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# Cooperative Research Projects

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U.S. DEPARTMENT OF  
HEALTH, EDUCATION, AND WELFARE

Arthur S. Flemming, *Secretary*

OFFICE OF EDUCATION

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## FOREWORD

**T**HIS BULLETIN is the third in a series of annual publications issued by the Cooperative Research Program of the Office of Education. Its purpose is to provide practitioners, researchers, and others interested in education with information concerning research projects that are being supported under the Cooperative Research Program. A brief description of each project initiated during fiscal year 1959 is included. Each description presents a statement of the problem under investigation, lists the major objectives, and describes the research procedures to be followed. At the end of each description are listed the name and title of the investigator, the name of the institution which he represents, the number of the project, its duration, and its beginning and completion dates.

Since most of the research described in this bulletin is still underway, no findings are reported. Copies of the reports of the completed projects are available through inter-library loan, and brief summaries of these final reports can be obtained free upon request from the Cooperative Research Branch. Information about incomplete projects can be obtained from the investigator.

Additional information about the Cooperative Research Program can be obtained from three other sources. *Projects Under Contract* is an annual publication which lists the research projects under contract, the institution with which the contract has been made, the name of the principal investigator, and the amount of money invested in the contract by the Federal Government. Quarterly supplements are published three times a year to keep the information on projects under contract as current as possible.

The first issue of a mimeographed newsletter which will be published several times a year has been distributed. It contains general information about the Cooperative Research Program. Future issues will present interesting aspects of promising current research as well as synopses of the findings and implications of completed projects.

Finally, two series of monographs are being developed, the first to describe the findings and implications of individual projects of significance and the second to present an integrated summary of the findings of a number of investigations in the same problem area. Six such monographs are now at various stages of development. It is planned that the first of these will be ready for distribution in the summer of 1960, and that the additional ones will follow at intervals of approximately one month. Further information on the Cooperative Research Program may be obtained by writing directly to the Office of Education, Division of Statistics and Research, Cooperative Research Program.

ROY M. HALL,  
*Assistant Commissioner for Research*

## INTRODUCTION

**PUBLIC LAW 531**, which was enacted in 1954 by the 83d Congress, is one of the laws providing Federal funds to support research in education. This law authorizes the Commissioner of Education "... to enter into contracts or jointly financed cooperative arrangements with universities, colleges, and State educational agencies for the conduct of research, surveys, and demonstrations in the field of education."

Although the law was enacted in 1954, funds were not appropriated for the Cooperative Research Program until July 1956. During the first year (fiscal year 1957) \$1 million were made available for initiating the Program. This amount was increased to \$2.3 million in fiscal year 1958, to \$2.7 million in fiscal year 1959, and to \$3.2 million in fiscal year 1960.

Investigators desiring support for research under Public Law 531 submit proposals to the Cooperative Research Branch of the Office of Education for evaluation by its Research Advisory Committee. This committee, which comprises nine outstanding researchers and educators from various sections of the country, meets three times a year to evaluate the proposals that have been submitted.<sup>1</sup> A list of the committee members follows:

Finis E. Engleman, executive secretary, American Association of School Administrators.

Warren Findley, assistant superintendent of schools, Atlanta, Georgia.

John H. Fischer, dean, Teachers College, Columbia University.

Chester W. Harris, professor of education, University of Wisconsin.

Everett Hughes, professor of sociology, University of Chicago.

Harry Levin, professor of psychology, Cornell University.

Henry Otto, graduate professor of elementary administration, University of Texas.

Dewey B. Stuit, dean, College of Liberal Arts, State University of Iowa.

Ralph W. Tyler, director, Center for Advanced Study in the Behavioral Sciences, Stanford.

<sup>1</sup> John H. Fischer, Everett Hughes, and Harry Levin are recent additions to the committee. They replaced Erick L. Lindeman, professor of school administration, George Peabody College for Teachers; J. Cayce Morrison, formerly assistant commissioner for research, now retired, New York State Education Department; and H. H. Remmers, director, Division of Educational Reference, Purdue University, whose terms expired. Warren Findley, also a recent addition, replaced Dorothy Adkins Wood, chairman, Department of Psychology, University of North Carolina, who resigned.

INTRODUCTION

The Research Advisory Committee carefully evaluates each proposal, and recommends to the Commissioner those which it feels best meet criteria grouped under the following headings:

1. The significance of the problem for education.
2. The soundness of the research design.
3. The personnel and facilities available to conduct the investigation.
4. The economic efficiency of the investigation. (Do the probable results justify the cost?)

After the Commissioner has approved the proposals recommended by the committee, staff members of the Cooperative Research Branch visit the investigators in order to negotiate the research contracts.

During its 3½ years of operation, the Program has expanded in several ways. From the original appropriation of \$1 million for fiscal year 1957 funds were increased to \$3.2 million for fiscal year 1960. Of the latter amount, approximately half has been used to initiate new research, and the remainder to continue the work begun under contracts initiated in previous years.

Growth in the Program can also be illustrated by the increase in the number and distribution of projects. At the end of fiscal year 1957, 72 projects had been initiated at 30 different colleges and universities and 6 State agencies in 27 States, the District of Columbia, and, what was then, the Territory of Alaska. By December 31, 1959, the number had increased to 265 projects at 97 colleges and universities, and 15 State agencies in 42 States, the District of Columbia, Guam, and Puerto Rico. A better perspective can be obtained from the following table.

Growth of the Cooperative Research Program After 1 Year and After 3½ Years of Operation

	<i>As of June 30, 1957</i>	<i>As of December 31, 1959</i>
Proposals reviewed.....	314	852
Projects signed into contracts.....	72	265
Universities and colleges participating.....	30	97
State agencies participating.....	6	15
States, District of Columbia, and outlying areas participating.....	27	40
Final reports received and approved.....	0	54
Congressional appropriations.....	\$1, 020, 190	\$9, 220, 190

There has also been a growth in the number of areas in which research is conducted under the Program. Two-thirds of the original appropriation in fiscal year 1957 was designated for research on the education of the mentally retarded. Thus, only limited funds were available for research in other areas of education. Now, however, investigations are being conducted in greater numbers on topics such as the physically handicapped child; student achievements, attitudes,



and aspirations; teacher effectiveness; population mobility; and various aspects of the curriculum.

Growth in the number of research areas included under the Program has been reflected in another way. When the Program began in 1956, 10 problem areas were identified as needing research. Some of these areas are: (1) the education of the mentally retarded, (2) the development of the special abilities of students, (3) staffing the Nation's schools and colleges, and (4) the educational problems resulting from population mobility. While the 10 areas were regarded as being of major importance, proposals for research on other aspects of education were not excluded. As a result, within 3 years the areas of cooperative research have grown beyond 10, so that the original classification system is no longer adequate. Therefore, a new classification system is in the process of being developed. In the meantime, projects contracted during fiscal year 1959 have been grouped according to the following five major categories:

1. Research on students
2. Research on teachers
3. Research on teaching and learning
4. Research on administrative problems
5. Educational research progress, theory, and methodology

For the convenience of the reader, the project descriptions included in this publication are arranged according to the five categories listed above.

The appendixes include an index of the investigators, an index of the States and institutions in which the projects are being conducted, and an index of the project titles. The first two indexes are arranged alphabetically; the third, numerically.

## SECTION I.

### Research on Students

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#### THE GIFTED

#### Career Development of Scientists—An Overlapping Longitudinal Study

*Problem.*—This study examines the process by which the individual becomes a scientist.

*Major objective.*—The objective of this study, involving several age groups over a period of 5 years, is to attempt to determine important features of scientific education and career development in science which would aid (1) in counseling students about science as a possible vocation; (2) in selecting promising students for special science training programs or scholarships; and (3) in planning course work in science at all stages of development.

*Procedures and design.*—In this investigation, several different school systems will be used to represent various types of communities and science programs. A population of 700 subjects will be drawn from five or six age groups, 8 years apart, and studied for a least 5 years. This would cover a career development span of 17 years in only 5 calendar years. The general procedure for selecting student subjects from a particular grade will be to define a population which includes the potential scientists for the grade. It is likely that a number of subjects will be drawn who are not potential scientists. These subjects will serve as a control group. The data collection will involve interviews with students, their parents, and teachers; standardized tests, examinations and questionnaires; projective techniques; and observations by both the researcher and cooperating teachers, using operationally defined rating scales. Analysis of the data will utilize such techniques as the multiple group discriminant function, multiple regression analysis, and analysis of variance and covariance.

WILLIAM W. COOLEY, professor, Graduate School of Education, Harvard University, Cambridge, Mass.

Project No. 436.

Duration: 4 years 11 months.  
July 1958 to June 1963.

### A Study of Factors Involved in the Identification and Encouragement of Unusual Academic Talent Among Underprivileged Populations

*Problem.*—This study attempts to identify "hidden" talent among the underprivileged by examining the factors associated with the emergence of a selected sample of such a population into academic distinction.

*Major objectives.*—The four objectives of this study are (1) to discover whether certain environmental factors are associated with the emergence of underprivileged persons distinguished in scholarly attainment; (2) to determine whether or not "talent" appears in certain underprivileged family lines (due either to social or genetic inheritance); (3) to discover what, if any, internal characteristics in a test performance profile suggest unusual academic promise for persons from generally low-scoring populations; and (4) to ascertain the motivational structure of underprivileged individuals attaining academic success.

*Procedures and design.*—Three sample populations will be used for this study. The first group will consist of 500 Negroes who have earned the doctorate. A second group of 500 Negroes who have earned the bachelor's degree will serve as a control group. The total TAT will be given to a second control group of 50 subjects to verify the reliability of the data collected for the larger sample. The devices to be used for gathering data will include the questionnaire, the interview, the collection and analysis of existing test data, case and group studies based on life histories and college personnel records, and geographical and historical mapping.

HORACE MANN BOND, dean and professor of education, Atlanta University, Atlanta, Ga.

Project No. 458.

Duration: 1 year 11 months.

September 1958 to August 1960.

### The Effects of Special Training on the Achievement and Adjustment of Gifted Children

*Problem.*—This study seeks to develop and evaluate an administratively practical special education program for intellectually gifted children in sparsely populated areas.

*Major objectives.*—The objectives are (1) to develop and implement a curriculum for an 8-week summer program for gifted children, (2) to devise methods for preparing teachers for this program, and (3) to evaluate the outcome of the program.

*Procedures and design.*—This research is an outgrowth of USOE Project No. 423, which developed a curriculum for gifted children. The present research will extend the curriculum to include an 8-week summer session in 1959, personnel training, and parent education. The experimental design for evaluating the program will be a three-factor design in which the effects and interactions of two control variables (intelligence and achievement) will be simultaneously observed in three treatment groups—experimental group D and control groups E and F. Group D will consist of 60 pupils with various combinations of intelligence and achievement levels who will participate in the summer school but take no part in special education programs during the regular school year. Subjects in group E will have the same characteristics as those in group D but will participate in special programs only, during the school year; while subjects in group F will not participate in any special program. Students in all groups will be tested with intelligence, achievement, and adjustment measures to determine the comparative value of the summer program.

NELLIE D. HAMPTON, associate professor of education, Iowa State Teachers College, Cedar Falls, Iowa.

Project No. 614.  
Duration: 17½ months.  
March 1959 to August 1960.

### The Extent to Which Group Counseling Improves the Academic and Personal Adjustment of Underachieving Gifted Adolescents

*Problem.*—This study investigates the effects of group counseling on the academic and personal adjustment of gifted but underachieving adolescents.

*Major objectives.*—The objectives of this study are (1) to improve a therapeutic interaction inventory both with test-retest reliability and team-against-team reliability checks, (2) to make a clinical analysis of individual personality change from session to session and to note how change in one individual seems to affect others in a group, (3) to analyze extensively counselor behavior, and (4) to make a thorough study of roles played by members of all the groups.

*Procedures and design.*—During the first phase of the research, pre-, post-, and followup data were collected on 29 underachieving, gifted ninth-grade pupils who had been provided with group counseling. While the entire sample had been randomly assigned to four groups, it was discovered that the groups ranged along a hostility-acceptance continuum from most hostile to most accepting. The counselors for the study were 35 graduate students who volunteered to do counseling after they heard the study described in guidance courses. Most of the counselors were employed as public school teachers. Data on the

students will be gathered from their performance on the California Achievement Test Battery. The Picture Story Test, and the Behavior Inventory. In addition to the latter two instruments, the counselors will be tested with the Edward's Personal Preference Schedule and a paired-word scale.

MERLE M. OHLSER, professor of education, and FRED O. PROFF, Associate Professor of Education, University of Illinois, Urbana, Ill.

Project No. 623.

Duration: 1 year 2½ months.

March 1959 to June 1960.

## THE MENTALLY RETARDED

### A Study of the Effect of Special Day Training Classes on the Severely Mentally Retarded

*Problem.*—This study attempts to assess changes in the behavior of severely retarded children as a result of school attendance.

*Major objectives.*—The objectives of this research are to determine (1) whether or not children in special day training classes for severely mentally retarded children show statistically significantly greater behavioral changes than do comparable nonschool (control group) children; (2) whether or not parents of children in day training classes show significantly greater changes in adaptability than parents of nonschool children; (3) whether or not children in day training classes show greater behavioral changes than comparable children attending State institutions; and (4) what implications the findings from (1), (2), and (3) have for curriculum development and improvement of school programs for the severely retarded.

*Procedures and design.*—The public school experimental group ( $N=73$ ) has been selected from 12 school districts in the State of California. The community nonschool control group ( $N=86$ ) was obtained from the States of California and Oregon. The institutional school experimental group ( $N=48$ ) and the institutional nonschool control group ( $N=35$ ) have been selected from a California State institution. All of the children in these groups are from 5 to 12 years old and have intelligence quotients ranging from 25 to 55. None of these subjects had prior school experience at the initiation of this study. The children in all of the groups were selected for the study on the basis of criteria established in the California State Education Code for trainable children. Multiple comparisons will be made between the various school, nonschool, and institutional groups on social

competency. Covariance analyses will be conducted on the social competency data to correct for the effects of initial differences of mental age and chronological age between the various experimental and control groups. No selective process will be established for the inclusion of parents in the study other than that their children meet the criteria established by the California State Education Code. Wherever possible, both mothers and fathers of the study subjects will be interviewed with the Parent Adaptability Interview Schedule. No parents of the institutional subjects will be included in the study. The social competency and parent adaptability pre- and post-test ratings will be obtained at the initiation and conclusion of the 2-year experimental period.

LEO F. CAIN, vice president, San Francisco State College, San Francisco, Calif.

Project No. 416.  
Duration: 11 months.  
July 1958 to June 1959.

### A Comparative Study of the Speech Responses and Social Ages of Two Selected Groups of Educable Mental Retardates

*Problem.*—This study investigates the speech responses and social quotients of educable mental retardates in regular and special classes in public schools.

*Major objectives.*—The objectives are (1) to compare the number of words, the number of different words, the classification of these words in terms of parts of speech, and the social quotients of mentally retarded children in regular and special classes; and (2) to provide data on the relative social development and verbal output of mentally retarded children in regular and special classes.

*Procedures and design.*—Fifty educable mental retardates, in the age range from 7 to 14, who are attending regular classes in the public schools will be compared with a similar sample in special classes. Selected pictures will be used to elicit speech responses for analysis, and each subject will be given an intelligence and a social maturity test. Subjects in regular and special classes will be compared on the basis of social and mental ages, number of words and total number of words used, and functional and recognition vocabularies.

MAMIE LOUISE THOMPSON WILSON,  
associate professor, Grambling College, Grambling, La.

Project No. 512.  
Duration: 1 year.  
February 1959 to January 1960.

## Responses of Bright, Normal, and Retarded Children to Learning Tasks

*Problem.*—This study compares the responses of bright, normal, and retarded children to different types of learning tasks.

*Major objective.*—The objective is to identify differences between bright, normal, and retarded children in behavior accompanying learning.

*Procedures and design.*—This project is an outgrowth of previous research carried out under USOE Project No. 176. In the present study, three groups of children classified as bright, normal, and retarded will constitute the subjects for measures of emotional and motivational reactions during the performance of certain learning tasks. There will be from 30 to 40 children in each of the groups. An additional group of from 30 to 40 institutionalized mental retardates will be included if feasible. Intelligence will be measured by standardized tests; emotion, by visceral responses of several types; and motivation, by adaptive-avoidant behavior. The learning tasks will be selected from spatial relations and motor coordination, number learning, verbal learning, abstract problem solving, and concept formation areas.

LESLIE F. MALPASS, associate professor of psychology, and NEIL A. CARRIER, assistant professor of psychology, Southern Illinois University, Carbondale, Ill.

Project No. 578.  
Duration: 2 years.  
April 1959 to March 1961.

## A Study of the Effect of Special Day Training Classes for the Severely Mentally Retarded

*Problem.*—This study attempts to assess those changes in the behavior of severely retarded children which are the result of school attendance.

*Major objective.*—The objective is to compare behavioral changes of (1) severely retarded children in special day training classes with those of comparable nonschool children, (2) parents of the children attending special classes with those of parents of the nonschool group, and (3) children in special classes with those of children attending such classes in State institutions. The study also seeks to determine the implications of these objectives for curriculum development and improvement of school programs for the severely mentally retarded.

*Procedures and design.*—This is a continuation of work begun under USOE Projects No. 109 and No. 416. In the previous projects a

sample was drawn of children between the ages of 6 and 12 who had intelligence quotients between 20 and 55, and who had no public school experience or comparable formal training.

The present project will make comparisons of the following groups on the basis of social competency: (1) children in public school classes with children in the community who are not in school, (2) children in public school classes with children in State institutions who attend school, (3) children in public school classes with children in State institutions who are not in school, (4) children in the community who are not in school with children in State institutions who are in school, (5) children in the community who are not in school with children in State institutions who are not in school, (6) children in State institutions who are in school with those in State institutions who are not in school.

LEO F. CAHN, vice president, San Francisco State College, San Francisco, Calif.

Project No. 589.  
Duration: 2 years.  
July 1959 to June 1961.

### The Efficacy of Special Class Training on the Development of Mentally Retarded Children

*Problem.*—This study investigates the development of mental, educational, and social skills in educable mentally retarded children who will have been educated in special classes from the age of 6.

*Major objective.*—The objective is to determine and compare the mental, educational, and social development of educable mentally retarded children who will be reeducated in a special class beginning at age 6, with a control group of educable mentally retarded children who will continue in the regular classes.

*Procedures and design.*—A sample of 120 mentally retarded but educable first-grade children will be divided equally into an experimental and a control group. The experimental group will be divided into four classes, and will be given special class treatment for 4 years, beginning at the age of 6. The subjects in the control group will remain in regular classes for the same period. The two groups will be compared annually on the basis of standardized intelligence tests and achievement tests, sociometric techniques, social adjustment scales, and language tests.

HANNAH GOLDBERG, assistant professor of education, University of Illinois, Urbana, Ill.

Project No. 619.  
Duration: 4 years 4 months.  
July 1959 to November 1964.



## THE PHYSICALLY HANDICAPPED

### An Assessment of Behavioral and Academic Implications of Hearing Loss Among School Children

*Problem.*—This study attempts to determine the relationship between hearing loss among children and academic deficiencies and maladjustment.

*Major objectives.*—The objective is to determine the relationship, if any, between audiometric findings and children's intelligence, academic achievement, social maturation, and adjustment to the school situation.

*Procedures and design.*—Children in grades 4 and/or 7 with any one of four major categories of hearing loss will be selected from a wide variety of schools and, with matched control groups, will be given intelligence and achievement tests. In addition, data related to school achievement and adjustment will be collected with structured interviews and sociometric techniques. First order and multiple correlation techniques will be used to analyze the data in an attempt to determine to what degree specified levels and types of hearing loss related to functional auditory handicaps are reflected by academic deficiencies and maladjustment.

M. D. SMITH, director, The Speech and Hearing Clinic and professor of speech, Purdue University, Lafayette, Ind.

Project No. 492  
Duration: 1 year 5 months.  
February 1959 to July 1960.

### Motivation for Speech and Hearing Improvement in Handicapped Children

*Problem.*—This study investigates the problem of motivation in children who need speech and hearing therapy.

*Major objectives.*—The objectives are (1) to test the assumption that the child needing speech or hearing therapy has a conscious desire for improvement, and (2) to evaluate the structuring of teaching sessions based upon this common assumption.

*Procedures and design.*—A total of 560 children suffering from speech and hearing defects, and a sample of 250 normal children, will be asked to rank 10 items designed to measure their interest in and need for improved speech, as well as for other needs presumed to be basic motivating factors in a child's life. The data obtained will be

analysed to indicate the relative strength of the expressed need for improved speech in contrast to other expressed needs of the children.

BRUCE M. SIEGENTHALER, associate  
professor, Pennsylvania State Uni-  
versity, University Park, Pa.

Project No. 495.  
Duration: 1 year 6 months.  
February 1959 to June 1960

### Effects and Interactions of Auditory and Visual Cues Utilized in Oral Communication

*Problem.*—This study seeks to determine the degree to which visual-auditory cues contribute to the total oral communication skill of hard-of-hearing individuals.

*Major objectives.*—The objectives are (1) to determine what proportions of an individual's maximum communication score can be attributed to the auditory component of speech and to visual cues when no auditory stimulus is present, and (2) to assess the relative importance of visual and auditory cues to the total communication score at discrete intensity levels.

*Procedures and design.*—Approximately eight sound intensity levels will be utilized in presenting at least two word lists to a sample of 24 subjects: 8 with normal hearing, 8 with a relatively flat audiometric pattern of hearing loss, and 8 with a dropping audiometric pattern of hearing loss. Scores consisting of the number of correct responses will be obtained from the use of (1) auditory cues alone, (2) cues without the benefit of an auditory stimulus, and (3) the interaction of these factors as a function of discrete intensity increase. Analysis of variance techniques will be used to test the significance of the main effects and interactions.

JOHN W. KEYS, professor of speech,  
University of Oklahoma,  
Norman, Okla.

Project No. 499.  
Duration: 1 year.  
February 1959 to January 1960.

### Education of the Aurally Handicapped: A Psycholinguistic Analysis of Visual Communication

*Problem.*—This study examines the linguistic determinants of perception and learning in oral-visual communication and in the language development of the aurally handicapped child.

*Major objectives.*—The objectives are (1) to define the character of the stimulus material (speech) in perceptual terms, with emphasis on visual speech reception (lipreading), and (2) to examine the processes of induced language acquisition in the deaf child.

*Procedures and design.*—An experimental group of at least 150 subjects drawn from normal-hearing adults and two control groups with a combined total of at least 100 normal-hearing adults will form the sample. Two sets of linguistic tests will be given. Descriptive units of structural linguistics will be isolated, and the perception of these units will be tested by evoking stimuli which are appropriate to each level of structure in the source language, and which are controlled for differences imposed by the experimental method. Auditory and audiovisual controls will be maintained for all lipreading tests in the experimental series, and the tests will be recorded on film and sound tracks. These proposed pilot studies will be used as the basis for the development of a comprehensive research program which should lead to improvement of lipreading techniques and methods of teaching the deaf.

EDGAR L. LOWELL, associate professor,  
University of Southern California,  
Los Angeles, Calif.

Project No. 502.

Duration: 1 year 5 months.  
January 1959 to June 1960.

### Development and Evaluation of a Speech Improvement Program for Kindergarten and First-Grade Children

*Problem.*—This study seeks to determine the effects of a specific speech improvement program on the auditory discrimination, articulation, reading, and spelling of children.

*Major objectives.*—The objectives are (1) to determine the effects of a specific speech improvement program on the auditory discrimination and articulation skills of kindergarten and first-grade pupils; and (2) to ascertain the effects of the program on the reading readiness, reading achievement, and other communications skills of children who have been exposed to the program for 3 years.

*Procedures and design.*—The sample will consist of 800 kindergarten children divided into an experimental group, a control group, and a group of 250 first-grade children. A pure tone audiometric test will be given to all of the children. The kindergarten children will be given tests of articulation and discrimination at the beginning of the program, at the end of kindergarten, and at the end of both first and second grades. The kindergarten group will also be given tests of reading readiness, a group test of intelligence during the first grade, and reading achievement and spelling tests at the end of the first and second grades. For the first-grade group, the only additional tests will be those of reading and spelling given at the end of the third grade. Other necessary data will be obtained from school records or parents. In addition, observations will be made of teachers and

speech correctionists, and questionnaires will be administered to these groups to obtain their value judgments concerning the selection of materials, directions for using them, children's reactions to the program, and the influence of the program on communications skills.

MARGARET C. BYRNE, director, Speech and Hearing Clinic, and RICHARD L. SCHIEFELBUSCH, director, Bureau of Child Research, University of Kansas, Lawrence, Kans.

Project No. 620.  
Duration: 3 years.  
July 1959 to August 1962.

### Speech Pathology and Audiology Programs in Elementary and Secondary Schools: A National Survey of Current Status and Problems

*Problem.*—This study investigates the present status of speech pathology and audiology in the Nation's school systems, and attempts to determine administrative and technical problems existing in this area.

*Major objectives.*—The objectives are (1) to provide educators and clinicians with information on the general practice, trends, and departures in speech pathology and audiology; and (2) to identify and define unresolved problems in this field and relate them to current research.

*Procedures and design.*—Nine problem-area work groups, representing geographical and professional areas, and consisting of a college-training program specialist, two public school supervisors of speech and/or hearing therapy programs, and a public school teacher will be appointed. All nine problem-area work groups will meet in a general session for a review of the basic problem, and each will be charged with a specific research responsibility for the ensuing year. They will determine the status and problems of their areas by the use of questionnaires, surveys, and library research. At the end of 1 year, the problem-area groups will meet and draft reports of their findings. The resident staff of the Purdue University Speech and Hearing Clinic, the Research Committee of the American Speech and Hearing Association, and an advisory committee will develop the general plan for the research. Research personnel will be available to the problem-area work groups for guidance and evaluation. A research specialist will integrate and analyze the reports and prepare a draft of the final report.

M. D. SZRZA, director of the Speech and Hearing Clinic, Purdue University, Lafayette, Ind.

Project No. 649.  
Duration: 2 years.  
April 1959 to March 1961.

## THE JUVENILE DELINQUENT

### A Sociopsychological Study of Conformity and Deviation Among Adolescents

*Problem.*—This study describes adolescent attitudes toward conformity in the school and larger society, and seeks to isolate the factors responsible for conformity to and deviation from these values.

*Major objectives.*—The objectives are (1) to describe the value attitudes of adolescent students, (2) to describe and analyze the factors underlying conformity-performance-deviant behavior among students, and (3) to predict nonconformity of adolescents in the schools and in the community.

*Procedures and design.*—A questionnaire will be developed to measure attitudes of adolescents toward the major value areas of American cultures, adolescent perceptions of social controls, and self-ratings of behavior. It will be administered to 22,000 children in the seventh through the ninth grades in the public, private, and parochial schools of one county in Iowa. A sample of more than 1,000 boys will be selected and intensively interviewed to obtain their views on social controls, and case histories will be obtained. The two closest friends of each of 300 members of a structured probability sample will be interviewed to obtain data on peer-group relationships. An additional 100 boys who were apprehended by the police during a 3-month period will be added to the total sample. Juvenile court records will provide information on deviant behavior of all members of the total sample, and school authorities will give information on students who either present attendance problems or withdraw from school. Hypotheses relating to performance-achievement in the schools and deviant behavior in the community will be tested.

ALBERT J. REISS, JR., professor of sociology, State University of Iowa, Iowa City, Iowa.

Project No. 507.  
Duration: 1 year.  
October 1958 to October 1959.

### The Status of Schoolboys and School Leavers as Factors in Their Friendship Changes

*Problem.*—This study evaluates the effect of the adolescent boy's status with classmates and teachers on his resistance to the appeal of antisocial friends.

*Major objective.*—The objective is to assess the contribution of status within the legitimate social order on the adolescent boy's stake

in law-abiding behavior in order to provide a basis for judging the feasibility of delinquency prevention programs at the junior and senior high school levels.

*Procedures and design.*—A panel of approximately 270 seventh-grade boys have been interviewed in considerable detail once a year since 1955 concerning leisure time activities and friends. Each year the school and police records of each boy's friends are checked, and the boy's orientation to delinquent and nondelinquent associates is rated. The boy's status with classmates is measured at the end of each academic year by an analysis of the data gathered from questionnaires. Each boy's status is also rated by teachers. School leavers are retained in this study, and occupational rather than school data are related to the friendship patterns of the leavers. Each boy's delinquent orientation is measured and observed over established periods of time to achieve at least partial control over other factors believed to have causal significance for delinquency. An analysis of these data will be used to evaluate the effect of status with classmates and with teachers on the adolescent boy's resistance to antisocial friends. The interrelationships among the variables included in the study will be determined. Special attention will be given to any differences in the way these variables interrelate for subgroups as defined by socioeconomic level, ethnic membership, course in school, and the point at which education is terminated.

JACKSON TOBY, associate professor of sociology, Rutgers University, New Brunswick, N.J.

Project No. 526.  
Duration: 2 years 7 months.  
January 1959 to August 1961.

## THE ACHIEVEMENTS, ATTITUDES, AND ASPIRATIONS OF STUDENTS

### The Influence of Teachers and Peers on the Aspirations of Youth

*Problem.*—This study, which consists of three separate investigations, examines the kinds of influence that peers and teachers exert upon the remote aspirations of high school students and the reactions of the students to processes of goal setting.

*Major objectives.*—The objectives are (1) to ascertain the relative influence of teachers and peers in determining the level of youth's objectives, (2) to determine the nature and effects of group standards which serve to protect young people from influence by elders, and

(3) to measure the relative influence of teachers and peers upon young people's evaluation of themselves (self-respect).

*Procedures and design.*—Three separate studies will be conducted. Data related to the first objective will be collected by a questionnaire administered to 400 students in the 9th and 10th grades, selected from different socioeconomic and intellectual levels. Data related to the second objective will be gathered by means of a laboratory experiment in which high school students will be used as subjects in about 40 groups of 8 to 10 members each. Observations of interpersonal behavior among the members, and questionnaires administered before the end of the experimental session will be the devices employed. The same type of laboratory experiment outlined in the second study (40 groups each, with 8 to 10 members) will be used in the third one. Contracting experimental conditions will be created in which different bases of influence will be employed to set the student's level of aspiration. The bases of influence to be used will include reward, punishment, expertness, and attraction. Data will be obtained by standardized techniques of observation, and by questionnaires to be filled out before the close of the experimental session.

ALVIN ZANDER, professor of educational psychology, University of Michigan, Ann Arbor, Mich.

Project No. 451.

Duration: 1 year 11 months.

September 1958 to August 1960.

### Effectiveness of Centralized Library Service in Elementary Schools

*Problem.*—This study compares the characteristic abilities and achievement in reading and other related skills and understandings of children who have centralized library services with those of children who do not.

*Major objectives.*—The objective is to test the hypotheses that a strong centralized collection of library materials in elementary schools will (1) measurably increase the reading skill and the amount and quality of the overall reading of children, (2) develop greater skill on the part of children in the use of reference materials and sources of information in organized libraries, and (3) increase the use of resource material for classroom work by teachers and children.

*Procedure and design.*—A pilot study will be conducted in two schools to develop instruments for use in a later project. One of the schools will have a centralized school library with a qualified school librarian and a collection meeting high quantitative and qualitative standards. The second school will not have a centralized library, although it may have classroom libraries or use deposits from a county

or city public library. Data will be gathered on the children's performance on reading and achievement tests, the amount and quality of their total reading, and the use of resources for learning by children and teachers. In addition, a study of the reading program and library materials will be made in each school, and a case study will be made of each community.

MARY V. GAVER, associate professor,  
Graduate School of Library Services,  
Rutgers University, New Brunswick, N.J.

Project No. 489.  
Duration: 1 year 5 months.  
January 1959 to June 1960.

### An Analysis of the Factors Related to the Motivation and Achievement of Students in Science Courses in Junior and Senior High School

*Problem.*—This study investigates the factors which motivate students to elect courses in the sciences, and the relation of those factors to the achievement of students in science courses in the junior and senior high schools.

*Major objectives.*—The objectives are to determine (1) what factors tend to motivate students to elect courses in science and (2) how these factors are related to achievement in these courses.

*Procedures and design.*—Approximately 2,500 students from a diversified sample of midwestern schools will be tested with a variety of achievement and other tests as they are either completing the sixth grade or entering the seventh grade, and again throughout the eighth and ninth grades. Beginning with the 10th grade, only those students electing science courses will be tested. At the same time, the science courses taken by the teachers of these students will be analyzed to determine relationships which may exist between the teachers' backgrounds and their students' achievement and election of science courses. Based upon a personal audit form and a supervisor's rating scale of the teachers, relationships will be sought between teachers' characteristics and the achievement, interests, and election of science courses by their students. Results will be published in yearbook form, and the findings will be submitted to a panel of research specialists for suggestions of implications.

GEORGE G. MALLINSON, dean, School  
of Graduate Studies, Western Michigan  
University, Kalamazoo, Mich.

Project No. 508.  
Duration: 3 years 6 months.  
February 1959 to August 1963.



### Late School Entrance, Social Acceptance, and Children's School Achievement

*Problem.*—This study explores the relation between progress in academic achievement and late school entrance.

*Major objective.*—The objective is to investigate the effects of late school entrance on the academic achievement and social acceptance of elementary school children.

*Procedures and design.*—This is the second phase of a continuing study of the mobility of school children. In phase I (USOE Project No. 457) late school entrants were found to have suffered a major social adjustment handicap: they were found to be among the children who had the lowest social acceptance in their groups. This second phase is designed to explore the relation between progress in academic achievement and late entrance in a sample of white children from 40 public school classrooms in Florida. The dependent variables will be scores on standardized school achievement tests. The major variables to be controlled will be age, sex, grade, intelligence, and socioeconomic status. Comparisons of progress in school achievement between early, or regular, entering and late entering children will be made in order to appraise the effects of late school entrance on achievement. The relation between social acceptance and school achievement of both late and early entrants will also be studied. The techniques used by teachers and the newcomer in gaining acceptance and making adjustments in the new classroom will be explored later.

WALTER D. SMITH, professor of psychology, Florida State University, Tallahassee, Fla.

Project No. 510.  
Duration: 9 months.  
January 1959 to October 1959.

### Relationships Between Achievement in High School, and Achievement in College and Adult Occupations: A Follow-Up Study

*Problem.*—This study proposes to discover and analyze the academic, occupational, and social achievements of a previously studied sample of high school students, and to isolate the factors in adolescents which are related to later achievement or failure in college or an occupation.

*Major objectives.*—The objectives are (1) to measure the relationships between factors associated with achievement in high school and achievement in college and adult life, and (2) to explore the social and psychological processes of various types of achievers and nonachievers.

*Procedures and design.*—The senior class of a metropolitan high school, composed of 878 members who graduated in 1952, will comprise the sample for an original study conducted by the present investigators. This followup study will use all the subjects of the original sample who can be contacted, or an estimated 80 percent of the total number. In the original study, data on intelligence, personality, social participation, school records, and teacher ratings were gathered. The followup study will add information on college grades, jobs held, personality structure, social participation, and problems in college or job experience since leaving high school. In addition to these data, established scales of socioeconomic status and rating scales of behavioral categories, based upon judge's estimates, will be used to determine achievement or the lack of it since leaving high school.

ALLISON DAVIS, professor of education and ROBERT D. HESS, assistant professor of human development, University of Chicago, Chicago, Ill.

Project No. 542.  
Duration: 2 years 11 months.  
November 1958 to October 1961.

### College Student Images of a Selected Group of Professions and Occupations†

*Problem.*—This study attempts to extend present knowledge on the ways in which college students view occupational alternatives open to them.

*Major objectives.*—The objectives are (1) to determine the primary dimensions of judgment used by college students in evaluating the major occupational alternatives open to them and students' images of occupations, and (2) to determine how these images compare in different segments of the undergraduate population and what aspects of the images influence occupational choice.

*Procedures and design.*—A pretested questionnaire will be given to random samples of students at four New England colleges to determine student images of occupations. Two forms of the questionnaire will be randomly distributed to the sample. Each questionnaire will contain rating scales of selected occupations, with a seven-point scale on 30 items per occupation. The items consist of pairs of terms with opposite meanings dealing with the social status of the occupation, the type of personality associated with it, and other characteristics. Random subsamples of the data from the entire sample and from certain selected categories of subjects will be factor analyzed for major judgmental dimensions employed by students. Then, overall profiles for single occupations and for rational groupings of

occupations will be compared, and the data will be analyzed separately for different categories of students.

DONALD DAVY O'DOWN, assistant professor of psychology, and DAVID C. BEARDSLEE, assistant professor of psychology, Wesleyan University, Middletown, Conn.

Project No. 562.

Duration: 9 months.

December 1958 to September 1959.

### The Identification, Development, and Utilization of Human Talents

*Problem.*—This study seeks to identify and investigate the talents of 16-year-olds who are not in attendance in secondary schools.

*Major objectives.*—The objectives are (1) to add data on 16-year-olds who are not in secondary schools to a national inventory of talents; (2) to evaluate the educational achievements of this group; and (3) to evaluate the effects of factors associated with environments, other than the school, on the individual and his self concept.

*Procedures and design.*—This research is part of a national inventory of talents and is designed to insure greater accuracy in the definition of relatively precise norms by adding 16-year-olds who are not in the secondary schools to the total sample, which is based upon secondary school attendance. The sample to be used in this project will be selected from records of certain secondary schools, and an intensive effort will be made to locate all 16-year-old dropouts in the school districts of these schools. These individuals will be given the same aptitude, achievement, interest, and personality tests that will be given to the inschool group. Likewise, the same biographical and background data will be obtained. It is assumed that about 125,000 16-year-olds in 1,400 schools will constitute the group still in attendance, and while no estimate is possible of the total number of secondary school students not in attendance, the sample for this study will include all 16-year-olds not in attendance in the jurisdictional limits of 100 of the 1,400 schools in the larger sample. (See Projects No. 266 and 635.)

JOHN C. FLANAGAN, professor of psychology, University of Pittsburgh, Pittsburgh, Pa.

Project No. 566.

Duration: 1 year 11 months.

December 1958 to November 1960.

### Pupil Expectations of Teacher Leadership Behavior

*Problems.*—This study proposes to analyze student expectations of teacher behavior in terms of dimensions of leader behavior.

*Major objectives.*—The objectives are (1) to identify and describe expectations of teacher behavior; and (2) to analyze these expectations in terms of the leadership behavior of the teacher.

*Procedures and design.*—A sample of 450 pupils will be composed of three mathematics and three social studies classes at each of three grade levels: intermediate (4 to 6), early secondary (7 to 9), and senior high school (10 to 12). An adaptation of the Leader Behavior Description Questionnaire from the Ohio State Studies in Leadership will be given to all children, and additional data on intelligence, socioeconomic status, and other identifying variables will be gathered. A complex analysis of variance design will be used to determine the significance of relationships found among the variables.

LOUIS M. SMITH, assistant professor,  
Graduate Institute of Education,  
Washington University, St. Louis,  
Mo.

Project No. 570.  
Duration: 10 months.  
March 1959 to January 1960.

### Critical Thinking, Attitudes, and Values in Higher Education

*Problem.*—This study surveys the interrelationships between critical thinking, attitudes, and values.

*Major objectives.*—The objectives are (1) to determine what changes in attitudes, values, and critical thinking ability take place in students while in college, and if and how these attitudes and values change after leaving college; and (2) to determine the relationships between college environment and changes in values and attitudes.

*Procedures and design.*—This is a continuation of Project No. 372, in which descriptive data were collected from 2,771 entering freshmen by means of a 3½-hour battery of tests, including measures of critical thinking, beliefs, and values, and a 2-hour battery administered to a smaller group of students in order to evaluate a selected experimental group of tests. In the present research, groups of students who showed evidence of certain common patterns of attitudes and values in the results of the first phase will be selected and followed during the remaining 3-year period in order to study change and factors related to change. A sample of 1,000 students will be retested to provide evidences of change, and further data will be collected from instructors, questionnaires, final grades, and other measures.

PAUL L. DANASEL, director of evaluation services and professor of higher education, Michigan State University, East Lansing, Mich.

Project No. 590.  
Duration: 3 years 2 months.  
October 1959 to December 1962.

### The Teenager's Conception of Mental Illness

*Problem.*—This study seeks to determine the present state of knowledge and attitudes among teenagers concerning mental health.

*Major objective.*—The objective is to provide data which will serve both as a measure of teenagers' present attitudes toward and knowledge of mental health and as a predictor of probable future adult attitudes in this area.

*Procedures and design.*—A questionnaire designed to measure the conception or "image" of mental illness will be developed, pretested, and then administered to a national sample of approximately 15,000 teenage students in 100 schools. A stratified random sample of 2,000 students will be selected from the larger sample, and detailed analyses will be made of their responses. Since the questionnaire will include a number of items designed to establish each respondent's classification in a variety of subsample categories, it will be possible to tabulate the percentage of those choosing each response by total sample and by the established categories of the sample.

E. J. ASHER, professor and head of the  
Department of Psychology, Purdue  
University, Lafayette, Ind.

Project No. 613.  
Duration: 6 months.  
March 1959 to September 1959.

### The Identification, Development, and Utilization of Human Talents

*Problem.*—This study attempts to identify and examine over a 20-year period the development and utilization of talents of a large sample of present high school students.

*Major objectives.*—The objectives are (1) to evaluate the effectiveness of certain specified types of educational experiences; (2) to obtain a national inventory of human resources and the interrelations of various personal and background factors; (3) to determine the predictive value of various patterns of test scores and related descriptive information with respect to college and career activities; and (4) to investigate the factors involved in the important choices, plans, and decisions made by high school students.

*Procedures and design.*—A stratified random sample of 5 percent of the Nation's 26,500 secondary schools will be drawn. All of the 9th, 10th, 11th and 12th grade students in these 1,400 schools will be given a 2-day battery of aptitude, achievement, interest, and personality tests, and will fill out biographical and background inventories. In addition to the initial data collection, each student will be asked for other information after he has been out of high school for 1 year. Later phases of the study will include followups after 5, 10, and 20

years. Analyses of these data will provide a national inventory of human resources, statistical tables of the scores of those planning to enter various careers and advanced training, information concerning the extent to which high school students have formulated definite career and educational plans, an inventory of courses being taken by students in the sample, distributions of aptitudes and abilities of students enrolled in various courses of study, and an indication of the level of aspiration and other motivational indices of the students. The subsequent collection of followup data will provide information for developing expectancy tables based on the results of various tests and later achievement. The effects of school philosophy and selected educational procedures on postschool behavior, the effect of home and community environmental factors on later behavior and achievement, and changes in plans and levels of aspiration after leaving school will also be determined.

JOHN C. FLANAGAN, professor of psychology, University of Pittsburgh, Pittsburgh, Pa.

Project No. 635.  
Duration: 1 year 2 months.  
April 1959 to June 1960.

## THE RETENTION OF STUDENTS

### The Influence of Different Types of Public Institutions of Higher Learning on College Attendance of Students From Varying Socio-economic and Ability Levels

*Problems.*—This study proposes to discover what influence different types of public institutions of higher education have—in the communities in which the colleges are situated—on the college attendance of young people with varying levels of ability and from diverse socioeconomic backgrounds.

*Major objectives.*—The objectives are (1) to discover how representatively different types of public institutions draw from the various socioeconomic and ability levels of graduates from high schools in the same community as the colleges; (2) to discover how representatively different types of public colleges draw from the various socioeconomic levels of the general population in the community; and (3) to discover what effect the presence of different types of public institutions of higher education appears to have in determining the percentage of various subgroups of high school graduates who enter any type of college.

*Procedures and design.*—The sample will consist of 6,000 high school seniors from 12 communities of moderate size in which only one public institution of higher education exists. Among the types of colleges which will be involved are (1) local public junior colleges, (2) State-controlled junior colleges, (3) 2-year extension centers of State universities, and (4) urban universities. The students who entered each college as freshmen in September 1959, who came from the college community, and who were graduated from high school in June 1959, will comprise the group to be studied. These freshmen will be compared with the preceding June high school graduates in the same community. In addition, the academic records of each socioeconomic subgroup in the freshman class will be compared while the ability factor is held constant.

T. R. McCONNELL, professor of education and chairman of the Center for the study of Higher Education, University of California, Berkeley, Calif.

Project No. 438.  
Duration: 11 months.  
October 1958 to September 1959.

### Factors Which Influence Decisions of Youth About Education Beyond High School: Followup Studies

*Problem.*—This study seeks to determine the differences among schools, communities, and geographical areas of Wisconsin in their yield of college-going students and to compare the characteristics of highly able youth who do not continue their schooling beyond high school and those who drop out of college short of graduation, with those who do persist in their education to college graduation and those who continue on to graduate school. This is the second phase of a statewide inquiry which is being carried on as USOE Project No. 247. This phase will analyze data on the student sample of 1957 Wisconsin high school graduates only through the freshman college year and sophomore registration.

*Major objectives.*—The objectives are (1) to test whether or not there are important differences among schools, communities, and geographic areas of Wisconsin in their yield of college-going students; and (2) to study the persistence and achievement in colleges of the high-ranking high school graduates of 1957 who entered Wisconsin colleges.

*Procedures and design.*—To obtain data on the first objective, 500 Wisconsin high schools (95 percent of all Wisconsin's public and private high schools) will be divided into subgroups of public and private schools; schools with small (1-59 graduates), medium (60-259 graduates), and large (260+ graduates) enrollments; and geographic and

economic areas of the State. A comparison will be made in the yield of college-going students from these groups. Within the groups, high-yielding schools of similar size and location will be compared with low-yielding schools on background factors revealed in responses to items of a questionnaire. Data on the second objective will be based on questionnaires sent to registrars of various Wisconsin colleges requesting information concerning the college achievement and persistence record of 1957 high school graduates who ranked in the top fourth of their high school classes in either scholastic aptitude or achievement and who entered a Wisconsin college in the academic year 1957-58.

J. KENNETH LITTLE, professor of education and director of the Office of Institutional Studies, University of Wisconsin, Madison, Wis.

Project No. 485.

Duration: 1 year.

September 1958 to August 1959.

## THE ABILITY GROUPING OF STUDENTS

### An Evaluation of Ability Grouping

*Problem.*—This study compares a modified system of ability grouping with a system of heterogeneous grouping.

*Major objectives.*—The objectives are (1) to explore the relative strengths and weaknesses of ability grouping; (2) to provide information to administrators who are considering ability grouping for existing educational facilities; and (3) to determine the long-term effects of ability grouping.

*Procedures and design.*—Randomly selected samples will be taken from three populations (superior, average, and below average) under the conditions of ability grouping and heterogeneous grouping. The experimental sample will consist of 400 fourth grade, 420 sixth grade, and 480 junior high school pupils. The control group will begin with 494 fourth grade, 712 sixth grade, and 700 junior high school pupils and will later be reduced in size on a random basis. Both samples will be matched on the basis of sex and level of ability. The pupils will be tested with such measures as achievement tests, teacher attitude scales, and mental maturity tests in four time-phased batteries. A final followup battery of tests will be given about 3½ years after the initial battery is administered. The major statistical technique to



be used in comparing the three ability-level samples under the two systems of grouping will be multiple analysis of covariance.

WALTER R. BOBE, professor of education and director of the Bureau of Educational Research, Utah State University, Logan, Utah.

Project No. 577.  
Duration: 3 years 6 months.  
June 1959 to December 1962.

### The Effectiveness of Homogeneous and Heterogeneous Grouping in Ninth-Grade English Classes With Slow, Average, and Superior Students

*Problem.*—This study investigates the comparative effects of homogeneous and heterogeneous grouping on student achievement, skill development, and attitudes.

*Major objectives.*—The objectives are (1) to compare the influence of homogeneous and heterogeneous grouping on student achievement, skill development, and attitudes; and (2) to determine which of these two types of grouping enables the teacher to be most effective in adapting the instruction to the ability levels of the students.

*Procedures and design.*—Four homogeneous bright, four homogeneous average, four homogeneous slow, and four heterogeneous classes are involved in this study. The sample consists of 150 superior, 325 average, and 118 slow ninth-grade pupils. Slow and superior students were selected on the basis of reading achievement and intelligence tests, school marks, and teacher recommendations. The average students were randomly selected. Pre- and post-testing measures will be obtained with a battery of achievement and critical thinking tests, and interest and attitude surveys. In addition to using posttest analyses in an attempt to show differences between homogeneous and heterogeneous groups, three trained observers will visit each class periodically and rate discernible differences in teaching approaches and student responses in the two types of grouping. Teacher and student ratings will also be used as data.

ELIZABETH M. DREWS, associate professor, Michigan State University, East Lansing, Mich.

Project No. 608.  
Duration: 2 years.  
March 1959 to March 1961.

## SECTION II

### Research on Teachers

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#### THE CHARACTERISTICS OF TEACHERS

##### An Analysis of Some Necessary Qualities of Effective Teachers

*Problem.*—This study analyzes some teacher traits that are felt to be essential, but not necessarily sufficient, for good teaching. The traits being analyzed include (1) the teacher's knowledge of his students' capacities, interests, and socioeconomic backgrounds, (2) the teacher's knowledge of educational psychology, (3) the teacher's knowledge of the subject matter of his primary teaching field, (4) the teacher's attitude toward aspects of the teaching profession, (5) the teacher's affiliation-achievement motivation, and (6) the teacher's social intelligence.

*Major objectives.*—The objective is to extend the knowledge of teacher traits by (1) developing scales of traits commonly believed to be effective in teaching, and (2) using the scales to examine the hierarchy of relationships of traits existing for college students and experienced teachers and to discover the kinds of motivation possessed by teachers.

*Procedures and design.*—The procedures are divided into three discrete stages. During the first year, commercial instruments will be selected and other instruments will be constructed to measure the traits. During the second year, at least 100 secondary school teachers will be tested twice on all traits except knowledge of subject matter, with an interval of not less than a month between tests. At the beginning of the third year, 100 teachers and 100 education students engaged in supervised practice teaching will be tested again on all traits.

JOHN SCHMID, associate professor of  
education, University of Arkansas,  
Fayetteville, Arkansas.

Project No. 458.  
Duration: 8 years.  
January 1959 to January 1962.

## Characteristics of Men Who Have Remained in and Those Who Have Left Teaching

*Problem.*—This study concerns men from a World War II military population. It compares men who entered teaching and remained, with those who entered the field but subsequently left.

*Major objectives.*—The objectives are (1) to describe, on the basis of aptitude scores and biographical information, a group of World War II veterans who are teaching; (2) to compare the teacher group with a comparable group who entered but subsequently left the field of education; (3) to identify the factors, as reported by the men, which caused those who left teaching to do so, and to relate the stated cause to the aptitudes of the men; and (4) to describe the subsequent vocational careers of those who left the field of teaching.

*Procedures and design.*—Approximately 1,000 men from a wartime population of 500,000 aviation cadet applicants will constitute the sample of this study. About 500 of these men have been identified as working in the field of education, and approximately the same number entered the field but subsequently left. For each of the 1,000 men in the sample there are available (1) scores which reveal a wide range of aptitudes; and (2) responses to about 100 items of a biographical nature. Those who left the field of education will be asked to indicate on a questionnaire the reasons for their leaving, their interest in returning, and factors which would influence a decision to return. For those currently in education, questionnaire data will be obtained on job satisfaction and firmness of commitment, sources of satisfaction and dissatisfaction with the present position, and factors important in holding them in the field. This teaching group will be compared with those leaving the field and with reference populations. An attempt will be made to relate the aptitude of those who have left teaching to their reasons for leaving and to relate the aptitude of those who remained in teaching to their present satisfaction and stability in teaching.

ROBERT L. THORNDIKE, professor of education, and ELEANETH P. HAGEN, assistant professor of education, Columbia University, New York, N.Y.

Project No. 574.

Duration: 1 year 2 months.

April 1959 to June 1960.

## THE PERFORMANCE OF TEACHERS

### The Measured Needs of Teachers and Their Behavior in the Classroom

*Problem.*—This study attempts to determine the relationship between the need structure of the teacher with respect to achievement, affiliation, and status, and the teacher's performance in the classroom.

*Major objective.*—The objective is to discover the characteristics of teacher performance which can be predicted from the teacher's need structure.

*Procedures and design.*—There are three separate phases to this research. During the initial phase, devices will be developed which can be used for the measurement of achievement motivation, affiliation motivation, and status motivation of teachers. The second phase of the research involves the development of methods for the measurement of those aspects of teacher behavior which are hypothesized to be a consequence of high level need in any one of the three areas studied. The instruments and methods for measurement developed in phases I and II will be used in phase III to test the relationship between need structure and teacher behavior in the classroom. Subjects for the first phase will be drawn from the 1,100 students in the College of Education of the University of Utah. The advanced stages of phase I and phase II will be conducted with 75 to 100 teachers of elementary grade pupils within Salt Lake City and nearby school districts. Phase III will require the cooperation of approximately 75 teachers for observation and a larger number, possibly 200, for taking the needs tests in order that a structured sample can be selected.

ROBERT M. W. TRAVERS, professor and chairman of the department of Educational Psychology, The University of Utah, Salt Lake City, Utah.

Project No. 444.

Duration: 1 year 11 months.

October 1958 to September 1960.

### The Evaluation of Laboratory Human Relations Training for Classroom Teachers

*Problem.*—This study attempts to evaluate behavioral changes in pupils and teachers which result from laboratory human relations training for teachers.

*Major objectives.*—The objective of this study is to gather evidence on what effect human relations training has (1) on teachers' attitudes and personality patterns, (2) on group behavior of pupils, (3) on observed teachers' classroom behavior, and (4) on the social-emotional climate of the classroom.

*Procedures and design.*—Fifty elementary school teachers and 1,500 children will be divided into two groups with an equal number of teachers in each group. All teachers and pupils will be tested at the beginning of the study. One of the groups of teachers will then receive human relations training. After a period of time all the teachers and pupils will be retested. An analysis of data will be based on changes in pupil behavior and comparisons between the two groups of teachers. The human relations training for teachers will be similar to that offered by the National Training Laboratories in its summer workshop at Bethel, Maine. The teachers receiving this human relations training are given an opportunity to practice different modes of leadership in a "psychologically safe" climate, and are provided feedback with which they can evaluate the development of their own skills. The same opportunity will later be given the control group.

NORMAN D. BOWERS, director of  
teacher education, Vanderbilt Uni-  
versity, Nashville, Tenn.

Project No. 499.

Duration: 3 years.

December 1958 to January 1961.

### A Study of Teacher Behavior in Relation to Children Differing in Anxiety Level

*Problem.*—This study seeks to determine how current practices in training teachers to deal with anxious children may be improved.

*Major objectives.*—The objectives are (1) to determine how anxious children, recognized or unrecognized, are handled by teachers; (2) to evaluate the effects of such handling on the learning and anxiety level of children; and (3) to devise procedures whereby teachers can be trained to recognize and handle such children.

*Procedures and design.*—Five elementary school classes will be observed by two trained teachers who will record children's behavior and the pedagogical and interpersonal behavior of the teacher. Specific ways in which a teacher responds to different children in her class will be related to changes in anxiety level as measured by pre- and post-test results on previously developed scales of test anxiety and

general anxiety. The entire study will be repeated the second year with five new classes and teachers. A variation of the study will be conducted during the third year using five teachers ranked either high or low in their understanding of and responses to the motivations and needs of children.

SEYMOUR E. SARASON, professor of psychology, Yale University, New Haven, Conn.

Project No. 624.  
Duration: 3 years.  
July 1959 to June 1962.

### Prediction of Teacher Performance and Emotional Stability: A Pilot Study

*Problem.*—This study investigates the relationships between teacher performance and physiological and personality variables, and between emotional stability and these same variables.

*Major objectives.*—The objectives are (1) to determine the value of using measures of individual differences in the functioning of the autonomic nervous system as a means of predicting which teachers will be able to withstand the stress involved in teaching; and (2) to validate these predictive measures against observed estimates of teacher performance and emotional stability during student teaching and inservice training.

*Procedures and design.*—Approximately 600 students in elementary teacher education will be tested for (1) scores of autonomic balance; (2) patterns of autonomic nervous system functioning at rest, during a standard stimulation, and during recovery; and (3) indices of over-reaction in specific organ functions. In addition, they will be given a battery of personality, temperament, and teacher characteristics tests during the junior year. As a first check on the validity of the test battery, qualified assessments of the teachers' classroom behavior during student teaching will be made by trained observers, and there will be a final evaluation of teaching performance and emotional stability during inservice assignments. Analyses are planned for relating the test battery to evaluations during student teaching and inservice training.

WILLIAM H. LUTTS, associate professor of education, University of California, Los Angeles, Calif.

Project No. 643.  
Duration: 1 year 6 months.  
September 1959 to March 1961.

## THE CAREER MOTIVATION OF TEACHERS

### The Pedagogical Significance of Unconscious Factors in Career Motivation for Teaching

*Problem.*—This study investigates the significance of unconscious factors in career motivation for teaching in relation to teacher training, assignment and performance, and pupil behavior.

*Major objectives.*—The objectives are (1) to determine whether or not individual differences in the motives and needs of the teacher can be measured reliably, and (2) to investigate the relationship between teaching-role behavior and the needs, attitudes, and motivation of the individual teacher.

*Procedures and design.*—A sample of between 600 and 1,000 teachers and teacher trainees will be tested twice with teacher preference schedules, which measures attitudes and gratifications, and an activity index, which measures needs. Data from these instruments will be used for an item analysis, reliability estimate, scale intercorrelations, and score standardization in order to revise the instruments. The revised measures will then be administered to several hundred teachers and student teachers. The data will be analyzed for motivational differences that are related to the influence of particular school systems and institutional philosophies, length of time in training, and other factors. A minimum of 20 of the teachers' scores will also be compared with independent observers' ratings of their manifest behavior in the classroom. Weighted composite scores from the three sets of scales will be compared with pupil learning, as measured by standardized achievement tests, pupil accessibility to learning, and classroom climate.

GEORGE C. STERN, associate professor of psychology, and JOSEPH M. MASLING, associate professor of psychology, Syracuse University, Syracuse, N.Y.

Project No. 512.

Duration: 1 year 9 months.

February 1958 to September 1960.

### A Study of the Job Motivations, Activities, and Satisfaction of Present and Prospective Women College Faculty Members

*Problem.*—This study seeks to investigate the factors that are related to the occupational choice of present and prospective women college faculty members.

**Major objectives.**—The objectives are (1) to provide information regarding the levels and types of academic positions held by women and to estimate the future supply of women for these positions; (2) to determine why present women faculty members chose this field, how they prepared for it, and what their expectations of satisfaction were from such positions; and (3) to explore the attitudes of women students toward ~~college~~ college faculties.

**Procedures and design.**—In order to develop a background for further research, a summary of existing research and reports on the current employment of women as faculty members in universities and colleges will be combined with prior research on why women choose or fail to choose careers in higher education. Seventy-five women faculty members have been chosen from a previous sample of women because of an indication of important differences in their motivation for academic careers. These women will be interviewed in order that the factors, conscious and unconscious, that had influenced their decisions may be examined. A followup study of Minnesota Ph. D.'s will be utilized to determine job shifts which have occurred, and, particularly in the case of women, why these changes have been made. A study will be made of the current college and graduate students, sampled at different levels of the program. This study will determine the attitudes of students toward college teachers and toward careers in higher education. This information will be related to the personality-inventory scores of members of the sample.

**RUTH E. BOKSER**, professor of higher education, University of Minnesota, Minneapolis, Minn.

Project No. 557.  
Duration: 2 years 5 months.  
May 1959 to October 1961.



## SECTION III

### Research on Teaching and Learning

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#### Construction of a General Ability Group Test for Puerto Rican Students in Elementary and Secondary Schools

*Problem.*—This study attempts to develop a group test of general ability which will accurately assess the intellectual capacities of elementary and secondary students in the Puerto Rican schools.

*Major objectives.*—The objectives are (1) to determine what common intellectual tasks will indicate mental ability of Spanish-speaking Puerto Rican and English-speaking American children, and (2) to ascertain what cultural differences influence intelligence test scores to distort results in favor of or against Spanish-speaking Puerto Rican children.

*Procedures and design.*—The first step will be a survey and analysis of published tests of intelligence and of the literature in the field to ascertain the common factors generally included in tests of intelligence. Next a pool of test items measuring different abilities at different grade levels will be prepared. This pool of items will be tried out for validity and reliability, and some items will be selected for construction of a provisional scale. A second item analysis and tryout will result in the construction of a final scale. The sample will include at least 500 children from primary, intermediate, and advanced grade levels selected on the basis of normal age and average achievement for the grade. The schools will be selected at random from the four geographical regions in Puerto Rico. A balanced selection of boys and girls from small, medium, and large communities will be used.

PABLO BOCA, director of education,  
University of Puerto Rico, Hato  
Rey, P.R.

Project No. 181.  
Duration: 1 year 6 months.  
February 1959 to August 1960.

## Teaching Language Arts to Non-English Speaking Children of Guam

*Problem.*—This study attempts to determine an effective method for teaching the English language arts to non-English-speaking children of Guam.

*Major objectives.*—The objectives are to determine (1) to what extent the comprehension of English should precede attempts to teach reading and writing of English in a bilingual situation; (2) whether achievement in reading, writing, and other areas of language arts is greater for primary grade pupils who have learned conversational English than for pupils who have received early stress on reading and writing in a bilingual setting; (3) whether or not relatively unskilled teachers can learn to teach conversational English to 6-year olds; (4) how growth in the language arts can be detected in a bilingual setting.

*Procedures and design.*—Ten local teachers who have had less than 3 years of college education and are representative of the Guamanian teaching staff will be selected for the study. They will be brought to college during the summer for workshops. Five will be taught the theory and methods for teaching conversational English, and five will be taught up-to-date methods of teaching reading readiness. Two experimental first-grade classes will be established in each of the five different public schools in the territory of Guam. In half of the experimental classes teachers will stress conversational English during most or all of the first year. In the remaining classes teachers will stress reading readiness for about the first half year. The children in the latter classes will be taught to read the preprimer and primers as soon as they are ready for them. All of the teachers will continue to receive summer help for 3 school years. One class in each school in the study and five classes from schools not in the study will be used as controls. Various measures of growth in English language arts (readiness tests, situational tests, reading and writing tests) will be given to both experimental and control classes, and the results will be compared.

JAMES G. COOPER, professor of the Division of Education and Psychology, Territorial College of Guam, Agaña, Guam.

Project No. 477.  
Duration: 3 years.  
October 1958 to October 1961.

### The Use of Test Results

*Problem.*—This study proposes to determine the conditions of transmittal and reception which will increase attention to and application of test results by appropriate persons in the schools.

*Major objectives.*—The objectives are (1) to gather descriptive statistics about the present use of test results in the secondary schools of a State, and (2) to investigate the relationship between the training of users and the ways in which test results are used.

*Procedures and design.*—This research consists of a number of sub-studies. Preliminary interviews with teachers will be used as a basis for constructing a questionnaire designed to gather data on the use of existing test results. This part of the research will concern about 600 schools and 1,500 counselors, principals, and teachers. In the second substudy, the thoughts and attitudes of teachers in one high school will be gathered to determine the ways in which they influence each other in the use of test results. Interviews with participants at a testing institute will also be used to develop this substudy. The third substudy is concerned with interviewing test users in the field of education and will involve visits to various sizes of schools. The fourth substudy is a questionnaire study of 1,000 teachers, counselors, administrators, and students and will be used to determine channels of information associated with the use of test results.

J. THOMAS HASTINGS, director, Unit  
on Evaluation, College of Educa-  
tion, University of Illinois, Urbana,  
Ill.

Project No. 509.  
Duration: 1 year 8 months.  
December 1958 to August 1960.

### Reading Ability: Significant Differences in the Substrata Factor Patterns Which Underlie Reading Ability in Known Groups at the High School Level

*Problem.*—This study tests the hypothesis that there is more than one way to solve an intellectual problem.

*Major objective.*—The objective is to provide an experimental basis for accepting, rejecting, or modifying one of the major hypotheses of the Substrata Factor Theory of Reading. The hypothesis being tested is that different individuals are able to read identical material with the same speed and/or comprehension by calling upon (1) different sets of subabilities, (2) different amounts of the same set of subabilities, or (3) a combination of different sets and different amounts of the same set of subabilities.

*Procedure and design.*—The sample for the study will consist of 498 high school students. The statistical techniques to be used include a centroid factor analysis of the total group, a substrata factor analysis of obvious subgroups, a varimax orthogonal rotation of all factors, and flow sheet analyses as diagrammatical models representing the various substrata analyses. The data for the study will be scores on group tests administered under standardized conditions in 1953.

JACK A. HOLMES, associate professor  
of education, The University of  
California, Berkeley, Calif.

Project No. 538.  
Duration: 1 year.  
February 1959 to January 1960.

### Correcting Contracts—The Use of Lay Readers To Assist High School English Teachers in Grading Compositions

*Problem.*—This study evaluates empirically the general applicability of the use of lay readers for grading compositions written by high school students.

*Major objectives.*—The objectives are (1) to determine whether or not trained lay readers can be used to provide assistance to the high school teacher of English in the correcting of compositions; (2) to determine whether or not the use of lay readers will assure a more careful analysis of the student's writing than is generally the case at present; (3) to study the effect of this type of correcting program on the general effectiveness of the teacher.

*Procedures and design.*—A sample of English classes from various combinations of curricula and grade levels will be selected from three high schools of various sizes. In 12 classes compositions will be graded by contract lay readers who will work closely with the teachers. In 12 other classes the same teachers will correct the compositions themselves without help from lay readers. It is possible that the use of a lay reader to correct the papers in one of his classes will provide the teacher with enough relief that he will be able to do a better job with the compositions he corrects himself. To determine whether or not this effect does occur, a third (control) group of teachers will be used. These teachers will work with the lay teachers but will correct all the compositions themselves. The classes will be matched on the basis of the mental ability, reading comprehension, and socioeconomic status of the students. All students used in the experiment will be given a series of impromptu theme tests at

the beginning of the school year and again in April of the same academic year. The compositions will be graded by Educational Testing Service workers who will have no knowledge of whether they had been written at the beginning or end of the school year. Classes will be compared by an analysis of covariance techniques.

EDWIN H. SAUER, lecturer on education in English, Harvard University, Cambridge, Mass.

Project No. 550.  
Duration: 2 years 6 months.  
December 1958 to June 1961.

### Teaching High School Students a Critical Approach to Contemporary National Issues

*Problem.*—This study proposes to develop methods of effectively teaching students a critical understanding of contemporary political, social, and economic issues.

*Major objectives.*—The objectives are (1) to determine the most appropriate thought process model which, when used to teach high school students, will give them the skills required to analyze current issues critically and intelligently, (2) to determine the most effective methods and procedures for presenting current issues and evaluating the presentation, and (3) to determine the relationship between personality attributes, academic ability, and a student's ability to apply the basic principles of critical thinking to contemporary issues.

*Procedures and design.*—From 10 to 12 experimental groups, each with 12 seventh-grade students, will be taught with experimental materials by three teachers. Half of the groups will be taught by a recitation procedure, and half by the Socratic method. Subjects in the recitation and Socratic groups will be matched on the basis of general academic aptitude, interaction rate, and peer status. Three control groups of about 50 students each will be given written tests before and after the experiment but will not be exposed to the experimental materials. Analyses of student achievement will be used to compare the experimental groups with the control groups, and the groups taught with the Socratic method with those taught with the recitation method.

DONALD W. OLIVER, assistant professor of education, Harvard University, Cambridge, Mass.

Project No. 551.  
Duration: 2 years 6 months.  
December 1958 to June 1962.

## The Perception of Music Symbols in Music Reading by Normal Children and by Children Gifted Musically

*Problem.*—This study attempts to determine whether or not normal children perceive and respond to music symbols in essentially the same way as do children who are gifted musically.

*Major objectives.*—The objectives are (1) to develop experimental learning situations which will provide information regarding the perception of music symbols by children of average and of gifted musical ability, and (2) to identify techniques and procedures which may be used for future research in this area.

*Procedures and design.*—Phase I of the study will determine how well a random sample of 30 children from grades 4, 5, and 6 of the Madison, Wisconsin Public Schools can identify the similarities and differences in various tonal configurations. The learning time and/or accuracy of the response will be the measures used. Phase II will utilize 80 children from grades 4 and 6, with two groups of at least 10 normal children and two groups of at least 10 musically gifted children from each grade. The children gifted musically will be those who are rated "above grade level" in music by a special music teacher and who achieve a percentile rank of approximately 80 or higher on the music aptitude tests. The normal children will be those who are rated "at grade level" in music by the special music teacher and who score a percentile rank of between 40 and 65 on the music aptitude tests. Direct observation and tape recordings made of pupil responses will provide the data for small group comparisons to determine the similarities and differences which may exist between the two groups of children.

ROBERT GEORGE PETROKA, associate professor of music and education, University of Wisconsin, Madison, Wis.

Project No. 554.  
Duration: 5 months.  
January 1959 to June 1959.

## The Language Used by Elementary School Children and Its Relationship to the Language of Reading Textbooks and Quality of Children's Reading Skill

*Problem.*—This study investigates the relationship between children's spoken language and the effects of the language used in reading textbooks.

*Major objectives.*—The objectives are (1) to analyze the structure of children's language in the first through the sixth grades; (2) to compare this language with the language used in the books with which children learn to read; and (3) to determine whether or not the differ-

ences between the language used in the books and that used by the children have any influence on the children's success in reading.

*Procedures and design.*—A sample of 600 children, 100 from each grade level from 1 through 6, will be classified according to grade, sex, socioeconomic status, and intelligence. Recordings of the language of these children will be made in free or informal, and formal or structured situations. Later the recordings will be analyzed in terms of sentence structure, patterns of word usage, and rhythm and flow of language. At the same time, a similar analysis will be made of selected samples from certain reader series for the same items, and children will be tested for silent and oral reading of these selected samples on a standardized reading test. The quality of reading skill will be compared subjectively and statistically with the quality of oral language used by the children.

RUTH G. STRICKLAND, professor of education, Indiana University, Bloomington, Ind.

Project No. 561.  
Duration: 3 years.  
February 1959 to January 1962.

### The Effect of TV Instruction on Individual Learning Curves

*Problem.*—This study seeks to compare the parameters of individual learning curves of pupils exposed to elementary Spanish instruction via television with the parameters of learning curves of pupils exposed to conventional Spanish instruction.

*Major objectives.*—The objectives are (1) to demonstrate that parameters of learning curves can be used effectively as multidimensional indices of academic learning activities, (2) to provide an incremental record of certain learning activities which are mediated by the TV instructor rather than the classroom instructor.

*Procedures and design.*—An experimental group of 38 students from small high schools who are exposed to TV instruction in Spanish three times a week will be compared with three control groups totaling 184 high school and college students who are taught Spanish by conventional classroom instruction. All members of the sample will be tested with a set of nine parallel Spanish vocabulary quizzes which will be randomly distributed at each administration for a total of 15 administrations. Scores will be considered as fifteen successive measurements with the same instrument, and the resulting learning curve parameters for experimental and control groups will be compared with reference to the distribution of "t." Intercorrelations of the parameters will be obtained for each group.

ROBERT EARL STAKE, assistant professor, Department of Educational Psychology and Measurements, University of Nebraska, Lincoln, Nebr.

Project No. 573.  
Duration: 7 months.  
April 1959 to November 1960.

### The Development of a Research Design To Investigate the Functional Understandings of Technicians as Bases for Curriculum Planning in Technical Education

*Problem.*—This study seeks to develop a research design which can be used to investigate the work functions and understandings of industrial technicians.

*Major objective.*—The objective is to develop a research design for determining the relationship between a technician's work activities and basic understandings in mathematics and science.

*Procedures and design.*—Existing occupational data will be collected in a centralized place, and a working group of specialists will examine and analyze these data. These analyses will determine the procedures that will be used in collecting data for a reliable study of technicians by a consultative group of specialists. The recommendations of this group will then be utilized to plan and execute a pilot study which will become the basis for later research and curriculum planning.

GEORGE L. BRANDON, associate professor, College of Education, Michigan University, East Lansing, Mich.

Project No. 629.  
Duration: 1 year.  
April 1959 to March 1960.

### Facilities and Equipment Presently Available for Teaching Science in the High Schools

*Problem.*—This study surveys the present availability of facilities and equipment for teaching high school science courses.

*Major objective.*—The objective is to determine what facilities and equipment are presently available in high schools for the teaching of science.

*Procedures and design.*—A committee, consisting of college and high school science teachers, State department of education personnel, and advanced graduate students in each of seven States, will survey a random sample of the high schools in seven States. The committee will conduct a personal inspection, using check lists, to collect data from 70 schools. Overall coordination and direction will be provided by a director and an associate director who will make an analysis of the data and suggest its implications.

ARCHIE N. SOLERHO, professor of biology and department chairman, University of Toledo, Toledo, Ohio.

Project No. 640.  
Duration: 9 months.  
March 1959 to December 1959.



## An Evaluative Study of Psychological Research on the Teaching of Mathematics

*Problem.*—This study seeks to develop a handbook or guide which can be used by investigators in the field of mathematics teaching.

*Major objectives.*—The objectives are (1) to conduct a critical review of psychological literature on research related to the learning of mathematics at all academic levels, (2) to formulate problems in the learning of mathematics and similar disciplines which might be resolved through appropriate experimental investigations, and (3) to develop an inventory of research methods that are appropriate to the conduct of such studies.

*Procedures and design.*—A systematic survey of the psychological literature will be undertaken in order to develop a bibliography of scientific research on the teaching of mathematics. An attempt will be made to differentiate between articles of little permanent interest and those which present important conclusions or make use of interesting methodology. Liaison will be established with research groups that are currently engaged in studies of mathematics teaching in an attempt to clarify certain issues. An inventory of problem areas in the field of learning will be developed, with special reference to the learning of mathematics. Various consultants will provide information on the possible applications of specialized developments, such as information theory, multivariate analysis and factor analysis, to investigations in learning. The findings from the literature, from current research studies, and from consultants will then be combined into a comprehensive report.

PHILIP H. DUBOIS, professor of  
psychology, Washington University,  
St. Louis, Mo.

Project No. 642.  
Duration: 3 months.  
March 1959 to June 1959.

## Analysis of the Curricular Offerings of Several Independent Liberal Arts Colleges

*Problem.*—This study surveys the range of offerings in independent liberal arts colleges to determine to what extent present course offerings by departments are required to serve the purposes of the institution.

*Major objectives.*—The objectives are (1) to discover the relationship between the number of hours required for a major and the total hours of instruction offered; (2) to analyze the reasons given by the central administrators and by the instructors for offering various

courses by department; (3) to study the attitudes of leaders in various professional teaching fields toward the scope of curricular offerings in their respective fields; (4) to compare the cost of present courses, by level and by department, with the cost of courses that are judged to be needed for an adequate A.B. degree program.

*Procedures and design.*—Fifteen independent liberal arts colleges will be selected as a sample. Through a catalogue analysis and correspondence with the institutions, the course offerings in each department will be determined over a 2-year period. Visits to the institutions will provide data on the reasons for offering various courses, enrollments in courses, and the cost factors of such instruction. Charts will be prepared showing the amount and level of courses offered, by department, together with class standing of enrollees. Financial charts showing the cost of instruction by type and level will also be prepared.

EARL J. McGRATH, executive officer,  
Institute of Higher Education,  
Teachers College, Columbia Uni-  
versity, New York, N.Y.

Project No. 647.  
Duration: 1 year.  
July 1959 to June 1960.

## SECTION IV

### Research on Administrative Problems

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#### How State Legislators View the Problem of School Needs

*Problem.*—This study seeks to identify the most significant factors which influence State legislators' perceptions of educational problems.

*Major objectives.*—The objectives are (1) to determine how legislators perceive educational problems and to identify the solutions they favor for these; and (2) to identify sources of advice and information most trusted by legislators, and to ascertain how legislators perceive political parties, lobbies, and the attitudes of their constituents as factors in solving educational problems.

*Procedures and design.*—A sample of 474 out of 504 legislators in four States was interviewed in an earlier study of legislators' role perceptions. Of these, 414 were asked questions dealing with the problem of the present study. In addition to interview data, socio-economic characteristics of each legislator's district, an analysis of his rollcall record, and the bills he has introduced will be used. These data will be analyzed for the relationships between the legislator's role orientations and his perceptions of, and attitudes toward, educational problems.

LEROY C. FERGUSON, professor of political science, Michigan State University, East Lansing, Mich.

Project No. 532.  
Duration: 7 months.  
January 1959 to August 1959.

#### The Incentive Approach to School Improvement

*Problem.*—This study tests the effect of an incentive approach in the utilization and development of local improvement projects aided by a State department of education.

*Major objective.*—The objective is to test the hypothesis that the role of a State education department is to work democratically with county and local units for the most socially desirable goals.

*Procedures and design.*—As far as practicable, all professional members of a State department of education, each superintendent of a county school system, and principals, teachers, parents and pupils from four pilot counties in a State will be given a battery of adjustment and values indexes, a measure of assumed similarity, and a role concept *Q*-sort before and after an intensive period of reorganization of relationships between the State department and lower levels of administration. The new organization of the State department will stress the democratic process and mutual development toward mutually determined goals in its relationships with county and local units.

CRAIG WILSON, assistant superintendent of schools, West Virginia State Department of Education, Charleston, W. Va.

Project No. 591.  
Duration: 1 year 6 months.  
June 1959 to December 1960.

### The Effects of School and Community Size Upon the Education of Children

*Problem.*—This study investigates the effects of school and community size upon children, especially upon their education.

*Major objective.*—The objective is to determine whether or not the "good" educational effects of schools and communities of one size can be transferred, by means of special arrangements, to those of another size.

*Procedures and design.*—The first phase will be devoted to the problem of identifying town-school systems which seem to represent extremes in population and enrollment and in community and school organizational structure. The second and third phases will be devoted to an observation and study of the behavior and participation of the students in school and community activities. Descriptions are planned which will reflect teacher-pupil relationships and pupil attendance and participation. The fourth phase will be devoted to assembling life history data on a representative sample of adults who supposedly are products of the various town-school systems. The final phase will be devoted to drawing together facts and observations accumulated over the entire study.

ROSEN G. BLANKEN, professor of psychology, University of Kansas, Lawrence, Kans.

Project No. 594.  
Duration: 3 years.  
July 1959 to August 1962.

## SECTION V

### Educational Research Progress, Theory, and Methodology

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#### A Survey of Educational Research and an Appraisal by Scientists From Other Fields

*Problem.*—This study surveys the status and trends in educational research and obtains an evaluation of this research by scientists from other fields as a basis for planning future educational research.

*Major objectives.*—The objectives are (1) to define the field of educational research, (2) to assess the level of scientific maturity of current educational research, and (3) to describe the level of theory development and utilization of research tools as guides to future educational research.

*Procedures and design.*—Phase I of this study will provide a description of educational research obtained in interviews with personnel in 50 organizations dealing with such research. The sample for this phase will include colleges and universities, foundations, and military, governmental, and other organizations involved in educational research. Data for this phase will be collected by interview, observation, and documentary analysis, with controls built into the interview instrument. Phase II of the study will consist of three 2-day sessions with representatives from various research and professional organizations and foundations. The first session will be devoted to a discussion of the results of the phase I survey; the second session, to a discussion of likely demands to be placed upon educational research in the future; and the final session to the implementation of a research effort to meet the coming need.

NICHOLAS A. FATTU, director of Institute of Educational Research, Indiana University, Bloomington, Ind.

Project No. 525.  
Duration: 1 year 10 months.  
October 1958 to August 1960.

## Development of a Theory of Education From Psychological and Other Research Findings

*Problem.*—This study attempts to develop a procedure which will lead to the formulation, revision, and final development of a broadly conceived theory of education based upon psychological and other relevant research findings.

*Major objectives.*—The objectives are (1) to determine important areas of educational theory requiring research, (2) to suggest modifications in educational policies and practices growing out of existing research, and (3) to reduce the lag between findings and the application of findings.

*Procedures and design.*—The first phase of the research will consist of gathering the results of relevant research and organizing the material into an initial draft of a theory of education based on research findings. This draft will then be presented to research specialists in education and related fields. This review will lead to revisions of the tentative theory. Small studies will be initiated in areas where little previous research has been conducted. In addition, attempts will be made to test crucial parts of the theory by doing small feasibility studies in classroom situations. The last phase of the program will involve a final revision of the theory based upon the current state of knowledge.

CALVIN W. TAYLOR, professor, Department of Psychology, University of Utah, Salt Lake City, Utah.

Project No. 621.  
Duration: 1 year 3 months.  
June 1959 to September 1960.

## An Empirical Investigation of the Effects of Nonnormality Upon the Sampling Distributions of the Product-Moment Correlation Coefficient

*Problem.*—This study proposes to determine by empirical means the sampling distribution of the product-moment correlation coefficient when the assumption of a bivariate normal distribution has not been met.

*Major objectives.*—The objectives are (1) to determine the effect which the lack of meeting the assumption of a bivariate normal distribution has upon the sampling distribution of the product-moment correlation coefficient, and (2) to determine what practical significance the assumption of a bivariate normal distribution is to the worker in educational research.

*Procedures and design.*—Populations of 10,000 IBM cards of both normal and nonnormal bivariate distributions will be established. The cards will then be arranged in random order by ordering random digits which will be punched on the cards. Samples will be obtained by counting off the number of cards needed for each sample, and the product-moment correlation coefficient will then be calculated for each sample. Sampling distributions of the product-moment correlation coefficient for the various populations will then be formed by repeated samplings. At least 3,000 samples for each sampling distribution will be obtained in an attempt to achieve precision. Obtained sampling distributions will then be compared with theoretical sampling distributions, and, as a check on the study procedure, the same method will be used to obtain a population in which the assumption of having a bivariate normal distribution has been met. Normal and nonnormal bivariate distributions will be established which have marginal distributions that would be normal, rectangular, leptokurtic, slightly skewed, and markedly skewed. Populations having correlations of approximately zero and approximately .75 will be established, and sampling distributions will be obtained for each population for sample sizes of 15, 30, and 90. A series of tables will be developed containing the sampling distributions of the product-moment correlation coefficients obtained under the various conditions described.

RAYMOND C. NORRIS, associate professor of psychology, George Peabody College for Teachers, Nashville, Tenn.

Project No. 637.  
Duration: 1 year.  
April 1959 to March 1960.

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