processes are and how they are accomplished, what their advantages and disadvantages are in various contexts, and how they can be planned and implemented optimally where their use is appropriate. Analysis of appropriateness and effectiveness of instructional processes will include attention to effects on achievement and other relevant student outcomes in addition to criteria derived from consideration of curriculum content and learning objectives.

The research will not be restricted to particular teaching-learning contexts within elementary and secondary schooling. However, it is expected that researchers will take context into account in planning particular studies and in noting qualifications on the probable generalization of their results, and that their programmatic and integrative contributions will describe context-specific findings in addition to more generic findings. In this regard, "context" is meant to include both broad factors such as grade level, subject matter, and types of students taught, as well as more specific factors such as the particular objectives to be pursued given the students' relevant cultural experiences with and prior achievement in the subject matter and the more general scope and sequence of curriculum and instruction within which the present activity fits. Consequently, it is expected that most studies will be conceived as targeted toward, and conducted within, instructional contexts that occur within specified grade levels and subject-matter areas and involve specified types of students, task structures, and instructional objectives.

The research will include attention to all types and levels of instructional objectives (not just knowledge reproduction), and to issues of quality and appropriateness. When is a particular instructional process appropriate? Given the topic and the students, what makes for a good lecture (discussion, homework assignment, etc.)? Are there equivalent alternative methods of accomplishing the same objective? In detail, how do teachers implement effective demonstrations (discussions, etc.), and how do these microprocesses differ from ostensibly similar but less effective ones? Given a particular task or activity to accomplish, what steps make for success, and what are the consequences of omitting these steps or implementing them poorly?

Attention to context will naturally require consideration of classroom organization and management, curriculum, individual differences, and other issues focused on by other centers. However, the focus of this center's research will be on instructional processes--the activities in which teachers engage their students and the things that teachers say and do in the process of accomplishing these activities. Within this, the emphasis will be on teaching and learning cognitive objectives rather than on the social or personal aspects of teacher-student interaction. Yet, the emphasis is on instruction via human interaction in the classroom (typically in the whole class or small-group setting), and not on curriculum design or on instruction via programmed materials or computers.

The research will build on, and not merely replicate, the present state of the art. Methods will include not only the high-inference rating and low-inference coding of teacher-student interaction, but "thick description" of how teachers accomplish academic activities, micro-analyses of videotaped activities, and interviews of teachers and students. Analysis should focus not only on interactions between the teacher and individual students, but on the teacher's instruction of the class or group as a whole and on the nature and effects of the activities and assignments that are included as part of the "instructional package." Designs may be descriptive, correlational, or experimental (although treatment studies should take place in regular classrooms under otherwise ordinary conditions, or at least be designed so that the findings are likely to be applicable by teachers working within the constraints imposed by typical classrooms).

Some attention should be given not only to the conduct of individual academic activities, but to the organization of those activities into a coherent instructional system (in other words, to the management of instruction). How is seatwork and other individual work monitored? What are workable methods of seeing that students get help as quickly as possible when they need it? How are needs for remedial instruction identified, and how is such instruction worked into the schedule? How do sequences of activities planned over several days or weeks move students gradually from exposure to new content through mastery of the content to application? What factors should determine the pace at which such movement progresses? What should be done with students who are notably ahead of or behind the majority of their classmates?

Some attention should also be given to research-into-practice issues. As principles of effective instruction are discovered and verified through treatment studies, guidelines and materials to train teachers to implement the principles and adapt them to their particular situations will be needed. The Center should disseminate such guidelines and materials in addition to reports documenting the validity of the principles.

Some attention should be given not only to the conduct of individual academic activities, but to the organization of those activities into a coherent instructional system (in other words, to the management of instruction). How is seatwork and other individual work monitored? What are workable methods of seeing that students get help as quickly as possible when they need it? How are needs for remedial instruction identified, and how is such instruction worked into the schedule? How do sequences of activities planned over several days or weeks move students gradually from exposure to new content through mastery of the content to application? What factors should determine the pace at which such movement progresses? What should be done with students who are notably ahead of or behind the majority of their classmates?

Some attention should also be given to research-into-practice issues. As principles of effective instruction are discovered and verified through treatment studies, guidelines and materials to train teachers to implement the principles and adapt them to their particular situations will be needed. The Center should disseminate such guidelines and materials in addition to reports documenting the validity of the principles.

These comments are especially relevant to projects that involve the development and testing of innovative school practices designed to optimize progress toward social and affective outcomes. Designers of such innovations should bear in mind issues of feasibility and cost-effectiveness. If innovations are to be adopted in the schools, they must not only make theoretical sense and be successful in attaining their objectives, but also must be adaptable to the financial and structural constraints within which schools and teachers must operate. They also must be compatible with the schools' primary focus on the teaching and learning of academic skills. Thus, in evaluating social or affective innovations, consideration should be given to intended and unintended effects of the innovations on instructional practices and outcomes. Ideally, innovations will not only be effective in attaining their social or affective objectives, but also be affordable, feasible in terms of classroom management and time constraints, and supportive of (or at least not in conflict with) the instructional program.

Center for the Study and Development of School Personnel

All attempts at educational reform, whether policy, organization or program, will depend on the quality of school personnel -- teachers, administrators, and others -- for their successful enactment. The Center for the Study and Development of School Personnel will conduct basic and applied research on the development of school personnel. (School personnel refers to teachers, administrators, counselors and other personnel serving pupils in the schools.)

The mission of this Center addresses three basic questions:

(1) Who should educate and/or work with school-age youth?

(2) What should school personnel be taught? Where should the education of school personnel take place and who should teach them?

(3) What are the ways that the workplace can enhance and sustain the continuing development of school personnel?

Background and Rationale

Research on the development of school personnel is guided by the belief that school personnel are critical for learning and school improvement. A number of presidential and governmental task forces have suggested that sweeping reforms in the education/training of school personnel are necessary to achieve excellence in the nation's schools. (See for example, A Nation at Risk; The Condition of Schools; The Path to Excellence; Improving the Attractiveness of

the K-12 Teaching Profession; and Model State Legislation: Continuing Professional Education for School Personnel.) Public concern about the academic and teaching competence of school personnel has increased the need for strong research evidence in this area to guide the formation of policy. Last, the current growing research on the importance of school personnel in school effectiveness has raised new questions about the development and training of school personnel that can only be addressed through a carefully designed program of research.

Related Literature

Recent studies on the selection and retention of students in teacher education show that the teaching force is attracting and retaining those students who are less able, academically, as measured by standardized tests (Vance and Schlechty, 1982; Schlechty and Vance, 1983). These findings and public concern over the competence and academic ability of teachers have led educators to wonder how they can identify, recruit, select, and retain those candidates who are best qualified for the nation's schools. The qualifications of the teaching force may not be sufficiently improved by the effectiveness of current programs preparing school personnel (Watts, 1980; Kleine & Wisniewski, 1981). There is insufficient understanding of the content and methods of programs needed to prepare, and continue to educate, school personnel. (Improving the Attractiveness of the Teaching profession, 1983; Kosack and Greenberg, 1983; Logan, 1975). In addition to the public press for more academically able teachers and effective preparation programs for school personnel, considerable attention has been given to ways of changing the

school workplace to enhance and sustain the career development of school personnel. This line of inquiry has called for more flexible career ladders for school personnel and new roles for teachers to participate in the education and assistance of their colleagues; a restructuring of salary scales; and developing continuing education programs that lead to personal and career growth (Schwartz et al., 1983; Griffin, 1983; Sykes, 1983).

These demands for the reform of recruitment, selection, preparation, and career development require a long-range research program on school personnel to address the following areas:

A. Who should work/teach in the nation's schools?

- What are the relationships, if any, between selection criteria and success in teaching?
- What is the effect of selecting more academically able candidates on the development of teaching competence and on subsequent school/learning improvement?
- How can we identify and retain the best qualified teachers?

B. What should be the content of programs that prepare school personnel?

- What training/education practices enhance school improvement? School personnel competence?
- What training/education practices influence the thinking/decisionmaking of school personnel which improve schooling practices?

- How can training programs be enhanced to retain the more academically able? Which of the important understandings and skills are best learned in universities? In field-based practice? Internships? On the job?
- What are effective ways to retrain teachers for working in shortage areas?

C. What are ways to enhance and sustain the continuing development of school personnel?

- What are the elements of continued professional development among school personnel? What can teachers learn from experience and faculty development?
- What staff development activities lead to professional expertise and school improvement?
- What are the relationships between staff development, increased professional competence, and school effectiveness?
- How can career patterns be designed to retain qualified school personnel and sustain their professional growth and commitment?
- What is the effect of different strategies for evaluation and testing of teachers on their professional growth and on school improvement? What role can members of the profession play in the design and implementation of quality control in schools?
- What is the impact of higher and differential pay systems on the continual professional competence and career patterns of school personnel?

A Center for the Study of Secondary Schooling

Mission:

Our young cannot flourish, taken but halfway; and our nation cannot thrive unless the payload years of secondary schooling are made much more productive than they are now. To effect this, we need to translate what should happen in instruction, curriculum, school organization and the like into what is to be done and how it can be done. In other words, we need to convert the descriptive insights which have triggered our national debate on education, and on secondary schools in particular, into specific ways to proceed in making secondary schools strong and successful. This then is the precise mission of a Center for the Study of Secondary Schooling.

To accomplish this will require the development and application of knowledge with respect to the substance, context, organization, and delivery of education in grades 7-12. Such efforts will involve special attention to patterns of instruction, barriers to learning, transitions from level to level and from school to work, delinquency, dropping out and discipline, design and development of academic programs, and appropriate processes for the conduct and application of research.

Background and Rationale:

It is now clear that public attention is firmly fixed on the state of public education, on what is needed to achieve exemplary results in teaching

our young, and on the significance of education for the future of America's social and economic development. This attention is characterized by constructive proposals for change rather than faultfinding and is distinguished by the range and significance of the stakeholders: political leaders, organizations of business leaders, presidents of major institutions of higher education, major professional groups, teacher leaders, and school board associations. Most important, however, is that a majority of the citizenry now affirms its willingness to support substantial investment in upgrading our schools so long as the effort is directed at solid and meaningful improvements in standards and quality.

To a large extent, the enormous concern and interest which has been generated has emerged parallel to the stream of major critiques and studies of education, which have been released over the last year, and has been stimulated and multiplied by public interest in the issues and problems. The studies now before us contain a range of detail and insight and come of prestigious lineage. And it is now fair to state that we have an obligation as a society and as experts and specialists to systematically attend to these problems and issues by carrying out a thorough program of basic and applied research. NIE's pursuit of an appropriate research focus and agenda is a key part of that action as we now move from what is needed and what should be to how we meet the needs and what we are to do.

Such action is particularly critical with respect to secondary schools which have emerged as prominent subject of current debate and analysis. All of the major reports give substantial attention to secondary schools and

several, either by design or implication, consider the condition of education on the secondary level to be the most important challenge of the next decade.

Many reasons explain this concern. An overwhelming majority of knowledge development efforts in educational research over the last 15 or 20 years have concentrated on elementary schools. Similarly, and perhaps logically, given the foregoing, the greatest effort and investment aimed at achieving stability improvement in schooling has been directed to the lower schools--and it has been worth doing, for we are beginning to see positive results at this level.

However, it has become increasingly obvious that whatever the gains in educational service delivery in the elementary grades, including the toughenining of standards, the stabilizing of environments, and the strengthening of content, the gains are not sustained during grades 7-12 for the large numbers of marginal pupils; and the promise of growth diminishes or recedes for even the most gifted, able, and successful of secondary school students. That is why an emphasis on secondary schooling is urgent, and it is made more compelling by the need to address not only the unique character of secondary schooling itself but the unique challenges of designing research approaches which can encompass the complexity of a secondary school. Such a Center, concentrating not only on the traditional high school years but on the full continuum of grades 7-12 can directly and rapidly focus on the range of secondary school problems.

Research Tasks:

To this end, we would recommend undertaking studies dealing with appropriate content and sequence of instruction, including subject-oriented research related to the design and delivery of academic programs and their placement within the course of study and the years of schooling. In addition, we need to address issues directed to the education of special populations at the extremes of both the ability and the social spectrum and investigation of special problems faced by secondary schools concerning such matters as school-leaving, antisocial behavior, discipline, motivation, and the relationship between family and school. Organizational patterns and the variant options of such patterns in such areas as program scheduling tracking, need to be looked at to ascertain their effect on teaching and learning. and closely related is necessary inquiry into the context of schooling, i.e., the school as totality, the interaction of instruction, the management of learning, and school environments (internal relationships, size, social life, extracurricular life, place in community, and the like).

Moreover, as we undertake to change how schooling at the secondary level occurs, it is appropriate to seek to define how change itself is effected (e.g., what do you do to redesign a school?), what kinds of change agent models are appropriate for which purposes, what staffing patterns and roles among teachers and support personnel need redefinition, extension or creation, what implications exist for teacher preparation and teacher development. (With what and how does one prepare a secondary school teacher or counselor or administrator. How do we match practitioners and the service delivery requirements of secondary schools?)

Linked to processes for change are processes for moving from one level of experience to another— from lower schools to middle schools, from JHS to HS, from HS to the world of work or further education. What can be done within the various transition opportunities to strengthen receptivity and motivation at the next level? What do we need to know about the ways learning may occur and the structure for learning appropriate to secondary school students (e.g., age grouping, peer tutoring, experiential learning, independent study, internships, cooperative learning, work-study, community service, vocational education).

Finally, we should consider tasks related to the relationship of research and practice. The opportunity now exists to develop a unique capacity to both accelerate the process of moving from knowledge development to practice and to generate effective mechanisms for an ongoing relationship between research and practice. Thus, we would want to design methods and mechanisms inherent to the research which will promote the application and dissemination of knowledge as part of the research strategy and by linking researchers and practitioners, create a base or cadre of practitioners with the expertise and awareness to disseminate knowledge within educators' ranks (e.g., interactive research, teacher-research linkers). In addition, the Center should encourage and seek supplementary support for the sponsorship of secondary schools to assist in the application of research findings.

Taken together, the tasks enumerated will enable the Center to address the full range of challenges which secondary education poses, challenges that go to the heart of the nation's human resource development needs.

Center for the Study of the Social Processes and Outcomes of Schooling

Mission

The mission is to study the processes and outcomes of schools that relate to their roles as socializing influences on students' social and affective development. In addition to instructing students in the formal academic curriculum, schools socialize their students by inculcating values, developing personal traits, and fostering social beliefs, attitudes, and behaviors. Some of this is accomplished deliberately through citizenship courses, counseling activities, and the like, but most of it is accomplished through the "hidden curriculum" communicated through modeling and expectations, organizational structures and routines, rules, and policies. The center will study these socialization structures and processes, documenting their effects on social and affective student outcomes, such as attitudes toward school, school ethos, and classroom atmosphere, and patterns of interaction with peers.

Background and Rationale

Studies of school effectiveness indicate that student achievement is associated not only with the amount and quality of instruction to which students are exposed, but also with the students' attitudes toward learning and beliefs about themselves as learners, with their degree of pride in and identification with the school, and with the schools' orderliness, safety, and social atmosphere. Thus, knowledge about how to create a good school climate and optimize the social and affective development of individual students is needed to complement knowledge about effective instruction.

Furthermore, such knowledge is important in its own right. The schools serve society not only by imparting academic knowledge and skills, but also by developing the personal and social traits that society values in its citizens. This socialization function is recognized and considered important by all educational stakeholders, even though they may disagree about what particular values or personal and social traits the schools should try to inculcate. The latter is a value question, which is not directly addressable through research.

Research can, however, assess the effectiveness of deliberate school socialization practices in attaining their goals. It can also identify the unintended effects of school practices such as tracking on students' social attitudes and behavior.

Such information is badly needed. There is a general perception that schools are not as effective as they could be in accomplishing social and affective objectives (the results of desegregation programs, for example, appear to be mixed at best), and some types of schools (notably inner-city high schools) are recognized as trouble spots. It is clear that we need tna emphasis on the effects of school structures and processes, and not merely on their goals. Good intentions are not enough.

Research on desegregation programs shows this clearly in its finding that increasing the frequency of contact between blacks and whites will not by itself improve race relations, and may even make them worse. Outcomes depend on the quality of the contacts. Contacts that are structured to be prosocial, especially those that involve cooperation in striving for shared goals, are

likely to improve social relationships, but contacts that lack these characteristics are not. Mere preaching about positive race relations without structuring of shared, goal-oriented cooperative activity is unlikely to change behavior.

It is likely that the situation is similar for other social and affective objectives. Mere agreement that a goal is desirable is not enough to insure its realization; preaching alone is unlikely to be effective either; and programs designed to realize the goal may or may not be effective. Empirical assessment is required. More generally, a center is needed to collect information about such programs, integrate information about their effectiveness, and conduct research, development, and evaluation of its own.

Also needed is information about the social and affective consequences (usually unintended) of existing school practices. Most such practices were developed entirely or at least primarily for pedagogic reasons—they seemed to facilitate academic instruction. Many of these practices, however, also have effects on students' attitudes and beliefs, on the nature and frequency of their interactions with peers, and on other social or affective outcomes. Again, a center is needed to systematically attend to the issues of social and affective effects of school practices, and to issue calls for caution or recommendations for change whenever it is discovered that school practices adopted for instructional reasons have unintended and undesirable effects on students' social or affective development.

Research Questions

This center will conduct basic and applied research on the social processes and outcomes of schooling. It will focus on the structures and conditions within which individuals (students, teachers, and other school personnel) interact in elementary and secondary school settings, developing information about how these structures and conditions function and about how they can be optimized to produce desirable outcomes.

Viewed from the perspective of outcomes, the center's mission will be to study schooling processes (especially school and classroom organizational factors) as they affect social and affective student outcomes such as: school ethos and classroom atmosphere; degree of identification with the school and participation in HS activities; friendship patterns and other sociometric characteristics; development of prosocial and cooperative interaction patterns among students in general and especially between students who differ in sex, race, socioeconomic status, or other status characteristics; school attendance patterns and other aspects of student attitude toward school. Student achievement would also be an important outcome of interest, of course, but in addition to rather than instead of these social and affective outcomes.

A second, related mission of this center will be to study the social structures and processes of schooling. This includes both research designed to describe these structures and processes and deepen our understanding of their functioning, as well as research designed to link these structures and processes to the student outcomes mentioned above. At the school level, these

structures and processes include: the size and configuration of the school and its subunits; tracking practices; counseling and other mechanisms determining the routing of students into tracks and classes; recruitment practices and other determinants of students' participation in extra curricular activities; the variety of extracurricular activities available and the opportunity they provide for personal development and social contact; scheduling and structuring of lunch periods and other opportunities for students to interact with their peers in between classes; variations in use of space and in size and heterogeneity of groups sharing the same space at a given time; and subdivision of schools into learning communities, homerooms, and other structural subunits.

At the classroom level, social structures and processes include: activity and reward structures that govern the nature and frequency of peer interaction; grouping practices; seating patterns; and curriculum and instructional practices that affect the frequency and nature of different types of students' contacts with one another.

The emphasis will be on advancing general knowledge about these topics, and in particular, on how desirable social and affective outcomes can be fostered in individual students, in classroom groups, and in the student body as a whole, in all types of schools. However, it is expected that there will be more emphasis on secondary than on elementary schools, and that attention will be given to such specialized topics as: optimizing race relations in desegregated schools; helping students (of both sexes) overcome inhibitions or other problems associated with overly rigid sex roles; facilitating the social

[illegible] students, responding to such problems as tardiness, truancy, or delinquency; and monitoring the social effects of pullout programs, special classes for gifted and remedial students, and other structural alterations in traditional school organizational patterns.

Given the focus of the center, it is expected that the concepts and methods of sociology and social psychology will be emphasized. There is no necessary restriction to these approaches, however. In fact, in view of the validity problems associated with questionnaires and other close-ended self-report measures, it would be advisable to replace or supplement such measurement with data gathered through testing, behavioral observation, or open-ended interviewing. Furthermore, whatever the data collection methods used, [illegible] and generalizability are likely to be maximized if the investigators are familiar not only with the theory and methods of sociology and social psychology, but also with schools as institutions, the roles of school administrators, teachers, and students, the organization and management of classrooms, and issues in curriculum and instruction. In other words, this center will be most likely to succeed in fulfilling its missions if its research is designed specifically to develop information about social factors in schools and classrooms, with specific attention to the nature of schooling and the constraints within which it is conducted. Studies intended to test more general sociological or psychological theories, for which schools are but one of many possible settings for the research, are less likely to yield knowledge of direct use to educational practitioners.

Mission Statement

The Center's broad mission is to conduct research on how school districts themselves can do better measurement, evaluation, and research, and on how schools can capitalize more productively on existing methods and findings of research. The main tasks are to investigate on economical, valid, and reliable methods of collecting information in school contexts, to identify remarkable research, evaluation, and measurement practices at the school and district level, and to understand how to foster the use of better methods and of high-quality educational research.

Background and Rationale

Measurement and evaluation practices at the school and district level improved dramatically from early 1970's, when evidence on the work of many program activities was poor. Current practices in obtaining evidence are far better but not uniformly so. Nor do we have a sufficient empirical basis for measuring many aspects of schooling that influence quality of students. The lack of methodology results in poor information for the teacher interested in good diagnosis of learning disabilities, in monitoring his or her own performance, or in judging the value of special intervention projects. It results in poor information being provided to decisionmakers and parents.

The second aspect of the mission—deeper understanding of how to foster better use of information—is justified on several grounds. First, the task of generating timely, relevant, and valid information is a demanding one. To

the extent that the information is not used and the resources are wasted, decisions will be less well-informed than they would otherwise be, and problems will be poorly identified. There are a great many impediments to the use of research information—lack of clarity, timeliness, relevance, and so forth. The various channels of communication, networks to enhance the likelihood that good information will be used, and strategies for removing obstacles to information use are not well understood.

Periodic synthesis of research in this area is expected of the Center. The papers that result should make special efforts to identify issues, policy and practices that are relevant to teaching, school administration, school change, and special populations, as well as to the educational research community. Useful technical advice on synthesis in the interest of research and some applications is given in Light (1983).

Research Questions

Two broad categories of research questions must be addressed. The first bears on research and development and use of better methods of measurement, evaluation, and applied research in school settings. The second bears on encouraging the frequent use of high-quality information.

Research on new methods, for instance, is warranted at the student level. It includes research on better ways to measure traits that are related to excellent performance, such as persistence, self-confidence, higher-order problemsolving, and others. These indicators must be developed for populations at special risk, such as language-minority students, as well as for mainstream students.

In the teaching arena, research and development on new and existing indicators is sensible for better understandinng on what is taught, and how and how well it is taught, measures that help teachers monitor their own performance.

Reliable, valid, economical indicators that help administrators monitor performance need to be invented, compared, and refined.

Measures of administrative performance require serious attention. The Center then might undertake research and development on better indicators of formal and informal leadership skills, technical performance, and so on.

Well-researched measures of the activities and quality of performance of other professionals, such ac counselors, and other stakeholders such as parent groups are virtually nonexistent.

Measures of the broader aspects of school climate and ethos, collegiality among students, community-school relations, work-school relations, etc., are underdevelopmednt. We need to build on that work to assure that such indicators do indeed measure what they purport to measure and that they can be used productively to identify problems, make decisions, or better understand how to improve school quality.

The Center's second broad category of research and development will address questions such as the following:

- What is the likelihood that good versus poor research, evaluation, and measurement information will be used at the school, district, and state level?
- What standards are used to judge quality of information?
- What types of research information are most useful for what types of decisions or understanding?
- How can the production of reliable, valid information be made less costly and useful?
- What are the impediments to the use of research and evaluation information? How can they be reduced or circumvented?

Seminal work on the local use of certain kinds of information has been carried out by Alkin and others (1979) for [illegible] evaluations, Sebring and Boruch (1983) for data generated by the National Assessment of Educational Progress, and others.

Various organizational arrangements and linkages affect the extent to which schools employ good methods of collecting information and the extent to which they seek and use good research information from external sources. These alternatives include, for instance, the creation and maintenance of offices of research and statistics at the school district level, the creation of a consortium of schools or districts to assure stable resources for obtaining high-quality information, and creation of consortiums dedicated to translating good research practice and results into forms that are more useful to schools. These institutional linkages and organizations are a legitimate target for study insofar as they ultimately affect the quality of school activities and personnel.

The research questions in each category apply to schools and school disticts mainly, primary level, secondary level or both, private or public. Some of the questions also bear on state-level activities insofar as high-quality information generated by local education agencies is used by state agencies to identify and understand problems, monitor progress (especially in state or federally supported programs), and to make decisions about all schools, special groups of schools, or populations of special interest to the state.

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5. Structural and Technical Specifications for R & D Centers

Length of award would be for 5 years, with recompetition of the center during the fourth year. Timing of competitions would be arranged so that the existing contractor would not lose continuity if it won the recompetition. On the other hand, plans for the fourth and especially the fifth year of operation of a given 5-year cycle would include preparation for completing existing activities (and phasing out the center if necessary) by the end of the fifth year.

Activities would center on research, along with certain forms of dissemination. The center would not only conduct its own research but act as a clearinghouse and synthesizer for all research dealing with its mission focus. Thus, the center would be expected to produce state of the art reviews and integrative papers as well as technical reports of research, and would be expected to disseminate its finidngs to educational practitioners (teachers, school administrators, teacher educators) in addition to other researchers. Presentations at practitioner conventions and publication in practitioner journals would be expected in addition to presentations and publications for researchers.

Some forms of training would be appropriate, particularly the development of university courses and summer institutes and other special programs related to the work of the center. In certain cases, cooperation with local school districts and consortiums in developing demonstration programs might be

appropriate. In general, though, training and technical assistance to educational professionals is an aim that must flow from the paramount goal of high-quality research. Ideally, training opportunities that develop from the center's research activities will be exploited through cooperation between the researchers and personnel from a regional laboratory or other training organization. In this regard, the researchers should be prepared to write materials, manuals, guidelines, etc., that may be needed to facilitate training. Once this is accomplished, however, the training should be "exported" to these other individuals and institutions.

The centers would be university-based. Subcontracting and development of consortia would be acceptable.

Work with local school systems would be encouraged, but there would be no geographical restrictions. The center would be exptected to develop and maintain cooperative working relationships with appropriate school systems, and to include practitioners (school administrators and teachers) on their advisory and review boards.

There would be no targeting or restrictions on which school subjects might be included in the research, and in general there would be much less specificity and detail about the nature of the research than there is in the RFP for the school technology center.

The level of effort would be similar to that called for in the school technology center RFP. Larger effort would be preferable, of course, but present funding levels do not allow it.

Schedules of deliverables that are sensible include progress reports for the past year and research agenda summaries for the coming year due once a year, and technical reports published as they are completed. We would recommmend that progress reports be due every 6 months rather than every year, because these act as a spur toward self review and provide a natural opportunity (as well as requirement) for center directors to take stock of their projects. The value of a yearly report meant only for the general public is questionable, although an annually updated brochure describing the center and catalog of center publications is justified. Avoidance of jargon in communications meant for practitioners or the general public is essential.

The center is expected to initiate research proposals and plans. NIE should reserve the right to approve or reject those proposals on grounds of either: a) relevance to the center's missions; or b) feasibility, potential contribution, quality of research design, qualifications of the investigators, and similar criteria that are typically applied to research proposals.

For at least some of the centers, direct practitioner involvement in the research process (e.g., by regularly employing a few "teacher collaborators" as part of the staff) will be warranted.

Finally, NIE might also consider encouraging certain centers to create "invisible colleges" in their mission areas. This would not be necessary for all centers, because some of them would fall within the invisible college already maintained. Rather than try to expand this invisible college indefinitely, however, there would be value in creating several other invisible colleges. (Invisible colleges tend to function more effectively when kept relatively small.)

6. Cross-cutting Topics: Centers for Research on Schooling

Several crucial topics cut across all the Center missions that the study Group considered. These topics are sufficiently pervasive and important to justify our giving them special attention, and our encouraging prospective centers to recognize them in developing their research plans and portfolios.

Flexibility and Partnerships

Centers must be university-based. But this still permits a wide variety of inter-institutional agreements, collaborative research, and cooperative contracts that can enhance the value of educational research. Such arrangements can foster work that is more useful in recognizing and understanding problems. They are vehicles for linking basic and applied research. They are important for assuring that stakeholders are properly recognized and potential users of research have ready access to the work and, most important, apply it thoughtfully.

Because the opportunity here is so great, we encourage the prospective centers to consider seriously linkages with other groups, e.g., consortium of school districts, with private as well as public institutions with an interest in research and its use, and with organizations with educational missions.

Doubl

SPACE

Synthesis

The independence and imagination of American researchers result in richly diverse and complex research products. The sheer magnitude and divesity demands, however, that such work be synthesized periodically.

Consolidation and self-conscious review is a guide to the future for researchers themselves, and greatly assists practitioners' understanding of the merits and limitations of the work. Moreover, applied research suggests strongly that users of research findings—teachers, planners, and so forth—rely heavily on syntheses to understand what can be or could be applied to resolve educational problems in the field.

For these and other reasons, we believe that it is imperative that Centers take seriously the matter of periodic intensive synthesis and review.

Time

Time plays critical roles in how much is taught and when and in how much is learned formally and otherwise. It is fundamental to understanding better management and resource allocation at the classroom, school, and district level, in contexts ranging fromm curriculum and instructional methods to staff development.

Its importance and pervasiveness implies that it should be given more serious attention in research on schooling.

Evaluation, Methods, and Evidence

A great many educational phenomena warrant research attention. But we do not always have ready access to methods of research that yield credible, verifiable and useful evidence. The difficulties of doing good research in real-world settings on curriculum and instructional methods, on school management and staff development, on administration, and on processes argue for catholicity in developing and choosing methods. The current state of the art and the history of evidence suggest that serious attention to the benefits and costs of various methods, and how to reduce their cost and intrusiveness and increase their value, can contribute to major research projects.

We, therefore, encourage Centers to take seriously the opportunity to develop and test methods of acquiring evidence of good quality in the context of substantive research on schooling.

Utilization and Dissemination

Centers generally conduct both basic and applied research. In many cases, Centers, themselves, can take some responsibility for fostering use of research they produce.

In many cases, however, the decisions about what research is usable, when to use it, and so forth lies beyond the scope and resources of a Center. Legislative committees, special consortiums, parent groups, professional organizations of teachers, etc., are legitimate users of some, perhaps most, applied research.

To the extent that bidders believe the Center's research should be applied, then special attention ought to be dedicated to audiences for and users of research. Creative mechanisms for getting timely information used properly is especially important.

Effects

A minority of applied research and evaluation projects are designed to get at effects—of a project, program, method of instruction, method of administration, etc. Yet understanding real effects of change is crucial to improving education of the nation's youth.

We strongly encourage prospective centers to dedicate serious attention to research that produces reliable and valid estimates of the effect of actions that purportedly improve the effectiveness or efficiency of education, as well as research that enhances our understanding of processes.

Diversity in Method

No single disciplinary group is equipped to handle the diverse, complex problems that influence quality of American education. Improvements in some cases at least are a matter of multidisciplinary approaches. Those disciplines may at times include, among others, education and educational psychology, economics and management, psychology, anthropology and sociology, and experts in various substantive areas, e.g., physics in teaching the sciences.

The Study Group, then, urges prospective Centers to assure that the various skills involved in a Center mission are well represented by Center staff.

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