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Cooperative Research Projects

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by DAVID L. CLARK
Research Coordinator, Cooperative Research Program

and ALICE Y. SCATES
Research Analyst, Cooperative Research Program

U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE
Arthur S. Flemming, *Secretary*

OFFICE OF EDUCATION
Lawrence G. Derthick, *Commissioner*

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Foreword

BULLETIN 1958, No. 5, of the U.S. Department of Health, Education, and Welfare, Office of Education, reported on the research projects underway in the State departments of education and colleges and universities throughout the United States which were supported by the U.S. Office of Education in accordance with Public Law 531, 83d Congress. This is the second such report and summarizes the projects initiated in fiscal 1958. (Included in this report are several projects which were in the process of being contracted during fiscal 1958, although the official date at which they began may have been July or August 1958. They are included to eliminate unnecessary delays in reporting ongoing research.) The purpose of this bulletin is to let interested school people and researchers know something about the research being supported by the Cooperative Research Program of the Office of Education.

Most of the research reported in this bulletin is still underway. It is not appropriate, therefore, to discuss the findings. Additional reports will be made when the projects are completed. In the meantime, more information about these research projects and their preliminary findings may be obtained from the researchers themselves.

To aid the school people and the researchers in keeping abreast of the research underway, the present report will be supplemented by a quarterly bulletin which lists the research projects under contract, the institution with which the contract has been made, the name of the principal investigator conducting the research, and the amount of money invested by the Federal Government in the contract. This supplement is called *Projects Under Contract* and may be obtained by writing directly to the Office of Education, Division of Statistics and Research, Cooperative Research Program.

At the close of fiscal 1958, 14 projects had been completed. This represented 2 years of research support under the Cooperative Research Program of the U.S. Office of Education. As more projects are completed in the various areas of study, the findings will be analyzed, evaluated, and synthesized by the Office and reported on a regular basis.

ROY M. HALL,
Assistant Commissioner for Research.

INTRODUCTION

PUBLIC LAW 531, 83d Congress, 2d session, was enacted in 1954. For the fiscal year 1957, approximately $1 million was appropriated, thus making it possible to initiate the program in July 1956. The program met with such immediate response from researchers and the public generally that Congress appropriated $2,300,000 in the fiscal year 1958 and $2,700,000 in the fiscal year 1959.

The staff of the Cooperative Research Program, working with researchers in State departments of education and colleges and universities, specialists in the Office of Education, and educators generally, had, as of June 30, 1958, negotiated 133 contracts—53 in mental retardation and 80 dealing with other areas of education. These other areas include 13 research projects in the development of students' special abilities, 4 in educational aspects of juvenile delinquency, 8 in the retention of students in schools and colleges, 6 in the organization and administration of schools and colleges, 18 in staffing the Nation's schools and colleges, 1 in planning and costs of school construction, 1 in vocational education, 4 in educational problems resulting from population mobility, and 25 in various other aspects of education.

The Office of Education has under contract (pending appropriations of Congress in 1960, 1961, and 1962) research calling for $6,500,000 in Federal funds and an additional amount estimated at $2,500,000 contributed by participating State departments of education and colleges and universities in the form of personnel, services, and facilities. In summary, therefore, within a 2-year period, the Office of Education has, with the most enthusiastic cooperation of the State departments of education and the colleges and universities throughout the United States, initiated over $9 million worth of research on the most crucial concerns in the field of education.

During the fiscal year 1958 the Office received 172 applications for the support of projects under the Cooperative Research Program. The

Research Advisory Committee,* which met in October, January, and May, reviewed all of these applications and recommended 50 of them to the Commissioner for approval. The appropriation available for this second year was $2,300,000. Somewhat more than half was needed to continue the support of projects begun during the fiscal year 1957, and the remainder, approximately $960,000, was used for the initiation of new projects.

The Federal funds expended by the end of the first 2 years of operation of the Cooperative Research Program were disbursed in 32 different States and the District of Columbia. A total of 53 different colleges and universities had participated, as well as 12 State departments of education. The length of the project initiated ranged from 3 months to 5 years, with the average length about 2 years. In total cost the projects ranged from about $1,500 to $600,000. The average total cost was approximately $64,000 for projects on the mentally retarded and $38,000 for projects on other aspects of education. The average total cost for all projects was $49,000.

Some totals to indicate the growth of the Cooperative Research Program during its first 2 years, from July 1, 1956, to July 1, 1958

Proposals received and reviewed	490
Proposals recommended to the Commissioner by the Advisory Committee	158
Projects signed into contract	133

Total Federal funds obligated to bring the 133 projects to completion:[1]

	Projects	
Mentally retarded children	53	$3,396,098
Special abilities of students	13	415,066
Juvenile delinquency	4	140,440
Retention of students	8	325,764
School organization and administration	6	398,970

[1] Funds obligated for contracts running beyond the current fiscal year are of course contingent on Congress appropriating funds. Appropriations for the first 2 years totaled $3.3 million; and now $2.7 million has been appropriated to carry the program through June 1959.

*This Advisory Committee of nine members is made up of educational research specialists who evaluate the proposals and make recommendations to the Commissioner of Education. The members of the Committee during fiscal 1958 were:

RUTH E. ECKERT, professor of higher education, University of Minnesota.
FINIS E. ENGLEMAN, executive secretary, American Association of School Administrators.
CHESTER W. HARRIS, professor of education, University of Wisconsin.
FRANK HUBBARD, assistant executive secretary for information services, National Education Association.
ERICK L. LINDMAN, professor of school administration, George Peabody College for Teachers.
J. CAYCE MORRISON, assistant commissioner for research, N.Y. State Education Department (retired).
WILLARD C. OLSON, dean, School of Education, University of Michigan (Chairman of the Committee).
H. H. REMMERS, director, division of educational reference, Purdue University.
RALPH W. TYLER, director, Center for Advanced Study in the Behavioral Sciences, Stanford.

	Projects	
Staffing	18	$764,755
School construction	1	166,265
Vocational education	1	22,227
Population mobility	4	44,090
Miscellaneous:		
Physically handicapped children	3	128,160
Curriculum and instruction	9	198,822
Social environment and personality	8	270,938
Other	5	186,625
Total	133	[a] 6,458,220

[a] In addition to the Federal funds, there are contributions from the participating institutions in the form of services, facilities, and personnel amounting, on the average, to more than one-third of the total cost.

Even with this rapid expansion of effort in educational research, the imbalance between the amount of research done in the physical sciences and the social sciences increases. The National Science Foundation has estimated that $3½ billion were expended for research and development in the physical sciences in 1958, and less than 5 percent of that amount was expended for research and development in social science.

It seems obvious to physical scientists and social scientists alike that the unrest, the fears, the frustrations, the tensions, the self-destruction, and the waste of human resources going on throughout the world indicate that much more research on the definition and understanding of human behavior, and the application of the educative process to the modification of human behavior in positive and desirable directions, is needed. The Office of Education is now sponsoring a pilot study which will lead to a nationwide survey of the status of educational research. It is anticipated that when this survey is completed it will be evaluated by scientists, social scientists, and educators generally throughout the country in an effort to determine the direction that educational research should take and to suggest the role of the Department of Health, Education, and Welfare in this area.

This is the second report on educational research supported by the Office of Education under the Cooperative Research Program. Since this program has met with such immediate and enthusiastic response from educators, researchers, and the public generally, it may well be one of the beginnings of a great educational upheaval in these United States through which our educational enterprise will be undergirded with the kind of research that is necessary to give meaning and effectiveness to education. It is becoming increasingly obvious that to neglect needed research in education is wasteful of potential human resources. It is just as obvious that if enough research in education can be done and ways found to translate the research findings into educational policies and procedures, the future citizens of these United States will be benefited directly by qualitative improvements in the educative process.

SECTION I

Research on the Education of the Mentally Retarded

A Study of the Concerns and Rewards of Rearing Mentally Retarded Children

Problem.—The purpose of this study is to identify and measure the positive and negative aspects of child-rearing experiences of parents of mentally retarded children.

Major objectives.—The objectives are (1) to gain insight into the impact of mental retardation in families; (2) to ascertain what parental attitudes expressed by parents of mentally retarded children are related to such factors as IQ level, sex, chronological age, birth order, number of siblings, etc., of the child, as well as such factors as socio-economic status, educational level, marital and residential stability of the parents; and (3) to apply the findings of the study in regard to concerns and rewards of rearing mentally retarded children to the guidance program and curriculum for mentally retarded children and to the individual and group counseling program for parents.

Procedures and design.—The sample will include about 400 mentally retarded children divided into four subgroups—100 trainable children institutionalized, 100 trainable children living at home, 100 educable mentally retarded children attending public elementary schools, and 100 attending public secondary schools. The sample will be drawn from institutions and public school systems in southern California and will represent a wide range of social, economic, and cultural influences. The data will be gathered through direct interviews with the parents.

Ernest P. Willenberg, Acting Chief, Bureau of Special Education, State Department of Education, Sacramento, Calif.

Project No. 175.
Duration: 2 years 6 months.
July 1957 to December 1959.

Perception of Symbols in Skill Learning by Mentally Retarded, Gifted, and Normal Children

Problem.—In this study, the process of perceiving language symbols as cues for meaning, models for skill performance, and definitions of value perception will be investigated.

Major objectives.—The objectives are (1) to compare the performance on selected perceptual tasks of sampling populations of mentally retarded, average, and superior children; and (2) to analyze these findings in relation to their implications for the teaching-learning process.

Procedures and design.—The nature and function of the perceptual process (as defined in the statement of the problem) will be investigated as they appear to operate in the fundamental school learning tasks of writing, reading, spelling, and arithmetic. These aspects of perception will be studied as integrated functions within the total perceptual process involved in learning. A sample of 20 to 30 pupils at each of three IQ levels—(60–69), (96–109), and (130–139)—will be tested and studied intensively.

This is a continuation of Project No. 151 reported in *Cooperative Research Projects, Fiscal 1957*, Bulletin 1958, No. 5, on page 23.

VIRGIL E. HERRICK and THEODORE L. HARRIS, professors of education, University of Wisconsin, Madison, Wis.

Project No. 263.
Duration: 4 years.
July 1957 to June 1961.

Psychological Characteristics Underlying the Educability of the Mentally Retarded Child: I. Concept Formation and Transposition in Young Mentally Retarded and Normal Children as Indicators of Educability

Problem.—This study is designed to provide a basis for determining the educability of mentally retarded children through an investigation of their ability to learn concepts and transfer such learnings to a variety of appropriate situations.

Major objectives.—The objectives are (1) to investigate the measurement of concept formation and transposition in young mentally retarded children; (2) to compare this quantitatively and qualitatively with the development of these abilities in normal children; (3) to relate these abilities to the etiology of mental retardation; and (4) to identify changes, if any, in the development of these abilities with advance in the chronological and mental age of mentally retarded children.

Procedures and design.—A study group of 66 institutionalized mentally retarded students and 174 public school children (aged 3–11) will

be used. The IQ range in the study group will be 20–79; in the control group 90+. Perceptual data will be gathered through a series of tests such as the Training Series in Concept Formation and the Transposition Test Series which will be applied to the study groups.

Analysis of variance of scores on training and test series will be used to determine the effect of such factors as the following and their interactions: normal vs. mentally retarded, endogenous vs. exogenous within retarded group, immediate vs. delayed testing, distance of test series from training series, MA, CA, IQ, sex, period of institutionalization.

WILLIAM E. MARTIN, professor of education, and ABRAHAM H. BLUM, assistant professor of education, Purdue University, Lafayette, Ind.

Project No. 266.
Duration: 1 year.
September 1957 to August 1958.

Identification of Mentally Retarded Children in Wyoming Through Objective Statewide Screening

Problem.—This study seeks to investigate the feasibility and validity of the identification of mentally retarded children in Wyoming through objective, statewide screening.

Major objectives.—The objectives are (1) to ascertain the extent to which misplacement of children occurs in the schools and institutions of Wyoming in regard to mental retardation, (2) to identify the mentally retarded children in Wyoming; and (3) to demonstrate the feasibility of a systematic, inclusive program on a statewide level for the identification of the mentally retarded.

Procedures and design.—A group mental test will be applied to all children (aged 6 to 17) in Wyoming. To approximately one-half of the cases in the lowest portion of the distribution of those tested, an individual test will be applied. The individual test will be supplemented by other available data regarding the child; for example, achievement tests, medical and social histories, and psychiatric examinations. The data for each child will be interpreted with respect to the degree of mental retardation and appropriateness of educational classification.

VELMA LINFORD, State Superintendent of Public Instruction, State Board of Education, Cheyenne, Wyo.

Project No. 313.
Duration: 1 year.
October 1957 to October 1958.

Measurement of Educability of Severely Mentally Retarded Children

Problem.—The purpose of this study is to investigate the possibility of establishing an objective, quantified, predictive measure of educability for severely mentally retarded children.

Major objective.—The objective is to test the hypothesis that the educability of the severely mentally retarded child can be inferred from his responses to learning situations designed to study abilities fundamental to education; specifically, the ability to learn under training, to transfer the training, and to retain the learning.

Procedures and design.—Two samples will be used in the study—a pilot group of 25 and a final group of 100. They will be drawn from noninstitutionalized, severely mentally retarded children who attend special classes in the New York Metropolitan area. The subjects will be tested on such bases as color, shape, and size discrimination, initiation, and memory without training. They will then be trained to the correct responses and retested. Retention scores will be obtained by retesting the children at later dates. The effect on test performance of other variables within the population will also be studied.

HOWARD NEWBURGER, associate professor, New York University, New York, N.Y.

Project No. 832.
Duration: 1 year.
April 1958 to April 1959.

A Study of the Modification of Parental Attitudes Toward and Understanding of Mentally Retarded Children

Problem.—In this study the effect of intensity of contact with personnel of a day care center is compared with varying methods of counseling in assisting parents of trainable retarded children to adjust to the family problems occasioned by the retardation.

Major objectives.—The objectives are (1) to compare attitude change among parents who obtain counseling through (*a*) incidental contacts with personnel in a day care center and (*b*) a small group discussion meeting held regularly at the day care center; (2) to compare attitude change among students whose parents are subjected to the varying counseling patterns; (3) to compare factual information gains among the three parent groups; and (4) to analyze the change among parents in the three groups in relation to the personality of the parent, the parent's level of education, and the severity and type of defect of the child.

Procedures and design.—The subjects will be the parents of trainable children aged 4 through 10 with IQ's ranging from 30 to 50 who attend a day care center in Minneapolis. Ten families (20 parents) will be randomly assigned to participation in each of the 3 groups. A fourth group of 25 families having no contact with professional workers will serve as a control group. Data collection on parents and children will include intelligence tests, information tests, attitude schedules, PARI, MMPI, observation in free and standard settings,

and evaluation of clinicians. The experiment will be replicated with similar groups in St. Paul, Minn.

DALE B. HARRIS, Director and Professor, Institute of Child Development and Welfare, University of Minnesota, Minneapolis 14, Minn.

Project No. 365.
Duration: 1 year 5 months.
April 1958 to August 1959.

Development of a Program for Educable Mentally Retarded Children in Rural Schools

Problem.—This study seeks to investigate the feasibility of using persons trained in identifying and teaching educable mentally retarded children to supplement the work of regular classroom teachers in attempting to establish adequate testing and teaching programs for educable mentally retarded children in sparsely populated rural areas.

Major objectives.—The objectives are (1) to investigate the effect of such a program on the academic achievement and social maturity of educable mentally handicapped children; (2) to test the effect of such a program on the inservice training of regular classroom teachers; and (3) to determine whether such a program is financially practicable in rural areas.

Procedures and design.—In each of 20 selected communities, all children aged 7 through 14 will be tested by a mobile staff of specialists. In 10 of the communities an experimental research teacher will conduct a special class once a week for educable mentally retarded children as identified through the testing program and will meet with the regular classroom teachers once a week. For the remainder of the week the children and classroom teachers will work in regular classroom situations. In the other 10 communities the educable mentally retarded children will remain in their regular classrooms with no special help. At the beginning and end of the 1958–59 school year, the educable mentally retarded children in these 20 communities will be tested for achievement and social maturity.

PHILLIP A. ANNAS, Executive Director, Division of Instruction, Maine State Department of Education, Augusta, Maine.

Project No. 382.
Duration: 1 year 6 months.
April 1958 to September 1959.

Achievement Motivation in Normal and Mentally Retarded High School Children

Problem.—This study proposes to investigate the conceptual and practical status of the achievement motive in a population of mentally retarded children.

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Major objectives.—The objectives are (1) to compare the level of achievement motivation between a group of mentally retarded high school students and a group of normal high school students; (2) to compare relationships found within each of the groups between achievement motivation and intelligence, and school performance; (3) to compare the level of achievement motivation of mentally retarded children in special classes with those not in special classes; and (4) to attempt to evaluate a composite measure of motivation and intelligence which will have value in predicting school performance.

Procedures and design.—The comparison will be made using a control group of 50 students in randomly selected normal classes and 2 experimental groups of 50 educable mentally retarded students in special classes and 50 not in special classes. Measures of achievement motivation, derived from projective materials, and measures of intelligence and academic achievement will be obtained and analyzed.

RICHARD DE CHARMS and THOMAS E. JORDAN, assistant professors of education, Washington University, St. Louis, Mo.

Project No. 390.
Duration: 10 months.
March 1958 to January 1959.

A Preliminary Exploration of Factors Associated With School Holding Power for Educable Mentally Retarded Adolescents

Problem.—In this study an exploratory examination will be undertaken of the school history of a sample of educable mentally retarded adolescents in order to identify factors which are related to school dropout among such students.

Major objectives.—The objectives are (1) to provide data which will be helpful in determining what percentage of educable mentally retarded children complete the high school program and what factors contribute to their continuance in school or to their leaving school early; (2) to investigate the points in the secondary school program where attrition of such students is highest; and (3) to relate the incidence of educable mentally retarded children's leaving school early to the State compulsory attendance law.

Procedures and design.—Two samples will be used in the study. The first will be drawn from students who were in the eighth and ninth grades in the Kansas City public schools in 1952. The second will involve current 10th-grade students who will be followed up for the next 3 years of their school experience in Kansas City. The former group will be composed of approximately 400 subjects; the latter, 200. The data being gathered will include achievement, individual and group intelligence test scores, subject grades, teacher rating on per-

sonality traits, health history, school progress, family data, pupil participation in activities, etc. Intensive interviews will be conducted with the subjects who can be located.

CLYDE J. BAER, Director, Division of Research, Kansas City Public Schools, Kansas City, Mo.

Project No. 408.
Duration: 2 years 10 months.
April 1958 to January 1961.

The Measurement of Sensory Thresholds in Exceptional Children

Problem.—This study is designed to devise new procedures for measuring auditory acuity in young mentally retarded children.

Major objectives.—The objectives are (1) to test whether or not the reported high incidence of hearing loss for pure tones in mentally retarded children is an artifact of the method of measurement, and (2) to devise new procedures for measuring auditory acuity in young mentally retarded children.

Procedures and design.—Operant conditioning techniques will be applied to trainable mentally retarded children, normal children, and physically handicapped children in the measurement of pure tone hearing thresholds. Results will be compared with the thresholds obtained previously by audiometrists experienced in examining exceptional children with conventional methods. The first sample will be drawn from children aged 10 through 14. This age group will be extended downward later in the study.

LEE MEYERSON, professor of psychology, and JOHN L. MICHAEL, assistant professor of psychology, University of Houston, Houston, Tex.

Project No. 418.
Duration: 1 year 6 months.
June 1958 to November 1959.

Studies of the Effects of Systematic Variations of Certain Conditions Related to Learning. I. Conditions of Reinforcement

Problem.—The purpose of this study is to evaluate the effect of systematic variations of selected conditions of reinforcement on learning performance.

Major objective.—To determine the actual and relative effect of systematic variations in the conditions of reinforcement upon the learning performance and levels of aspiration of mentally handicapped, intellectually normal, and gifted children.

Procedures and design.—The sample will consist of 405 subjects in three groups. Mentally handicapped subjects will be selected from the IQ range of 50 to 80; normal, 90 to 110; and gifted, 120 plus. The subjects will fall in the mental age range of 9 through 12. Socio-

economic status will be held constant for the three groups and none of the subjects will have severe emotional problems or uncorrected physical or sensory limitations. Eight tests will be administered to the subjects. These will include a verbal and a concrete test form of tasks assumed to involve conditioned response learning, discrimination and rote learning, and problem solving. The proposed conditions of reinforcement will be controlled by type, frequency, and time of introduction. The analyses of data will involve comparisons within and between intelligence groups.

KATHRYN A. BLAKE, assistant professor of special education, Syracuse University, Syracuse, N.Y.

Project No. 470.
Duration: 1 year 4 months.
June 1958 to September 1959.

SECTION 2

Development of Students' Special Abilities

The Educational Motivation Patterns of Superior Students Who Do and Who Do Not Achieve in High School

Problem.—This study seeks to discover and analyze significant differences in motivational patterns and the educational achievement of talented students.

Major objectives.—The objectives are (1) to determine the differences in motivation toward academic achievement between those who achieve and those who do not; (2) to determine the difference between achievers and nonachievers in relation to their self-concept, developmental history and home background, social adjustment, peer relationships, and parent's social status; (3) to determine the relationship between achievement and nonachievement among students of high ability and their continuation of study beyond high school; and (4) to determine the difference, if any, between the patterns of educational motivation of boys and girls.

Procedures and design.—The population studied will consist of the upper 30 percent of the 10th and 12th grades in the Quincy, Ill., public schools. The n will be 230 and the selection of subjects will be made on the basis of IQ scores. The achievement measure will be based on the grade-point average attained in academic subjects. Data on motivation will be gathered through the use of a variety of standard instruments, i.e., McClelland's TAT. Further data on the students will be gathered from home interviews and testing. An analysis of variance and other appropriate tests of significance will be used to compare achievers and nonachievers.

Paul H. Bowman, associate professor,
University of Chicago, Chicago, Ill.

Project No. 208.
Duration: 2 years.
July 1957 to June 1959.

A Survey and Followup Study of Educational Plans and Decisions in Relation to Aptitude Patterns

Problem.—The purpose of this study is to investigate educational and occupational plans and goals among high school students and the relation of these plans and goals to the aptitude patterns of the students.

Major objectives.—The objectives are (1) to inventory the educational and occupational goals, preferences, attitudes toward advanced education, plans and conditions for changing plans, and appropriate biographical data of a sampling of high school students; and (2) to relate these data to students' aptitude patterns.

Procedures and design.—Five percent of the total secondary school population (9 through 12) in the United States will be surveyed by questionnaire in regard to their plans, preferences, attitudes, and biographical data. These data will be compared with students' aptitudes, interests, and personality characteristics, as obtained in parallel studies to be conducted by the investigator. Each of the students in the sample will be followed up 1 year after graduation from high school to compare actual decisions and choices with earlier preferences and plans. The questionnaire and inventory forms for the study will be developed by the project staff, an executive committee, and an advisory panel composed of national leaders in education, psychology, and related disciplines.

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

Project No. 226.
Duration: 5 years.
July 1957 to June 1962.

A Pilot Study in Developmental Guidance at the Elementary School Level

Problem.—This study is designed to evaluate the developmental progress of children in an ungraded primary school program.

Major objective.—The objective is to determine whether children in an ungraded primary system, whose differences are taken into account and provided for through refined guidance techniques, will progress more satisfactorily than in the traditional graded system.

Procedures and design.—The experimental subjects will be six groups of children in the Minquadale School, Rose Hill-Minquadale School District, New Castle, Del. The performance of this group of children will be compared with performance in the primary grades in the same school when it was operating with a traditional school program. Data regarding the subjects will be gathered through teacher

observation of pupil health and behavior symptoms; pupil maturation based on physical examinations and X-rays; tests of intelligence, achievement, aptitudes, and interests; case conferences with parents and teachers; and the like.

MARTHA M. HEFFERNEN, Division of Child Development and Guidance, State Department of Public Instruction, Dover, Del.

Project No. 273.
Duration: 4 years.
September 1957 to August 1961.

Attitudes of High School Students as Related to Success in School

Problem.—The purpose of this study is to clarify understanding of the specialization of the interests and attitudes of high school students and the relation of these mental constructs to academic achievement.

Major objectives.—The objectives are (1) to define attitudes which lead to intrinsic interest in subject matter content; and (2) to develop an instrument for scaling the defined attitudes.

Procedures and design.—Preliminary item analysis and selection will be based on a sample of 92 high school science students. Followup on a revised questionnaire will be administered to 325 high school science students enrolled in a college preparatory course. A final sampling will be made of 3,750 students from the San Francisco Bay area. The associations between attitudinal variables, relative achievement in various school subjects, and vocational and educational aspirations among this group of high school students will be investigated. The partial associations among these variables in subgroups, homogeneous with respect to age, sex, socioeconomic status of parents, and IQ, and the interrelationships between these and other variables, will be analyzed. Data on students will be gathered through the use of a Lickert-type attitude inventory, structured questionnaire, nondirective interview, and extant records.

T. BENTLEY EDWARDS, associate professor of Education, University of California, Berkeley, Calif.

Project No. 274.
Duration: 1 year.
August 1957 to July 1958.

The Identification and Classroom Behavior of Elementary School Children Each of Whom Is Gifted in at Least One of Five Different Characteristics

Problem.—This study seeks to improve the selection of, and program for, gifted elementary school children.

Major objectives.—The objectives are (1) to develop methods of measurement to be used in the identification of elementary school

children gifted in one or more of the following respects: verbal facility, spatial orientation, numerical facility, logical reasoning ability, and science; (2) to develop an elementary school curriculum suitable for children gifted in one or more of the above-mentioned respects; and (3) to assess the effect of the selection procedure and the specialized program on the social and mental development of children with diverse talent patterns who are enrolled in a common program.

Procedures and design.—Measuring instruments will be constructed for the selection, beginning at the kindergarten level, of children who exhibit giftedness in one of the five respects mentioned. Pretesting of the instruments will be conducted during the first year of the project, with 370 subjects, from which 25 will be chosen (5 with outstanding talent in each area) to compose a class for the gifted at Hunter College Elementary School. Further testing of the instruments, with 200 additional children, and the selection of 2 more classes to complete the formation of the experimental group will be undertaken the following year. A special teaching program will be developed for use with these three sections. The control group will be composed of classes selected for entrance to the Hunter College Elementary School (a school for gifted children) through conventional means (IQ scores) and taught by techniques currently used with classes of gifted children. Evaluation of social and mental development will be made through structured observation, achievement and aptitude testing, and sociometric techniques.

FREDERICK B. DAVIS, professor of education, and GERALD S. LESSER, assistant professor of education, Hunter College, New York, N.Y.

Project No. 297.
Duration: 2 years.
September 1957 to August 1959.

Identification and Development of Talent Among High School Students in Regular Classes

Problem.—This study is designed to investigate the problem of providing for individual differences within the heterogeneously grouped secondary school class.

Major objectives.—The objectives are (1) to develop a conceptual model of talent in adolescence; (2) to identify "indices of talent" that manifest themselves in the behavior of students as they are involved in the general education program (grades 7–12), and (3) to investigate the development of talent, the relation of talent to social climate and the uniqueness of talent in subject areas.

Procedures and design.—The first phase of the study will center around the definition of talent in fields of specialization by experts from the various disciplines and the synthesis of prior research in child

development relating to the refinement of the concept of talent in adolescence. Students at the Ohio State University School will be identified as talented through teacher judgment and observation; cumulative records; intelligence, achievement, and personality tests; etc. These students will be studied intensively through clinical interviews and other appropriate techniques.

PAUL R. KLOHR, assistant dean, College of Education, Ohio State University, Columbus, Ohio.

Project No. 320.
Duration: 1 year 6 months.
January 1958 to June 1959.

Differences Between Good and Poor Problem Solvers

Problem.—The purpose of this study is to discover the variables which discriminate among good and poor problem solvers at below average, average, and above average intelligence levels.

Major objectives.—The objectives are (1) to isolate observable variables which discriminate between good and poor problem solvers at the junior high school level; and (2) to relate these discriminating variables to intelligence levels.

Procedures and design—Group tests of problem-solving ability and general intelligence will be administered to 600 junior high school pupils in schools near Philadelphia. On the basis of these results, and pupil achievement records, 30 to 50 relatively good and poor problem solvers will be selected at each of several levels of tested intelligence. These groups will be tested for attitude toward problem-solving activities and for such abilities as testing hypotheses, estimating, abstracting and generalizing, locating and eliminating errors, and breaking from set. Five to ten good and poor problem solvers will be selected at each of several levels for intensive individual testing.

MERLE W. TATE, professor of education, University of Pennsylvania, Philadelphia, Pa.

Project No. 368.
Duration: 1 year 4 months.
April 1958 to August 1959.

The Specialization of Attitudes as Related to Academic Success at Varying Academic Levels

Problem.—In this study, the educational subject-matter preference and interest of students as related to their academic success will be investigated.

Major objectives.—The objectives are (1) to investigate the educational experiences and academic success of students with varying attitudes, interests, and aspirations at different educational levels; (2) to compare the academic success and educational experiences of

children with their subject-matter preferences; and (3) to collect initial data for a panel study of the educational and vocational disposition of elementary and high school students of varying interests and abilities.

Procedures and design.—The investigation will be initiated by intensive study of the attitudes and reasoning activities of individuals at varying levels, using written and oral protocols and observations. Data to be gathered in regard to subjects will include subject area grades, personal data, educational and vocational aspirations, standardized achievement scores in mathematics and science, group and individual tests on interests and attitudes. The elementary school experience of subjects will be assessed by a case study method.

T. BENTLEY EDWARDS, associate professor of education, University of California, Berkeley, Calif.

Project No. 379.
Duration: 2 years 11 months.
August 1958 to June 1961.

The Identification of Gifted Elementary School Children With Exceptional Scientific Talent

Problem.—This study proposes to identify children in the top 2 percent of their age category with respect to science aptitude.

Major objective.—The objective is to construct a test of science aptitude for individual administration to young gifted children and to obtain preliminary evidence of its validity.

Procedures and design.—Fifteen subtests will be constructed around components of science aptitude. Item analysis of questions will be based on a sampling of 370 children. Selected children (30) obtaining the highest overall scores on the test will form an experimental grade group at Hunter College Elementary School. Other elementary grade classes at Hunter will serve as control groups. Cumulative records of science aptitude and science achievement will be maintained on the experimental and control groups. Original test item scores will be reanalyzed on the basis of predictive value in science achievement.

FREDERICK B. DAVIS, professor of education, and GERALD S. LESSER, assistant professor of education, Hunter College, New York, N.Y.

Project No. 392.
Duration: 1 year 9 months.
July 1958 to March 1960.

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

Problem.—This study seeks to advise an economical and practical method of providing more effective educational opportunities for gifted children in rural areas and small communities.

Major objective.—The objective is to test the effectiveness of an experimental 8 weeks' summer program in providing increased educational opportunities for gifted children in rural areas and communities of less than 10,000 in population.

Procedures and design.—Three groups, made up of 60 fifth-graders each, will be established for the experiment. Group A will attend an 8-week summer session for which a special curriculum will be prepared. Group B, a control group, will be attending public schools with representative enriched programs for the gifted. Group C, a control group, will be attending schools which give no organized attention to the gifted. Children in all 3 groups will have IQ's above 120. Other relevant variables will be controlled. Comparisons will be made on pretest and posttest achievement, ability and interest tests and inventories, personal interviews, questionnaires, and extant data.

T. A. LAMKE, coordinator of research and assistant to dean of instruction, Iowa State Teachers College, Cedar Falls, Iowa.
ARTHUR J. LOOBY, assistant professor of psychology, Iowa State Teachers College, Cedar Falls, Iowa.
ARTHUR C. ANDERSON, supervisor, research and publications, Iowa State Department of Public Instruction, Des Moines, Iowa.

Project No. 423.
Duration: 1 year 3 months.
March 1958 to June 1959.

SECTION 3

RETENTION OF STUDENTS IN SCHOOLS AND COLLEGES

A Study of the Motivations of Youth for Leaving School

Problem.—This study proposes to investigate factors related to the motivations of youth during their developmental years and the ultimate influence of such factors on the decisions of students to leave or remain in school.

Major objectives.—The objectives are (1) to identify the characteristics of school dropouts as contrasted with those who stay in school; (2) to investigate experiences which lead to school leaving; (3) to determine the perceptions of school-leavers regarding their school experiences; and (4) to investigate what school-leavers do after they leave school and how successful their adustment is to the adult world.

Procedures and design.—The population of subjects will include approximately 400 students who were in the ninth grade in the Quincy, Ill., public schools during the school year 1954–55. Data regarding these pupils will be gathered from school records and from records of court, police, and welfare agencies. These data will be supplemented by intelligence, personality, and achievement test scores, sociometric information, teacher ratings of behavior, and personal interviews with each student who has left school approximately 6 months after he dropped out. This same group of students has been involved in another study conducted by the University of Chicago, and many data have already been collected on these pupils for the last 5 years. Interviews will also be held with employers of all who dropped out and who are now working.

PAUL H. BOWMAN, associate professor,
University of Chicago, Chicago, Ill.

Project No. 200.
Duration: 2 years.
July 1957 to June 1959.

Investigation of the Use of Statistics in Counseling Students

Problem.—In this study the potential validity of certain statistical data for use in counseling students who are choosing major fields of study will be investigated.

Major objective.—The objective is to evaluate the extent to which the use of an index, combining prediction techniques and classification procedures, in counseling first-year college students in regard to choice of a major field may increase the proportion of such students who ultimately graduate.

Procedures and design.—The sample will include approximately 1,200 students who entered MIT as freshmen from secondary schools in 1952 and 1953. The validation group will include about 700 entrants in 1954. For these students, data will be collected regarding secondary school grades, rank and type of school attended, College Board scores, intended college major at time of application and matriculation, and first semester grades at MIT (independent variable); and grade average at MIT, college major in last semester of attendance, and when and if bachelor's degree was earned (dependent variables). Regression analysis will be used to derive a prediction of chances for graduation given membership in a particular major. Discriminant analysis will be employed to derive the probability of membership in a particular major.

ROBERT E. HEWES, registrar, Massachusetts Institute of Technology, Cambridge, Mass.

Project No. 336.
Duration: 1 year 6 month.
January 1958 to June 1959.

SECTION 4

Organization and Administration of Schools and Colleges

Problems of Adjustment of Indian and Non-Indian Children in the Public Elementary Schools of New Mexico

Problem.—The purpose of this study is to find the best means for facilitating the adjustment of Indians and non-Indians in the public elementary schools of New Mexico, taking into consideration differences in culture, value systems, language, motivations, and behavior.

Major objectives.—The objectives are (1) to delineate differences between Indian and non-Indian children in culture, basic beliefs and ideals, attitudes, etc., which need to be understood by teachers in order to work constructively with these children in the teaching-learning situation; (2) to assist the classroom teacher in arriving at suitable responses to child behavior in view of these differences; (3) to modify or adjust school curricula with respect to learning experiences appropriate to children with varied cultural backgrounds; (4) to adapt teaching methods to the understanding of the cultural differences; and (5) to improve the teacher-education program in the light of the unique problems dealt with in schools where Indian children are enrolled.

Procedures and design.—A basic statement of definition and explanation of cultural differences in New Mexico will be prepared for teacher use, based on an interdisciplinary approach to the problem (educational, sociological, anthropological, psychological). Two to six pilot schools where integration is occurring will be selected as the experimental group for descriptive study. The teachers in these schools will be assisted in relating the defined cultural differences to their classroom procedures, and these school situations will be described in terms of teacher methodology, teacher-pupil behavior, parent participation, and measures of achievement. Objective measures on the subjects, including sociometric studies, standardized read-

ing test scores, measures of oral language communication in English, etc., will be gathered. The control group will be drawn from other Indian and non-Indian classroom situations, Indian classrooms supervised by the Indian Service, and public school classrooms enrolling no Indian children.

MILES ZINTZ, associate professor of elementary education, University of New Mexico, Albuquerque, N. Mex.

Project No. 275.
Duration: 3 years.
August 1957 to July 1960.

Community Understanding as a Factor in the Financial Support of Public Education

Problem.—This study seeks to determine whether or not citizens would give adequate financial support to education if they were fully informed of the need, and whether current communications techniques are effective in adequately informing the public about school needs.

Major objectives.—The objectives are to identify and analyze (1) the socioeconomic factors which elicit community financial support for public schools; (2) the attitudinal and behavioral characteristics of selected communities which have histories of success or failure in supporting public education; (3) the communication techniques which have proved effective or ineffective in eliciting community financial support for public schools within a given socioeconomic pattern; and (4) the problems associated with increasing lay participation in school activities.

Procedures and design.—The first phase of the study will explore and define the socioeconomic and attitudinal characterics which are present or absent in community behavior toward local school financial support, and the interrelation and interactions of the school administration and the community in cases of observable administrative success or failure. The sample for the study of the latter will be 100 selected school systems in which instruments for defining this interaction will be tested. An intensive study of public attitudes will be conducted in one selected school system, and instruments to measure these factors will be pretested in this situation. The second phase of the project, designed to test and validate further the instruments, will involve intensive case studies of school systems involved in (1) a hotly contested bond or tax campaign, and (2) the dismissal of a superintendent for reasons connected with the issues here under study; two communities in different sections of the country in which school-community relations appear to be excellent; and a survey of one or two sets of paired communities of similar socioeconomic status but contrasted by opposite histories of financial support for public education.

A study of a single community with a sample of 800 husband-wife pairs will also be undertaken to investigate the "psychology of participation" in school affairs.

WILLIAM R. ODELL, Professor of Education, Stanford University, Stanford, Calif.

Project No. 308.
Duration: 2 years 11 months.
August 1957 to June 1960.

Effects of Population Trends and Social Change on Educational Institutions in the State of Washington

Problem.—This study proposes to analyze the impact of social, economic, and population factors on the schools in the State of Washington.

Major objective.—The objective is to determine relationships between changes in basic social, ecological, and demographic conditions and trends in the growth, function, organization, and policies of educational institutions.

Procedures and design.—The State will be grouped into logical and relatively homogeneous territorial components. Population and enrollment trends for these small areas will be studied and related to the underlying ecological and demographic factors that are responsible for these changes. Where data are available, facts and factors in institutional changes in response to community change will be analyzed. Data will be obtained from census tract publications and tabulations, private and parochial reports to the Washington Department of Public Instruction, official records, files, interviews, and observation.

CALVIN F. SCHMID, Director, Office of Population Research, University of Washington, Seattle, Wash.

Project No. 309.
Duration: 1 year 3 months.
September 1957 to November 1958.

The Development of Fiscal Relationships of State Departments of Education

Problem.—The purpose of this study is to provide a means to determine, in detail, how State departments of education operate fiscally within State governments, including the practices, traditions, laws, and regulations which govern the fiscal relationships of State education departments.

Major objective.—The objective is to develop an instrument for use in investigating the fiscal relationships of State departments of education.

Procedures and design.—An instrument for investigating the fiscal relationships of State departments of education will be developed by the project staff, reviewed by an advisory committee and consultants

in school finance, and tested in four or five States. The instrument will be refined on the basis of analysis after use in these field experiences.

SAMUEL E. BURR, JR., Chairman, Department of Education, and Chairman, Division of Education and Communication, American University, Washington, D.C.

Project No. 341.
Duration: 8 months.
February 1958 to September 1958.

Long-Term Study of Educational Effectiveness of Newly Formed Centralized School Districts in Rural Areas

Problem.—This study seeks to determine whether the type of school district organization in rural communities is related to the outcomes of the school.

Major objectives.—The objectives are to determine the effect of reorganized and nonreorganized school districts in relation to (1) the provision of educational opportunities; (2) the achievement of educational objectives; (3) the cost of providing the opportunities and reaching these objectives; and (4) the changes produced in community and neighborhood social structure and processes.

Procedures and design.—The sample will be 10 Wisconsin communities—5 with reorganized and 5 with nonreorganized school districts. The communities in the two groups will be matched on the basis of such factors as wealth, population, topography, type of farming, propinquity to urban areas, size, and density of population. All first-grade children in these communities (circa 700) will be studied. Longitudinal studies of these children will extend well past the termination date of this project—they will be restudied intensively at grades 6, 9, and 12 and also 5 years after their graduation from high school. A wide range of data will be gathered on the teachers, students, administrators, and community characteristics of the ten districts.

BURTON W. KREITLOW, Professor of Education, University of Wisconsin, Madison, Wis.

Project No. 375.
Duration: 3 years 3 months.
April 1958 to June 1961.

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SECTION 5

STAFFING THE NATION'S SCHOOLS AND COLLEGES

The Identification and Measurement of Secondary School Homemaking Teachers' Attitudes and Other Characteristics Associated With Their Ability to Maintain Desirable Learning Situations

Problem.—The purpose of this study is to identify attitudes and other characteristics of secondary school homemaking teachers which are related to their ability to establish and maintain a desirable learning atmosphere.

Major objectives.—The objectives are (1) to determine the relation of home economics teaching competencies to teachers' attitudes toward pupils, families, communities, coworkers, the profession, and the subject matter; (2) to supplement the currently available instruments for measuring the ability of home economics teachers to create the sort of classroom atmosphere conducive to learning; (3) to develop a profile sheet identifying the patterns of home economics teacher characteristics which are found to be related to the ability to maintain a desirable learning atmosphere; and (4) to establish home economics teacher norms on the psychological variables identified as those relating to teaching competence.

Procedures and design.—An item pool for the measurement of attitudes and characteristics will be developed, based on such sources as already established attitude, opinion and value instruments, opinions of high school administrators and home economics supervisors, and evaluative devices used by schools and colleges. Two groups of home economics teachers will be identified (effective and ineffective) based on ratings of home economics supervisors and pupils. The trial items will be administered to the subjects. A refined inventory of items will be administered to a random sampling of home economics teachers for further validation of the instrument. Criteria for validation in the random sample will include such items as: teacher self-evaluation, Johnson Interest Inventory, Ohio Acceptance of Families

Inventory, Minnesota Teacher Attitude Inventory, scores on The Teaching Evaluation Record, etc.

ROXANA R. FORD, professor of home economics education, and CYRIL J. HOYT, associate professor of education, University of Minnesota, Minneapolis, Minn.

Project No. 244.
Duration: 3 years.
July 1957 to June 1960.

The Logical Structure of Teaching and the Development of Critical Thinking

Problem.—This study seeks to discover and describe conditions favorable to the improvement of critical thinking in the high school classroom.

Major objectives.—The objectives are (1) to develop procedures by which teachers can be more effective in improving the ability of students in critical thinking; and (2) to discover what teachers themselves should be taught to assist them in influencing the ability of their students in the area of critical thinking.

Procedures and design.—The first phase of the study will involve the formulation of categories of teaching procedures which engage the higher mental processes and analysis of each procedure to determine its logical structure. Two groups of teachers will be investigated during this phase, those who are successful and those who are unsuccessful in teaching their students to think critically, identified on the basis of data gathered in a previous study conducted by the investigator. Each of the teacher groups will be further classified on the basis of the logical procedures they employ and the degree and correctness with which they develop them. Data will be gathered by means of tape recordings made in the classroom, checklists recording information on materials, etc. The second phase of the study will be conducted only with teachers judged unsuccessful in teaching critical thinking. They will be retrained and the effectiveness of the retraining will be measured by pre- and post-tests of pupil improvement in critical thinking. Student experimental and control groups will be set up for this testing procedure.

B. OTHANEL SMITH, professor of education, University of Illinois, Urbana, Ill.

Project No. 258.
Duration: 5 years.
September 1957 to August 1962.

Career Conflicts in School Systems: A Comparative Study

Problem.—In this study, the nature of the tensions and conflicts between the career goals and motivations of professional personnel in a school system will be investigated.

Major objective.—The objective is to investigate the distinctive characteristics of a school system as contrasted with a business organization and the effect of this distinctiveness on the nature of tensions and conflicts on job performance, career goals, and career patterns.

Procedures and design.—The sample will include a public school system and a business firm in the same community. Personnel in both organizations will complete questionnaires directed toward obtaining data on personal career goals, role conflicts, and perceptions of the objectives of the institution. A smaller sample of administrators will be interviewed about their perceptions of institutional goals and about criteria for the evaluation of organizational effectiveness and individual performance. The samples from each organization will allow for such variables as sex, age, marital status, and education.

JOHN L. COLOMBOTOS, research fellow, social science research project, University of Michigan, Ann Arbor, Mich.

Project No. 330.
Duration: 1 year 6 months.
December 1957 to May 1959.

Characteristics of Teacher Behavior and Competency Related to the Achievement of Different Kinds of Children in Several Elementary Grades

Problem.—This study proposes to investigate the influence of teachers exhibiting different patterns of behavior on the achievement of children with different personality types and levels of intelligence.

Major objectives.—The objectives are (1) to determine the various kinds of teacher behavior which are associated with the achievement of children of several rather different kinds of personality and levels of intelligence; and (2) to determine predictors of those teacher behaviors associated with the achievement of the different kinds of children.

Procedures and design.—The sample will include approximately 1,500 children (grades 3 through 6) and 60 classes in the New York Metropolitan area. The selection of the sample will provide a wide range of socioeconomic levels among the children and teaching competencies among the teachers. The latter will be determined by supervisor's opinions. Data gathered will include: for children, personality description, pre- and post-test achievement scores, sociometric evidence, and IQ; for teachers, observation of behavior, personality description, academic interest, and informational background. The data obtained will be analyzed in relation to achievement gain by the children.

LOUIS M. HEIL, Director, Office of Testing and Research, Brooklyn College, Brooklyn, N.Y.

Project No. 352.
Duration: 2 years.
February 1958 to January 1960.

Development of Means for the Assessment of the Quality of Teaching in the Elementary Schools

Problem.—The purpose of this study is to define and describe good teaching and the process by which it can be determined with reliability.

Major objectives.—The objectives are (1) to determine what differences in teaching profiles or patterns may be formed among elementary teachers who are judged to be good teachers; (2) to identify teaching acts that are more characteristic of good teachers than less adequate teachers, that tend to ameliorate the power component of the teacher, that result in positive affectivity rather than negative, and that are most directly related to the promotion of democratic citizenship in the world today; and (3) to validate a description of good teaching and to build an instrument for the analysis of the teaching act.

Design and procedures.—The first phase of the study will be case studies of four teachers judged superior. Paired observers will gather the data on each teacher through four 30-minute observations. Standardized achievement and intelligence test data on the students in the four classes will be taken from school records. Several standardized instruments will be administered to the children to determine their perception of the situation. Phase two of the study will involve a sample of approximately 50 teachers judged to be good teachers. The data-gathering procedures will be essentially the same as those used in the first phase. The judgment of superior teaching in each instance will be based on the observations of some group that has close contact in a supervisory sense with the teacher.

MARIE M. HUGHES, professor of elementary education, University of Utah, Salt Lake City, Utah.

Project No. 353.
Duration: 1 year 3 months.
April 1958 to June 1959.

Role of the Teacher and Occupational Choice

Problem.—This study proposes to investigate the role of the teacher, actual and expected, and the effect of the expectation on teacher recruitment.

Major objectives.—The objectives are (1) to identify the salient features of the role of the teacher, emphasizing both expectations held for teachers and actual areas of teacher performance; (2) to investigate the extent to which differential expectations are held for teachers by various groups; and (3) to analyze the effect of expectations held for the teacher role on the recruitment of teachers.

Procedures and design.—The first phase of the study will involve a number of interviews with persons representative of a variety of groups, i.e., teachers, pupils, public, parents, etc., to develop a catalog

of the various behavioral areas of the teacher role which are important for study. The second phase will involve behavioral observation study of teachers and the responses of others with whom the teacher is in interaction. Phase 3 consists of a study, matched to the second phase, of the expectations held by teachers and others for the salient behavioral areas of the teacher role. The fourth phase will involve interviews with potential teachers at all grade levels (including elementary) as to their expectations for the teaching role, source of these expectations, and intentions regarding the teaching profession.

BRUCE J. BIDDLE, associate professor of education, University of Kansas City, Kansas City, Mo.

Project No. 371.
Duration: 2 years 2 months.
July 1958 to August 1960.

The Effects of Direct and Indirect Teacher Influence on Learning

Problem.—In this study, the influence of the degree of directedness on the part of the teacher on the teaching-learning situation will be investigated.

Major objectives.—The objectives are (1) to investigate the effect of direct and indirect teacher influence on the learning of gifted, average and slow students, and students who could be classed as dependent compared with those who are more independent; (2) to investigate the relation of the learning task ("ambiguous" or "clear") to the type of influence required to be exercised by the teacher; and (3) to identify the periods, if any, in the overall cycle of classroom learning at which direct or indirect teacher influence is most effective.

Procedures and design.—The independent variables in the study will be direct teacher influence, indirect teacher influence, and the nature of the learning task. The dependent variables will be measures of learning, including awareness of facts, application of principles to problem solving, and interpretation of new data. Pretests, posttests, and delayed-recall tests of achievement will be administered, and the data will be analyzed separately for gifted, average, and slow students and for students scoring high or low on a personality scale of dependence-independence proneness. The student sample will be drawn from seventh- and eighth-grade students. The first year of the project will consist of laboratory experiments testing specific hypotheses about teacher influence and student dependence-independence. Field studies will be conducted during the second year, testing the effects of teacher influence in public school classroom situations.

NED A. FLANDERS, associate professor of educational psychology, University of Minnesota, Minneapolis, Minn.

Project No. 397.
Duration: 2 years 8 months.
July 1958 to September 1960.

Problem Solving Performance of Elementary School Teachers on Professional Criteria

Problem.—This study proposes to assess and describe problem solving performances of elementary school teachers on certain professional criteria.

Major objectives.—The objectives are (1) to develop an instrument for assessing the performance of elementary school teachers in solving problems which represent valid professional tasks for such a group; and (2) to study the effects of changes in controlled conditions upon characteristic problem-solving processes of elementary school teachers.

Procedures and design.—The first phase of the study involves the isolation of valid tasks for elementary school teachers in arithmetic. This will be done by examining the aims defined by the recognized professional organizations concerned with the teaching of arithmetic, leading textbooks, and the writings of leaders in the field. During the second phase, the tasks will be defined in terms of problems, and specific scoring criteria will be developed. During the third phase, scoring procedures will be developed and validated for the assessment of performance on these tasks. A sample of approximately 200 students will participate in this validation testing. The fourth phase will involve the development of recording methods—obtaining protocols of subjects' responses while solving the problems under controlled conditions. The self-report method will be used in this phase. The final phase will study the effects of changes in controlled conditions on characteristic problem-solving processes of elementary school teachers.

NICHOLAS A. FATTU, director, institute of educational research. Indiana University, Bloomington, Ind.

Project No. 419.
Duration: 2 years.
July 1958 to June 1960.

A Study of the Relationship Between the Observed Classroom Behaviors of Elementary Student Teachers, Predictors of Those Behaviors, and Ratings by Supervisors

Problem.—The purpose of this study is to investigate the predictive value, relative to success in student teaching, of data regarding college students preparing for teaching gathered at their date of college entrance; the validity of judgments regarding student teachers made by student teaching supervisors; and the effect of placement variables on the student teaching experience.

Major objectives.—The objectives are (1) to investigate the relationship between ratings of classroom behavior of student teachers

by trained observers and the judgment of student counselors in relation to probable success made at the time of college entrance; (2) to compare the ratings of classroom behavior by trained observers using a standardized observation instrument and those of student teaching supervisors; and (3) to investigate the relation of placement factors (grade level assignment, length of experience, etc.) on the ratings of classroom effectiveness.

Procedures and design.—Approximately 60 senior women at the University of Minnesota who were subjects in an earlier admissions interview study will comprise the sample for this investigation. The placement of the students in teaching experiences will provide control over the socioeconomic variability in school situations. Student variability in relation to such factors as intelligence will be controlled statistically. Observation of student-teacher behavior will be based on from eight to ten 1-hour observations by trained observers using a standardized observation schedule and the ratings of their regular supervisors. Data on predictor variables were gathered in an earlier study. Placement variables will be investigated through a crossover design of student placement in teaching situations.

ROGER E. WILK, assistant director for personnel research, college of education, University of Minnesota, Minneapolis, Minn.

Project No. 473.
Duration: 1 year 3 months.
June 1958 to September 1959.

SECTION 6

Educational Problems Resulting From Population Mobility

The Improvement of School Organization and Administration To Meet the Needs of Children of Migrant Farm Workers

Problem.—The purpose of this study is to improve educational facilities, organization, and curricula for the children of domestic agricultural migrant workers.

Major objectives.—The objectives are (1) to identify existing obstacles in the education of children of migrant workers; (2) to identify the best methods for teaching migrant children; (3) to find ways to integrate the educational program for migrant children with the total school program; (4) to establish better systems for recordkeeping in relation to these children; and (5) to investigate needed inservice training programs for teachers of migrant children.

Procedures and design.—Several experimental summer schools for migrant children will be established. Other schools with migrant children will cooperate in the study as a control group. Through observation, interviews, analysis of extant records, questionnaires, and tests, data regarding the ability, achievement, health, ethnic and cultural backgrounds, etc., of migrant children will be gathered. State legal provisions affecting the education of migrant children, psychological factors affecting their assimilation into American life, and the implications of data regarding migrant children to preservice and inservice preparation of teachers will also be studied.

William G. McDonough, director of research, State Department of Education, Denver, Colo.

Project No. 307.
Duration: 3 years.
January 1958 to December 1960.

Effect of Migrant Farm Labor on the Education of Children

Problem.—In this study, the effect of farm labor performed by nonresidents on the education of the children of the nonresident workers will be investigated.

Major objectives.—The objectives are (1) to determine the extent to which farm labor performed by nonresidents interferes with the education of the nonresident workers; and (2) to investigate how this interference could be lessened through (*a*) adjusting the dates of school terms in selected communities from which the workers come, and (*b*) recruiting additional workers from these selected communities to replace workers whose migrant farm labor seriously interferes with the education of their children.

Procedures and design.—Between 150 and 250 nonresident families will be interviewed on a structured schedule. They will be selected randomly and interviewed on the farms where they will be employed. Communities from which many nonresident families come will be visited to check the reliability of education information furnished in the interview and to assess the possibilities of making changes in school terms and of recruiting other laborers from these communities.

MELVIN S. BROOKS, associate professor of sociology, Southern Illinois University, Carbondale, Ill.

Project No. 401.
Duration: 1 year 2 months.
May 1958 to June 1959.

Late School Entrance and Children's Adjustment

Problem.—This study proposes to investigate the relationship between late entrance to the public school classroom and the social and emotional adjustment of children in the classroom.

Major objectives.—The objectives are (1) to determine the effect of late school entrance (December to February 15) on the total social structure of the classroom and the social status of the late entrant; (2) to investigate the effect of teachers' attitudes on the personal-social adjustment of late entrants; and (3) to study the emotional adjustment of late entrants.

Procedures and design.—A total of 25 classrooms in grades 4 through 6 will constitute the sample for this study. An experimental group of late entrants and a matched control group of September entrants who remained all year will be drawn from these classes. The matching will be on the basis of sex, age, grade and classroom membership, socioeconomic status, and intelligence. Data will be derived from a series of tests administered to the subjects during the school year before the initiation of this project as follows: Moreno-type sociometric

tests and the Ohio Social Acceptance Scale in the fall and spring, ratings of the students by teachers on the Haggerty-Olson-Wichman Behavior Rating Schedule, the California Test of Personality administered in the fall and spring, and the Wiley Child Guidance Scale administered to teachers 2 weeks after school opened.

WALTER D. SMITH, professor of psychology, and JOHN A. DEMMING, assistant professor of psychology, Florida State University, Tallahassee, Fla.

Project No. 457.
Duration: 3 months.
June through September 1958.

SECTION 7

Other Aspects of Education

Personality Factors in the Development of Communication and Leadership Skills

Problem.—This study seeks to investigate the effect of personality factors in the development of communication skills and the methods by which schools can take such factors into account in teaching these skills.

Major objectives.—The objectives are (1) to determine the effect of personality factors in the development of communication skills; (2) to investigate how schools can do a better job of teaching communication skills by taking into account the student's personality; and (3) to develop practical materials and tools for the use of teachers in meeting this problem.

Procedures and design.—The design will call for a series of separate but related substudies. The basic sample will be 150 6th-grade pupils and 450 pupils in a college preparatory curriculum in the 10th and 11th grades. The measures to be taken on the subjects will include tests of mental ability and reference and personality variables, and estimates of behavior such as classroom discussion and written exercises. The substudies will include factor analysis of personality and communication variable, study of aspects of oral communication behavior which are influential in forming others' judgments about the personality of the communicator, study of the conditions affecting readiness to participate in communications situations, an experimental study on the teaching of oral communications skills, an experimental study of the elicitation and training of written composition behavior, and a study of home backgrounds affecting communications skills.

John B. Carroll, professor of education and Director of Laboratory for Research in Instruction, Harvard University, Cambridge, Mass.

Project No. 217.
Duration: 2 years 10 months.
September 1957 to June 1960.

An Analysis of the Organization of Education as a Subject of Study

Problem.—This study proposes to clarify the definition of the term "education" and to attempt to develop an organizational plan useful in the study of education.

Major objectives.—The objectives are (1) to search out the significant plans, past and present, employed in the study of education; (2) to establish the place of systematization in the study of education; and (3) to attempt a systematization of academic subject matter in the field.

Procedures and design.—An historical review of the systematic formulations relating to the study of education will be undertaken. These formulations will be analyzed for the purpose of identifying the principles and concepts involved. On the basis of these analyses, a tentative system for classifying the study of education will be constructed.

W. H. COWLEY, professor of higher education, Stanford University, Stanford, Calif.

Project No. 245.
Duration: 2 years.
July 1957 to June 1959.

The Investigation and Measurement of the Social Values Governing Interpersonal Relations Among Adolescent Youth and Their Teachers

Problm.—This is a study on the human values of adolescents which affect their interpersonal relations and their relationships with teachers.

Major objectives.—The objectives are (1) to construct and refine scales for discovering the values which are important to adolescents; and (2) to investigate relationships between pupils and teachers and the interrelationships among adolescents.

Procedures and design.—The subjects will consist of 5,000 adolescents selected from upstate New York communities with differing socioeconomic characteristics. The Edwards' scales of psychological need, Morris' scale, and the Syracuse Scales of Social Relations will be administered to a sample of these subjects. New scales will be developed and administered to all the subjects. These will include such approaches as: selected TAT cards with verbally dramatic settings, checklist on which subjects can indicate preferential order for the description of desirable and undesirable companions, checklist of adjectives on which subjects can indicate preferential order for ideals of individual behavior, etc. Relationships between pupils and

teachers will be analyzed in approximately 100 classrooms of differing types, and the relationships between selected pupils and their parents will be investigated.

ERIC F. GARDNER, professor of education, and GEORGE G. THOMPSON, Professor of Psychology, Syracuse University, Syracuse, N.Y.

Project No. 259.
Duration: 5 years.
July 1957 to June 1962.

Verbal Learning Among Children With Reduced Auditory Acuity

Problem.—This study proposes to investigate learning processes in aurally handicapped children and to evaluate the benefits which accrue from the combined visual-auditory methods of presenting material to such children.

Major objectives.—The objectives are (1) to compare verbal learning by visual, auditory, and visual-auditory stimulation among normal and aurally handicapped children; (2) to contrast the verbal learning ability of normal and aurally handicapped children; and (3) to investigate the effectiveness of appropriately designed techniques of auditory training in the improvement of verbal learning ability and retention in aurally handicapped children.

Procedures and design.—The sample for the study will include from 1,600 to 2,000 children. In the experimental procedure, the children will be asked to memorize lists of simple words presented visually (by means of a memory drum), auditorily (by the use of a tape recorder), and then in a simultaneous visual-auditory presentation. The basic learning function will be described in normal children aged 8 to 12 and later in aurally handicapped children who have sufficient residual hearing to respond to amplified stimulation.

JOHN H. GAETH, professor of education and Director of Hearing Clinic, Wayne State University, Detroit, Mich.

Project No. 289.
Duration: 3 years.
September 1957 to August 1960.

Language Ability in the Middle Grades of the Elementary School

Problem.—The aim of this study is to investigate and evaluate language development and its relationship to other factors in the middle elementary grades.

Major objectives.—The objectives are (1) to identify those qualites of children's language that constitute control and effectiveness of verbal communication; (2) to trace the development of these qualities in

children in the middle elementary grades (4 through 6); and (3) to relate children's language development to factors assumed to be associated with language development.

Procedures and design.—The sample will consist of 225 fourth-graders who will be studied longitudinally through grade 6. The subjects will be selected from the Oakland public schools and will be stratified according to factors assumed to have a bearing on language development. Data to be gathered will include protocols of the subjects' speech, writing, reading, and listening and information on health, mental ability, socioeconomic status, school achievement, and school attendance.

WALTER LOBAN, associate professor of education, University of California, Berkeley, Calif.

Project No. 324.
Duration: 3 years.
January 1958 to December 1960.

Development of Community Centered Programs in Junior Colleges

Problem.—This study proposes to develop a concise and accurate description of what comprises a comprehensive community-service program in junior colleges and to investigate problems associated with the development of such a program.

Major objectives.—The objectives are (1) to identify attitudes and conditions in a community which must be considered in developing a community-service program; (2) to investigate the nature of educational needs in a community which can be satisfied by a junior college and to develop a method for compiling a listing of such needs; (3) to investigate procedures used to coordinate community-service agencies in a community; (4) to provide a basis on which a junior college can evaluate the extent to which its community-service program is reaching all segments of a community; and (5) to relate the community-service program to the regular program in such respects as cost, staff, organization, utilization of facilities, etc.

Procedures and design.—The project will involve a pilot study and a followup study based on the evidence acquired in the pilot study. The sample in the pilot study will be three junior colleges in Texas. The followup study will be made in nine junior colleges in three different geographic areas. Interview data will be gathered from junior college staff members, staff members of other agencies engaged in community service, city and county government officials, representatives of community groups, and a representative sampling of citizens. Records of junior colleges, other community service agencies, and government departments will be studied in relation to budget

allocations, annual reports of activities, etc. Reports of surveys from the above-mentioned agencies and records of coverage in news disseminating agencies will be studied. Questionnaire surveys will be made of junior college faculty and student body, members of men's and women's clubs, and labor unions.

JAMES W. REYNOLDS, professor of junior college education, University of Texas, Austin, Tex.

Project No. 333.
Duration: 1 year 6 months.
January 1958 to June 1959.

Personality Changes Associated With a College Education

Problem.—The purpose of this study is to determine whether or not there are changes in personality factors in college students associated with their college education.

Major objective.—The objective is to determine if significant changes in ethnocentrism, authoritarianism, and dogmatism are associated with a college education.

Procedures and design.—The experimental group will include 700 subjects who enroll in and complete a 4-year college program at San Jose State College. Two control groups will be established. Group A will be composed of 500 subjects who never enroll in college, and group B will be made up of 1,100 subjects who enroll but fail to complete the 4-year program. Three psychometric scales for the measurement of ethnocentrism, authoritarianism, and dogmatism will be applied to the subjects three times—first, before entering college; second, at the end of the sophomore year; and finally at the end of the senior year. It is expected that, by the end of the fourth year, the size of the control group sample will be reduced to 100 for group A and 500 for group B.

WALTER T. PLANT, assistant professor of psychology, San Jose State College, San Jose, Calif.

Project No. 348.
Duration: 4 years 8 months.
February 1958 to September 1962.

A Study of the Interests of Children and Youth

Problem.—This study seeks to investigate certain interests of children and youth and the possibility of creating or redirecting interests to the benefit of commonly valued educational goals.

Major objectives.—The objectives are (1) to investigate the activitives and attitudes of pupils in grades 3 through 9 in relation to recreational pursuits, vocational and educational interests, entertainment media, and reading preferences; and (2) to relate these interests to such factors as age, sex, background, etc.

Procedures and design.—Inventories and questionnaires will be administered to pupils, teachers, and parents. Adaptations of the Witty-Kopel Inventory and questionnaires will be administered to approximately 300 children in each of grades 3 through 9 in selected schools in the Chicago area.

PAUL A. WITTY, professor of education, Northwestern University, Evanston, Ill.

Project No. 367.
Duration: 1 year 6 months.
June 1958 to December 1959.

Critical Thinking, Attitudes and Values in Higher Education

Problem.—This study proposes to investigate critical thinking, attitudes, and values among college students, and the interrelationship among these factors and the changes taking place in them as a result of education.

Major objectives.—The objectives are (1) to determine changes, if any, which occur in college students' critical thinking, attitudes, and values as a result of education and what student factors and environmental conditions influence this change; (2) to relate attitudes and values to such factors as withdrawal, underperformance, and disciplinary problems of college students; (3) to determine the extent to which such factors as socioeconomic background effect changes in students; and (4) to define more clearly educational goals in the affective domain and specify more clearly the type of experiences appropriate to bring about desired changes in various types of individuals.

Procedures and design.—One group of entering freshmen at Michigan State University (circa 4,000) will be given a battery of tests and questionnaires measuring critical thinking, attitudes, and values. Evidence on ability and achievement ratings and continuing data on major field, grades, withdrawal, disciplinary action, etc., will be gathered. For certain subgroups, determined by test score patterns, more detailed information will be gathered by interview, reports from teachers, and the like. The project plan envisages a followup study of the student group and a retesting at the end of the senior year.

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

Project No. 372.
Duration: 1 year 6 months.
April 1958 to September 1959.

Relationship of Self-Concept to Beginning Achievements In Reading

Problem.—In this study, the effect of self-concept in young children on later achievement in reading will be investigated.

Major objectives.—The objectives are (1) to determine the predictive value of kindergarten children's positive or negative quality of self-concept, ego strength, and self-concept in respect to learning in relation to reading achievement at the end of the second grade; and (2) to analyze the extent to which the child's achievement in reading at the end of the second grade is associated with any change which may have taken place in the preceding 3 years in relation to his positive or negative quality of self-concept, self-concept in respect to learning, or ego strength.

Procedures and design.—A sample of 200 kindergarten entrants will be interviewed and the children will be observed to obtain a rating in relation to their self-concept. A followup interview will be held with as many of the subjects as are still available at the end of their second-grade experience in school, and a standardized reading achievement test will be administered at that time.

WILLIAM W. WATTENBERG, Professor of educational psychology, Wayne State University, Detroit, Mich.

Project No. 377.
Duration: 4 years.
July 1958 to June 1962.

Studies of College Environments

Problem.—The purpose of this study is to develop and explore the uses of an instrument for identifying certain psychological characteristics of different college environments.

Major objectives.—The objectives are (1) to develop an instrument for the measurement of college environments, determining its reliability, validity, structure, and significance; and (2) to investigate the effectiveness of different institutions for different kinds of students.

Procedures and design.—A College Characteristics Index will be administered to a group of 2,000 students in 30 colleges. The instrument will then be revised, following analysis of item discrimination, item or scale intercorrelation, and factor analysis, and it will then be administered to from 2,000 to 4,000 students in a diverse sample of 20 to 30 colleges. An Activities Index will also be administered to approximately half of the students in this latter group. A wide variety of data on the cooperating colleges will be obtained and reports will be made by on-the-spot observers. The College Characteristics Index and the Activities Index will then be administered to a group of about 1,000 Syracuse University students. Data regarding pupils' success in college, choice of academic major, etc., will be gathered on these students and related to their scores on the instruments.

C. ROBERT PACE, chairman, psychology department, and GEORGE G. STERN, associate professor of psychology, Syracuse University, Syracuse, N.Y.

Project No. 378.
Duration: 2 years.
July 1958 to June 1960.

A Study of Cognitive Development and Performance in Children With Normal and Defective Hearing

Problem.—This is a study of concepts, generalizations, and abstractions as they are formed by children in their everyday experiences and in controlled experimental situations and to trace the development of these abilities.

Major objectives.—The objectives are (1) to determine the relationship between the level of generalizations attained in experimental situations to the level of linguistic skill and generalizations learned through everyday experiences; and (2) to identify the relation of defective hearing to the growth of the higher mental processes using cross-sectional and longitudinal data.

Procedures and design.—Two groups of 60 children each will comprise the sample. One-third of each group will be at each of the following age levels—6, 9, and 12. Group I will be made up of children with normal hearing enrolled in public schools, and group II will be composed of deaf children enrolled in special classes. Variables such as sex, age, and father's occupation will be controlled in the samples. Information will be obtained from school records for children at each age from first grade through junior high school. Each child will be tested individually on a battery of measures which will include assessments of the concepts, generalizations, and abstractions which the children have attained in language, quantity, form, etc., and determinations of both the process of formulation and the concepts, generalizations, and abstractions arrived at by the children in selected tasks presented in experimental situations.

MILDRED C. TEMPLIN, professor, Institute of Child Development and Welfare, University of Minnesota, Minneapolis, Minn.

Project No. 387.
Duration: 4 years 6 months.
April 1958 to September 1962.

A Project in the Teaching and Development of an Integrated Physics-Algebra Course at the Ninth-Grade Level

Problem.—This study proposes to investigate the extent to which the contents of an elementary course in physics and algebra can be taught advantageously at the ninth-grade level with a view toward improving the quality and efficiency of education in science and mathematics at that level.

Major objective.—The objective is to develop a syllabus of content and method for an integrated physics-algebra course at the ninth-grade level.

Procedures and design.—A syllabus will be developed for a ninth-grade physics-algebra course, taking into account recent experimental programs in science and mathematics. The materials and course content will be used with a group of 20 slightly above average freshman students at Bayless High School, St. Louis. Progress made by these students will be compared with that made by other students in conventional algebra and physics courses. Evaluation of the course will also be made by teachers who will be using some of the materials in their own courses.

ALEXANDER CALANDRA, associate professor of physics, Washington University, St. Louis, Mo.

Project No. 403.
Duration: 1 year.
April 1958 to March 1959.

Adapting Instruction to the Learning Needs of Children in the Intermediate Grades

Problem.—In this study the effect on children's achievement and social and personal adjustment of adapting instruction to learning needs will be investigated.

Major objectives.—The objectives are (1) to determine the degree to which learning efficiency can be increased by a program which provides for individual differences and needs of pupils; (2) to identify which subjects, and which aspects of these subjects, are most influenced by such a program; and (3) to determine whether gains in learning are accompanied by improvements in the social and personal adjustment of pupils, in attitudes, interests, and initiative in learning.

Procedures and design.—The sample will involve about 700 students with 30 different teachers. Measures of achievement, intelligence, subject interest, social relationships, and the like will be applied to the students in the sample before any provisions are made to assist the teachers. The teachers will then be given abundant help in providing for the learning needs of children in their classroom. They will be aided by a research fellow with outstanding teaching and supervisory experience and various adjustments will be made in different subjects for levels of ability, progress rates, special difficulties, enrichment of learning, and self-direction in study. Posttests will be administered to the same pupils taught by the same teachers 1 year after the original tests were administered.

DONALD D. DURRELL, professor of education, Boston University, Boston, Mass.

Project No. 407.
Duration: 1 year 6 months.
May 1958 to October 1959.

Relation of Occupational Aspiration to Educational, Social, and Psychological Factors

Problem.—This study proposes to investigate the relationship of occupational aspiration to educational, psychological, and sociological factors and to develop a method of measuring level of occupational aspirations.

Major objective.—The objective is to evaluate the Occupational Aspiration Scale as a quick and accurate method of measuring level of occupational aspirations.

Procedures and design.—The subjects will be 442 17-year-old boys in schools in Lenawee County, Mich. The subjects will be given the following tests: [1] Cattell's "16 P–F Test," California Test of Personality, Cattell's "Test of G-Culture Free," the Occupational Aspiration Scale, and a questionnaire on educational and occupational aspirations, family background, and sociometric data. The Occupational Aspiration Scale will be evaluated in terms of its reliability, validity, factorial structure, and correlation with selected personality variables, parents' social class position, parents' ambition for the youth, and level of occupation aspiration of the youth's best friends.

ARCHIE O. HALLER, associate professor of sociology and anthropology, Michigan State University, East Lansing, Mich.

Project No. 412.
Duration: 3 years.
March 1958 to February 1961.

An Experiment in Teaching Topographical Orientation and Spatial Organization to Congenitally Blind Children

Problem.—This study seeks to determine whether the topographical orientation and spatial organization of congenitally blind children can be improved through a training program.

Major objectives.—The objectives are (1) to investigate whether, through group training, it is possible to improve the topographical orientation and spatial organization of congenitally blind children 6 weeks of age and older; and (2) to determine whether (*a*) specific diagnosis of difficulties is necessary in every case, (*b*) training should be aimed at a particular area of special difficulty, and (*c*) the added and repeated stimulation provided by such a program results in increased perceptual activity in general.

Procedures and design.—Sixty congenitally blind children, with no other physical handicaps, between the ages of 5 and 14 will be divided

[1] Initial test administration to the sample had been completed before this project was submitted to the Office of Education for support.

into an experimental and control group of 30 each on the basis of performance on a spatial relations test and supervisor's observations. The experimental group which will be composed of children all showing poor performance in general orientation and space perception will receive the training program. The control group, which will be composed of children having apparently "normal" development, will not be given any special training. The effects of the training program will be measured by tests, observations, and ratings.

RALPH GARRY, associate professor of educational psychology, Boston University, Boston, Mass.

Project No. 424.
Duration: 1 year 6 months.
April 1958 to September 1959.

Development of Educational Methods for Different Types of Students

Problem.—The purpose of this study is to investigate the possibility of developing methods of instruction appropriate to students with varying patterns of temperamental readiness and orientation to learning.

Major objectives.—The objectives are (1) to develop a method of classifying students according to their temperamental readiness for and orientation to learning in the various subject fields; (2) to develop teaching methods appropriate for the identified types with emphasis on such elements as verbal ground covering, learning by doing, social interactiveness, and conscious self-directiveness; and (3) to investigate the increase in learning, if any, over conventional methods of instruction when students, organized into temperamentally homogeneous groups, are taught by methods consonant with their temperamental type.

Procedures and design.—Selection instruments will be developed through a variety of approaches; for example, deduction of likely "types" from existing theoretical and scientific formulations. Methods of instruction will be developed with respect to two high school subjects through such techniques as the analysis of teaching problems, as viewed by teachers, which might reveal a mismatch between temperament of students and method of instruction. The experimental design will involve 2 classes (a total of 48 students) who will be taught the same 2 subjects by different teachers. The classes will be made up of four student types. Each of four units within the courses will be taught by a different method, devised to be optimally effective for the four student types. Evaluation of student progress will involve pre- and post-tests and observation of behavior. Field studies in 10 schools, concurrent with the experimental studies, will investigate such bases

for grouping as: congruence or compatibility with teacher, cultural homogeneity, psychological need complementation, functional role, and resource complementation.

HERBERT A. THELEN, professor of educational psychology, and director of the teaching-learning laboratory, University of Chicago, Chicago, Ill.

Project No. 428.
Duration: 2 years 2 months.
July 1958 to August 1960.

The Development of a Conceptual System for Dealing With Problems of Curriculum and Instruction

Problem.—In this study, a planned, rigorous search will be conducted for a conceptual system by means of which the central problems of curriculum and instruction can be identified and related to each other.

Major objectives.—The objectives are (1) to formulate a rationale encompassing and relating the major questions to be dealt with in curriculum development; and (2) to indicate the significance of this rationale for a corresponding rationale encompassing and relating the major questions to be dealt with at the level of classroom instruction.

Procedures and design.—Each segment of the rationale formulated will be related to the previous research and scholarly analysis which is pertinent. The conceptual system will be continually checked against research and related studies during the development of the project.

JOHN I. GOODLAD, professor of education and director, center for teacher education, University of Chicago, Chicago, Ill.

Project No. 454.
Duration: 2 years.
July 1958 to June 1960.

Relationship of School Experiences to Delinquency

Problem.—In this study, the relationship of school experiences and school accomplishments to juvenile delinquency among boys of below average learning ability will be investigated.

Major objectives.—The objectives are (1) to analyze the perception of school experiences held by boys who have had school difficulties associated with repeated delinquency; (2) to isolate factors associated with low learning ability found among repeaters as contrasted with nonrepeaters; (3) to investigate the extent to which school accomplishment is a predictor of repeated delinquency in boys of below average and average intelligence; and (4) to analyze teachers' perceptions of these boys.

Procedures and design.—The subjects will be 1,262 boys who committed their first offense in 1954. School grades and intelligence test

scores for the sample will be obtained from their school records. Police records for 3 years (1954 through 1956) will determine the repeaters and nonrepeaters. Further data on the subjects, regarding socioeconomic status, home relationships, etc., will be gathered from police and school records. Semistructured interviews with a subsample of 25 boys who became repeaters will be conducted to determine perceptions which they hold of their school experiences.

WILLIAM W. WATTENBERG, professor of educational psychology, Wayne State University, Detroit, Mich.

Project No. 201.
Duration 1 year 10 months.
September 1957 to June 1959.

The Development of a Correlated Modular System of School Design and Construction

Problem.—This study proposes to develop a workable system of modular school design.

Major objective.—The objective is to develop a correlated modular system of school design which will permit a variety of competitive materials and equipment components to be mass produced for schools and used interchangeably and flexibly.

Procedures and design.—A review of research relating to modular design and construction will be undertaken. From 125 to 150 of the best current school designs by leading architects will be analyzed to establish dimensional modules and to determine the most common types of building sections, arrangements of units and utilities, etc. These schools will be representative of varying levels of education and geographic areas in the country. The data gathering will include visits to a number of school campuses for actual inspection of buildings and conferences with board members, school administrators, teachers, and pupils.

LEON R. GRAHAM, Assistant Commissioner, Texas Education Agency, Austin, Tex.

Project No. 212.
Duration: 2 years 10 months.
September 1957 to June 1960.

Vocational Education in Public Schools as Related to Social, Economic, and Technical Trends

Problem.—This study seeks to analyze the implications of contemporary social, economic, and technical trends for the nature of vocational education programs and the extent to which selected programs are serving the needs of society in this era of change.

Major objectives.—The objectives are (1) to identify the contemporary social, economic, and technical conditions and trends which

have implications for vocational education; (2) to survey existing patterns and programs in selected schools to determine the extent to which the programs manifest attention to the identified trends; and (3) to ascertain what changes, if any, should be made in existing programs of vocational education and to hypothesize new patterns of vocational education relevant to the previously identified conditions and trends.

Procedures and design.—A listing of major social, economic, and technical conditions and trends will be prepared and ranked, by specialists in sociology, economics, and education, in terms of potential influence on vocational education. These identified trends will serve as the base for preparation of lists of desirable purposes and procedures for two specialized fields of vocational education. A checklist to be used in evaluating vocational programs in public schools will be prepared. A sample of 75 high schools will be visited and surveyed using this checklist. Status scores will be completed for each school and used to determine interrelationships among purposes, resources, and operational procedures for the two specialized fields of vocational education chosen for study. The relationship of such factors as school size and expenditures to the status scores will be made.

FRANK J. WOERDEHOFF, associate professor of education; NORBERT J. NELSON, assistant professor of education; and JOHN K. COSTER, assistant professor of agricultural education, Purdue University, Lafayette, Ind.

Project No. 385.
Duration: 1 year 6 months.
June 1958 to November 1959.

APPENDIX

Investigators on Cooperative Research Projects Contracted During Fiscal Year 1958

Locations in Which Research Projects were Initiated in Fiscal Year 1958

Statistical Summary of Cooperative Research Program Activities: Fiscal Years 1957 and 1958

Table 1.—Summary of funds obligated during fiscal years 1957 and 1958 by months [1]

Month	Funds obligated			
	During fiscal 1957		During fiscal 1958	
	For fiscal 1957	For successive years [2]	For fiscal 1958	For successive years [3]
Total obligated	$998,980	$3,151,957	[2] $2,307,087	[2] $4,151,133
Appropriation	1,000,000	----------	2,300,000	----------
July	----------	----------	[2] 1,552,604	[2] 3,189,417
August	----------	----------	196,967	327,296
September	32,275	75,005	3,672	----------
October	63,130	79,155	32,600	----------
November	124,069	171,862	7,810	----------
December	145,506	367,676	104,086	94,267
January	207,800	1,056,881	2,243	14,721
February	169,581	117,518	38,469	13,062
March	59,228	581,372	169,409	158,427
April	3,906	544,220	107,131	----------
May	173,373	79,289	90,641	213,932
June	20,112	78,979	1,455	140,011

[1] A summary of the research proposals received in fiscal year 1957 was published as *Cooperative Research Projects—Fiscal 1957*, Bulletin 1958, No. 5, Department of Health, Education, and Welfare, 1958.
[2] Contingent on appropriation of funds by Congress.
[3] This includes sum of total obligations from the fiscal year 1957.

Table 2.—Proposals received and contracts signed during fiscal years 1957 and 1958

Period	Proposals received	Contracts signed
July–December 1956	197	37
January–June 1957	127	35
July–December 1957	90	28
January–June 1958	82	33
Total to July 1, 1958	496	133

Table 3.—Geographical distribution of research projects and Federal funds during fiscal years 1957 and 1958

Region	Fiscal 1957				Fiscal 1958			
	Projects		Federal funds		Projects		Federal funds	
	Number	Percent	Amount	Percent	Number	Percent	Amount	Percent
Northeast	25	34. 7	$1, 788, 954	42. 9	14	23. 0	$569, 367	24. 9
North Central	28	38. 8	1, 462, 360	35. 1	29	47. 5	940, 899	41. 1
South	14	19. 5	660, 651	15. 8	6	9. 8	278, 073	12. 2
West	5	7. 0	258, 516	6. 2	12	19. 7	499, 400	21. 8

Numerical List of Projects