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ABSTRACT

This 1981 supplement adds recently produced publications to the basic bibliography of resource materials produced by the Wisconsin Research and Development Center for Individualized Schooling as an aid to educators in dealing with diversity among students. Detailed abstracts are provided for items listed in each of seven categories: (1) books summarizing and synthesizing the work of center-associated faculty; (2) studies of instructional programming for the individual student; (3) studies of administration and organization for instruction; (4) studies in language--reading and communication; (5) studies in mathematics; (6) studies of implementation of individualized schooling; and (7) evaluation of practices in individualized schooling. Most of these publications are available from ERIC or the Wisconsin R&D Center. Numerical listings of technical reports, theoretical papers, practical papers, and working papers are also provided, as well as an author index.
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1981 SUPPLEMENT

Wisconsin Research and Development Center
for Individualized Schooling

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Madison, Wisconsin

January 1981

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WISCONSIN R & D CENTER

MISSION STATEMENT

The mission of the Wisconsin Research and Development Center is to understand, and to help educators deal with, diversity among students. The Center pursues its mission by conducting and synthesizing research, developing strategies and materials, and disseminating knowledge bearing upon the education of individuals and diverse groups of students in elementary and secondary schools. Specifically, the Center investigates

- diversity as a basic fact of human nature, through studies of learning and development
- diversity as a central challenge for educational techniques, through studies of classroom processes
- diversity as a key issue in relations between individuals and institutions, through studies of school processes
- diversity as a fundamental question in American social thought, through studies of social policy related to education

The Wisconsin Research and Development Center is a noninstructional department of the University of Wisconsin-Madison School of Education. The Center is supported primarily with funds from the National Institute of Education.

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HOW TO OBTAIN R & D CENTER PUBLICATIONS

Most publications listed in this bibliography are available from either the Education Resources Information Center (ERIC) or the Wisconsin R & D Center.

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Revised 3-02-81

BOOKS

BOOKS

The Wisconsin Research and Development Center for Individualized Schooling has a responsibility to ensure that the knowledge gained from its research and development activities is readily available to the education community. For this reason each major line of inquiry pursued at the Center is designed to culminate in the publication of a "milestone" document such as a book, a monograph, or conference proceedings. The following books summarize and synthesize the work of Center-associated faculty and other scholars in several areas related to individualized schooling. Information regarding publication dates of books in press or in preparation may be obtained from the Center Information Office.

Allen, V. L. (Ed.). Children as teachers: Theory and research on tutoring. New York: Academic Press. 1976. 290 pp. \$25.50.

These well-integrated articles discuss current theory and research on peer tutoring, an increasingly important technique in the education of children. Eminent scholars from several disciplines have contributed the original chapters that make up the book. The secondary themes of cross-age interaction and helping relationships among children are prominent throughout the book. With its emphasis on the practical educational and psychological aspects of peer tutoring, Children as Teachers will be of great benefit to educational psychologists, child psychologists, social psychologists, educators, learning researchers, school psychologists, curriculum developers, and to students and workers in special education, social work, and related disciplines.

The first two sections of the book establish the basic theoretical and empirical foundations for practical programs discussed in later sections. A wide range of theoretical perspectives is offered, including historical background, role theory, ethological and cross-cultural considerations, and social skills theory. Chapters in the second section present original research on social class and ethnic differences in tutoring by young children, teaching by siblings, nonverbal skills and consequences of tutoring for the tutor, and the use of a variety of nonprofessionals as helpers. The third section evaluates a wide range of tutoring programs currently operating in the schools. Authors of these chapters draw upon available research and their extensive practical experience to present the advantages and disadvantages of tutoring programs, and to discuss the important considerations that should be taken into account when developing tutoring programs in the school. Finally, two chapters of the book summarize an extensive amount of empirical research and practical experience relevant to tutoring programs in the school.

Allen, V. L., et al. Interpersonal skills in tutoring: The role of nonverbal behavior. New York: Academic Press. In Press.

Tutoring by children is a very complex process consisting of task-oriented social interaction between the tutor and learner. Only a meager amount of attention has been paid to the interaction process itself, which seems to be one of the most important factors determining the outcome of tutoring programs. The purpose of the present book is to provide an in-depth analysis of the interactional skills used by children in a tutoring situation. Particular emphasis is placed on nonverbal behavior because of the subtlety and importance of this aspect of social interaction. There are no other books that address this specific topic.

The first major section of the book considers tutoring in a broad historical, sociological, and psychological context. The first chapter presents an historical overview and discusses the potential advantages and problems associated with tutoring programs from the perspective of the tutor, tutee, and society. The next two chapters discuss the theoretical models available for explaining interpersonal interaction, and present a detailed analysis of verbal and nonverbal components of interaction. The central portion of the book consists of a series of original studies conducted by the author and associates. These empirical studies focus upon various aspects of children's nonverbal behavior which are important in the tutoring situation. In each chapter that reports original research, an attempt is made to place the topic under discussion within a more general framework. This goal is accomplished in three ways: first, by providing a fairly lengthy review of the existing literature dealing with the problem; second, by presenting empirical studies in an abbreviated and readable form; and third, by including in each chapter a final section devoted to discussing results and pointing out concrete implications of the findings for tutoring programs. Role theory and social skills theory are taken as the conceptual framework for organizing and discussing the material presented in the book.

Carpenter, T. P., Moser, J. M., & Romberg, T. A. (Eds.). Addition and subtraction: A developmental perspective. Hillsdale, New Jersey: Lawrence Erlbaum Associates. In Press.

This volume represents recent theoretical views and research findings of a group of international scholars who are concerned with the early acquisition of addition and subtraction skills by young children. The various chapters are an outgrowth of a series of papers presented at a conference held in November, 1979.

The chapters are organized into several sections: critical analyses of the structure of addition and subtraction problems,

the role of counting in solution processes, development of addition and subtraction in other cultures, a technological/information processing analysis of error patterns, and developmental theories related to the acquisition of addition and subtraction skills.

While all the authors have the common aim of discussing the growth and development of the skills and understandings related to addition and subtraction, they individually bring a rich variety of perspectives to this area. The authors from Japan, Israel and the Soviet Union represent different cultural traditions as well as diverse research paradigms. The American contributors bring together the disciplines of psychology, educational psychology and mathematics education, including fields of interest such as information processing, artificial intelligence, early childhood, and classroom teaching and learning.

Dickson, W. P. (Ed.). Children's oral communication skills. New York: Academic Press. 1981. 416 pp. \$29.50.

This book, which presents papers from a conference held in October 1978, integrates the research on children's communication skills deriving from two previously separate traditions: experimental research on referential communication skills and sociolinguistic research on children's communicative competence in natural settings. In addition, educational implications of the research and future directions for research and teaching of communication skills are considered.

The research brought together in this volume portrays an optimistic view of children's ability to communicate. Perhaps most exciting is the evidence emerging that children can be taught a number of speaking and listening skills. A second encouraging theme underlying the present volume is that both the referential and sociolinguistic traditions have important contributions to make to our understanding of children's communication. These two traditions have tended to remain isolated from each other; this book is a step toward the kind of cross-disciplinary interchange necessary for a full understanding of communication skills development. The third major contribution of this volume is to offer broader theoretical perspectives on children's communication skills. It contains theoretical papers which reflect the growing importance of cognitive models of the processes underlying children's communication performance.

This book is directed toward researchers in both the referential and sociolinguistic traditions, educators concerned with the development of a curriculum for oral communication skills, and policy makers concerned with the role of communication skills in the curriculum at the local, state, and national levels.

Harvey, J. G., & Romberg, T. A. (Eds.). Problem-solving studies in mathematics. Madison: Wisconsin Research and Development Center for Individualized Schooling. 1980. 287 pp. \$11.00.

This book explores the questions of how to find out what problem-solving capabilities an individual has and what other intellectual abilities are related to that capacity. The book reports nine studies originally done as doctoral dissertations, and briefly reviews 31 additional studies. The studies look at problem-solving in elementary, secondary, and college classrooms.

Only the insight approach to problem solving is considered in the book. That approach involves transforming the information given in a problem by analysis, synthesis, recombination, or other technique. The editors contrast insight with trial and error, another common problem-solving approach.

One aspect of insight emphasized in the book is the use of heuristics, higher order decision processes that help organize the search for problem solutions. Diagrams, reasoning backwards, using analogies, and looking for patterns are examples given by one of the chapter authors.

Four chapters focus on teaching the use of heuristics for problem solving and generally conclude that abilities can be improved. Other chapters discuss how to assess student problem-solving skills, including heuristics. Concluding chapters examine relationships between learner characteristics such as gender and visual spatial abilities and problem solving. The book includes an extensive bibliography.

Klausmeier, H. J., & Allen, P. S. Cognitive development of children and youth: A longitudinal study. New York: Academic Press. 1978. 336 pp. \$19.50.

The authors report the major findings from the first longitudinal study of cognitive development of children and youth, encompassing grades 1-12. This groundbreaking book presents a theory of cognitive learning and development (CLD theory) on which the longitudinal study is based, and describes the application of principles of cognitive learning and development to educational practices.

Psychologists, educators, and other professionals are given access to detailed longitudinal data on four different groups of students-- Grades 1-3, 4-6, 7-9, and 10-12. Students' growth throughout the school year in acquiring concepts, understanding principles, understanding structures of knowledge, and problem solving is charted. Normative development is examined along with interindividual and intraindividual differences in the rate and pattern of development.

The authors present a design for instruction which evolved through two decades of research, together with a research-based form of schooling that makes possible effective instructional programming for the individual student. The results of many short-term experiments, the longitudinal study, and the school reform effort are brought together for the first time in this volume.

Klausmeier, H. J., & Associates. Cognitive learning and development: Piagetian and information-processing perspectives. Cambridge, Mass.: Ballinger Publishing Co. 1979. 384 pp. \$25.00.

This book presents the results of a 4-year study of children's conceptual development from two perspectives: Klausmeier's conceptual learning and development (CLD) theory, which focuses on development during the school years, and Piaget's more comprehensive theory of cognitive development. The book makes significant progress in clarifying the relationships between the two theories and contributes substantially to extending knowledge of the course and nature of students' cognitive development. The material is addressed to the scholarly community in educational psychology, and education. It can also be used advantageously in graduate courses in cognitive development or learning.

Klausmeier, H. J., Rossmiller, R. A., & Saily, M. (Eds.). Individually guided elementary education: Concepts and practices. New York: Academic Press. 1977. 394 pp. \$19.50.

Many elementary and middle schools across the country have adopted Individually Guided Education (IGE) in the last decade. Research and evaluation studies show that the teachers' own morale and the students' educational achievements are higher, and that the students' self-concept and attitudes toward learning are improved. This complete system for adapting instruction to meet the needs of individual children is a much-needed alternative to the age-graded, self-contained elementary school classroom, the departmentalized elementary school, and the unstructured, open classroom.

With Individually Guided Elementary Education: Concepts and Practices, students, teachers, and administrators now have an authoritative and comprehensive overview of this system. It is written by 16 scholars, most of whom worked with the Wisconsin Research and Development Center for Cognitive Learning, local schools, state education agencies, and teacher-education institutions in developing and refining IGE. It is ideal both for a basic text in a credit course or noncredit staff development program dealing with IGE, and also for a second text in courses and program dealing with elementary and middle school education.

This book covers in detail the components of IGE, and also provides an overview and history of IGE. In addition, it defines objectives for starting IGE schools and establishing IGE as a focus for educational renewal, and guides readers to additional material with descriptions of a wide variety of print and audio-visual materials keyed to the chapters.

This book provides useful, how-to-do-it information for current and prospective teachers and administrators wishing to learn about IGE or adopt it for use in their schools. It will prove equally useful to the staffs of existing IGE schools in refining their practices. In addition to its value as a primary text for credit courses and noncredit staff development programs in IGE, it can serve as a second or supplementary text for courses and programs in particular aspects of individualization, such as individualized reading, mathematics, science, or social studies, and in courses on alternatives in education. Students, researchers, and teachers interested in curriculum and instruction, administration, or educational psychology at the elementary level will find the book's new perspectives and coverage invaluable for dealing with the reform and renewal of American education.

Klausmeier, H. J., & Sipple, T. S. Learning and teaching concepts: A strategy for testing applications of theory. New York: Academic Press. 1980. 228 pp. \$22.50.

This book has three major themes. First, the authors report the results of 13 controlled experiments carried out over a 3-year period. These results markedly extend our knowledge about learning and teaching abstract process concepts (such as observing, inferring, predicting, and classifying) during the intermediate school years. Second, applications of Klausmeier's theory of cognitive learning and development and of his model of instructional programming for the individual student were tested and demonstrated; the book presents empirical verification of applications of both theories. The third substantive area of the book involves the research paradigm which had several noteworthy features. Each of the 13 experiments was carried out simultaneously, the cumulative effects of the experiments on both the experimental and comparison groups of students were measured, and the participating teachers carried out the experimental treatments as part of their regular instruction of the students.

An important feature of this project is developing and then empirically testing the effectiveness of instructional strategies and materials based on theory. This approach avoids the limitations of short-term experimentation that is unrelated either to theory or to instructional practice. It also eliminates the pitfalls of attempting to spell out applications of theory without conducting research on the applications. Thus, the book is of interest to practitioners as well as to researchers.

Levin, J. R., & Allen, V. L. (Eds.). Cognitive learning in children: Theories and strategies. New York: Academic Press. 1976. 314 pp. \$32.00.

This book approaches children's learning in the classroom setting through a series of research projects carried out over a period of ten years by investigators at the Wisconsin Research and Development Center for Cognitive Learning. The research reported in the book stresses an orderly progression from basic to applied research in education and offers a balance of theoretical and practical information on learning and development in children. The chapters dealing with basic cognitive processes in children include discussions of research projects on concept development, memory processes, visual imagery, intellectual abilities, and metaphor. Strategies for improving classroom instruction in schools are dealt with through more applied research on prereading skills, creativity training, cross-age tutoring, and the teaching of concepts.

Lipham, J. M., & Daresh, J. C. (Eds.). Administrative and staff relationships in education: Research and practice in IGE schools. Madison: Wisconsin Research and Development Center for Individualized Schooling. 1979. 141 pp. \$6.50.

This book synthesizes 20 studies, conducted between 1972 and 1978, that analyzed staff and administrative relationships in IGE schools. The book includes a brief description of IGE and its development, and major chapters on the adoption of IGE as an educational change, school organizational structure, educational leadership, and decision making. Both theoretical and practical applications of the research are discussed in detail, and areas for further research are indicated. Each study is abstracted in the appendix.

Many of the findings reported in the book have implications for educational practice. For instance, no innovation of any significance can occur in the school without the understanding and support of the principal and the active involvement of the staff. Strong linkage between teacher education institutions and local schools was also found to be an effective means for sustaining educational change. Also, principals and unit leaders must provide support, give direction, and encourage staff participation if the instructional program is to be effective. Different leadership behaviors are required during different stages of the implementation process. In addition, opportunities must be provided for the staff to participate appropriately in the decision-making process at both school-wide and instructional levels.

Massaro, D. W., Taylor, G. A., Venezky, R. L., Jastrzembski, J. E., & Lucas, P. A. Letter and word perception: Orthographic structure and visual processing in reading. New York: Elsevier-North Holland Publishing Co. 1980. 278 pp. \$30.00.

This book evaluates how the reader's higher-order knowledge about orthographic structure interacts with featural information during the processing of letters and words. The research was carried out utilizing a general information processing model, which provided a formal framework from which hypotheses could be derived and tested. Since the study of visual processing in reading requires an examination of the visual features that are functional during reading, the authors describe those features used in the recognition of lowercase letters. In discussing the fundamental properties of the orthographic structure of English, they distinguish two broad categories of descriptions. The first is derived from statistical-redundance measures based on the frequency with which letter, letter sequences, and words occur in natural texts. The second category, rule-governed regularity, is based on phonological constraints of English and scribal conventions governing the spelling of English.

The psychological reality of various descriptions of orthographic structure in perceptual recognition tasks and overt judgment tasks are examined. The recognition tasks assess the degree to which knowledge of orthographic structure is utilized in word perception, and the overt judgment tasks assess the degree to which this knowledge is consciously available.

The book offers conclusions and implications for future research and classroom practice. For example, additional experiments might help researchers to choose between rule-governed regularity and statistical redundancy. This research promises to lead to the description that best reflects the knowledge of orthographic structure used in the course of normal reading.

Arriving at a good description of orthographic structure should be beneficial in the development of reading instruction. Given that the utilization of orthographic structure is an important component in letter and word recognition, instructional materials should be designed to facilitate children's understanding of this structure. Current phonics programs address only the correspondences between spelling and sound, not the constraints in English orthography. Delineating the best description of orthographic structure might facilitate the teaching and learning of this structure.

Popkewitz, T. S., & Tabachnick, B. R. (Eds.). The study of schooling: Field based methodologies in educational research and evaluation. New York: Praeger Special Studies. 1981. 316 pp. \$26.50

The use of field studies in educational research and evaluation presents unique dilemmas, issues, and questions for researchers to consider. Among these are the implications of findings to educational knowledge and policy-making, methodological concerns about validity and instrumentation, and ethical and political questions related to access to school contexts and to control of research data.

This book responds to issues raised by the recent interest in educational field studies. It includes essays by an international group of scholars. Rather than making a surface distinction between qualitative and quantitative research, the authors explore the scientific roots of educational inquiry as they relate to the ethical, political, and social underpinnings of research.

The book consists of three major parts. The first part, entitled "Social Theory and the Study of Schooling," includes essays that explore field studies not as a set of operations, but as a set of ideas and historical traditions. Methodology is thought of as having broad dimensions that are closely related to theories of social affairs. Various essays in this section draw upon Marxist, phenomenological, and sociology-of-knowledge perspectives to consider what are significant questions for research.

The second part is entitled "Creating Knowledge About Schooling." The essays in this section examine issues related to developing valid descriptions and to generalizing from intensive analyses of school contexts. As in the previous section, different intellectual traditions are expressed to give shape to the problem.

The third part is entitled "Practical Problems of Getting into the Field." These essays discuss political and ethical problems of preparing researchers and carrying out field studies.

In short, each article is a complete statement of a response to a problem rather than an excerpt from a longer paper. Each paper is written by active practitioners in educational research. The discussion of theory as it relates to practice is useful in beginning a course in field study methods.

Popkewitz, T. S., Tabachnick, B. R., & Wehlage, G. G. School reform and institutional life: A case study of Individually Guided Education. Madison: University of Wisconsin Press. In Press.

This book is about the relation of institutional qualities of schooling and educational reform. The problem emerges out of an indepth study of six elementary schools which have adopted a particular reform program, Individually Guided Education. Within this common framework, the study identifies three distinctly different patterns of schooling. These are labeled technical, constructive, and illusory. Each of these institutional patterns contains particular conceptions of school knowledge, patterns of teacher and pupil work, and professional ideologies. Drawing upon the sociology of knowledge, these patterns of schooling are examined and the implications discussed for how educational reform is conceptualized, implemented, and evaluated.

The book is divided into three parts. Part One provides the conceptual background to the study; the problems of studying the "effects" of reform within an institutional context and the assumptions about schooling, learning, and social change that shaped the development of this effort at reform. Part Two explores the findings of the investigation. Technical, constructive, and illusory schooling are discussed considering certain constitutive characteristics of the schools studied. Part Three refocuses the discussion of the different institutional configurations in relation to the ways in which educational reform is conceptualized, implemented, and researched.

This study of Individually Guided Education, reform, and institutional life is not a conventional evaluation. The authors do not establish criteria which are explicitly used to measure some outcome, such as achievement, nor do they describe the extent to which Individually Guided Education is successfully implemented. The intent is to make problematic the categories and procedures of Individually Guided Education by describing the implicit as well as explicit learning which occurs when students, administrators, and teachers respond to the strains of an educational reform.

Rossmiller, R. A., Geske, T. G., Frohreich, L. E., Doro, M., & Johnson, H. W. Research utilization and productivity in IGE schools. Madison: Wisconsin Research and Development Center for Individualized Schooling. 1979. 60 pp. \$6.50.

This monograph summarizes the results of studies of cost, resource utilization, and productivity in elementary schools using the system of Individually Guided Education (IGE). Data for the studies were obtained from a random sample of 41 IGE schools and 15 matched pairs of IGE and non-IGE schools.

Instructional expenditures in IGE schools did not differ significantly from those in non-IGE schools. However, teachers in IGE schools spent their time differently than did their counterparts in non-IGE schools. IGE teachers devoted significantly more time to one-to-one instruction, particularly in reading and mathematics, and significantly less time to large group instruction.

A production function approach was used to identify the input and process variables that were most closely related to student achievement in reading and mathematics and to student self-concept. Several variables were found to be related consistently to student achievement in reading and mathematics. Among them were (a) teachers' involvement in a degree program, (b) years of teaching experience, (c) teachers' sex, (d) students' maturity, (e) students' social confidence, (f) teachers' perception of the principal's leadership, (g) teachers' expression of job satisfaction, and (h) teachers' involvement in decision making.

A set of 12 independent variables accounted for 78% of the variance in reading achievement and a similar set of 12 variables accounted for 71% of the variance in mathematics achievement. All of the variables included in the two composite sets were susceptible to control by teachers and administrators. One subscale of the Self-observation Scales, social confidence, served as a proxy for student self-concept. A set of 12 variables similar to those employed in the analyses of reading and mathematics achievement accounted for 72% of the variance in social confidence scores. The independent variables most closely related to social confidence tended to reflect the ambience of the school rather than specific aspects of the instructional process.

Yussen, S. R. (Ed.). The development of reflection. New York: Academic Press. In Press.

This book results from a conference held in October 1979 to explore recent developments in two interrelated fields of inquiry, metacognitive development and interpersonal attribution. Metacognition is concerned with the knowledge or beliefs held by individuals about the nature of some cognitive activity, e.g., remembering or comprehending. Interpersonal attribution concerns the beliefs held by individuals about what other people are like and what causes others to act the way they do.

The process of acquiring insights into one's own cognition is a logical part of acquiring understanding into the nature of what people are like in general. Thus, metacognitive awareness and interpersonal attribution appear to be closely linked.

The book consists of 10 chapters by the conference participants and brief introductory and concluding chapters by the editor. It defines the state of our knowledge about metacognitive growth and interpersonal attribution, speculates on the "link" between these two domains, and suggests consequences from this research for the practice of education. The book is expected to appeal to scholars in psychology, human development, and social psychology.

BOOKS IN PREPARATION

Allen, V. L., & Devin-Sheehan, L. The one-room: A social psychological analysis.

Otto, W. (Ed.). Reading expository material.

Wilkinson, L. Cherry (Ed.). Communicating in the classroom.

The books listed above will be published by Academic Press.

STUDIES OF INSTRUCTIONAL PROGRAMMING FOR THE INDIVIDUAL STUDENT

DEVELOPMENT OF METACOGNITION

Faculty Associate:

Steven R. Yussen, Department of Educational Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Yussen, S. R., & Kane, P. T. Children's conception of intelligence. Technical Report No. 546. 74 pp. July 1980.

A study was designed to take a broad look at the notion of intelligence held by children. A sample of 71 elementary school children in first, third, and sixth grades were interviewed with an extensive questionnaire to determine their views on several themes prominent in the psychological literature on intelligence. At all grades, children's (1) spontaneous definitions of intelligence included the critical concept of the amount of information or knowledge a person has. The youngest children also identified interpersonal skills while the older ones stressed academic skills. Several interview items targeted (2) visible signs of intelligence. The youngest children generally thought it was possible to spot intelligence from the way a person looked, talked, and acted, whereas the older groups did not. Children were also asked to identify (3) whether each of a large number of specific qualities are associated with intelligence. The youngest children affirmed that all qualities are associated with the concept; the oldest children distinguished mental qualities from social and academic ones and these latter ones from physical qualities. Another section (4) probed children's beliefs about the relative importance of nature and nurture on intelligence. The youngest children opted for nature and the oldest opted for nurture the majority of the time. In a final section of the questionnaire, (5) children were queried on their beliefs about the constancy or malleability of intelligence. The youngest children believed dull people could later become bright, but bright people are not likely to become dull. By contrast, the third and sixth graders thought change in both directions was quite possible and likely.

ANALYSIS OF CROSS-AGE TUTORING PROCESSES

Faculty Associate:

Vernon L. Allen, Department of Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Atkinson, M. L., & Allen, V. L. Perceived structure of nonverbal behavior.
Technical Report No. 565. 27 pp. November 1980.

Thirty-six observers viewed a sequence of nonverbal behavior that was described as being either spontaneous (the stimulus person was filmed with a hidden camera) or deliberate (the stimulus person was acting). While watching the videotape, observers segmented the behavior into meaningful units. Results indicated that observers who believed they were watching deliberate behavior generated approximately twice as many units for the nonverbal sequence as compared to observers who believed they were viewing spontaneous action. The findings are discussed in terms of a cognitive schema that an observer uses in the active organization of behavioral events.

Brideau, L. B., & Allen, V. L. Individual differences in nonverbal communication: Facial and vocal encoding skills. Technical Report No. 567.
38 pp. November 1980.

The present study tested the hypothesis that physical attractiveness is related to social skills in nonverbal communication. The socialization environment of persons is assumed to differ as a function of their physical attractiveness. We predicted, on the basis of these differences, that the physically attractive would have greater opportunity than physically unattractive individuals to develop nonverbal communication skills (encoding ability). Results showed that physically attractive females had greater nonverbal communication skills than unattractive females in two nonverbal channels (facial and vocal). Males did not differ in communication accuracy (facial and vocal) as a function of level of physical attractiveness. The interaction between physical attractiveness and sex of encoder is consistent with research suggesting that attractiveness contributes strongly to social acceptance and self-concept for females, but less so for males.

ADAPTING INSTRUCTION TO STUDENT LEARNING STYLE

Faculty Associate:

Penelope L. Peterson, Department of Educational Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Janicki, T. C., & Peterson, P. L. Aptitude-treatment interaction effects of variations in direct instruction. Technical Report No. 537. 45 pp. March 1980. ED 187 690.

This study investigated aptitude-treatment interaction (ATI) effects of variations in direct instruction. Two teachers each taught a 2-week fractions unit to two classes of randomly assigned fourth- and fifth-grade students. Each teacher taught one class using direct instruction and the other using a small-group variation of direct instruction. Students completed aptitude measures before the study began and achievement and attitude measures at the end. Regression analysis on achievement showed significant ATI and significant teacher effects. Students who had positive attitudes and an internal locus of control did better in the small-group variation probably because they had some choice of activities and control over their learning. Teachers differed in effectiveness within direct instruction but did not differ within the small-group variation.

Peterson, P. L., Janicki, T. C., & Swing, S. R. Individual characteristics and children's learning in large-group and small-group approaches: Study II. Technical Report No. 561. 49 pp. October 1980.

This study attempted to replicate and extend previous aptitude-treatment interaction (ATI) findings for students' learning in large-group and small-group teaching approaches. Each of two elementary teachers taught a 2-week geometry unit to two classes of fourth- and fifth-grade students. Each class received one teaching approach. Stratified random assignment was used, so within each class students were either matched or mismatched on their initial preferences for the teaching approach. Students completed aptitude measures at the beginning of the study and achievement, attitude, and retention measures at the end. Results indicated that matching teaching approach to students' initial preferences did not affect students' achievement, retention, or attitude scores but did affect their classroom behavior. Regression analyses showed significant curvilinear ATI for ability that supported previous ATI findings. High and low ability students did better in the small-group approach than in the large-group approach. Medium ability students did slightly better in the large-group approach than in the small-group approach.

Germano, M. C., & Peterson, P. L. A comparison of individually guided education (IGE) teachers' and non-IGE teachers' use of student characteristics in making instructional decisions. Working Paper No. 301. 32 pp. November 1980.

This study investigated the extent to which IGE and non-IGE teachers considered student characteristics when making instructional decisions for an individual student. Thirty-two IGE and 32 non-IGE teachers each completed a questionnaire in which they made instructional recommendations for eight hypothetical students. Each student was described as either high or low on achievement, sociability, and motivation. Results indicated that teachers did consider student characteristics in making their instructional recommendations. Teachers recommend that students low on achievement should spend more time working with the teacher in either a one-to-one or small-group setting than students high on achievement. Teachers also reported that compared to students high on sociability, students low on sociability should spend a smaller amount of time working in a small group or larger group and a greater amount of time working alone or one-to-one with the teacher. Surprisingly, IGE and non-IGE teachers did not differ in the extent to which they used student characteristics in making their instructional recommendations. However, IGE teachers believed that when they made their recommendations, they considered sociability to be most important, motivation next most important, and achievement least important.

STUDENTS' COMMUNICATIVE COMPETENCE IN INSTRUCTIONAL CONTEXTS

Faculty Associate:

Louise Cherry Wilkinson, Department of Educational Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Wilkinson, L. C., & Calculator, S. Effective and appropriate requests in first-grade reading groups. Technical Report No. 564. 58 pp. November 1980.

In this report, we introduce the concepts of effective and appropriate speakers and listeners to characterize one aspect of children's use of language. Effective communicators use their knowledge of language forms, functions, and contexts to achieve their communicative goals. Appropriate communicators comply with the societal conventions of cooperation and politeness in conversation. Effective and appropriate use of language to communicate is crucial for learning in the classroom, which can be defined as an interactional context in which both the roles of speaker and listener are alternately assumed by teachers and students. This report includes the results of a study on selected aspects of requests for information and action produced by 54 first-grade children. Three issues are addressed. The use of requests for information and action are examined in detail, in light of the theoretical notions introduced. A second issue concerns individual differences in these aspects, while the third issue concerns the relationship of these aspects to language ability, social competence, and reading achievement.

INSTRUCTIONAL PROGRAMMING FOR THE
INDIVIDUAL STUDENT IN SECONDARY SCHOOLS

Faculty Associate:

Herbert J. Klausmeier, Department of Educational Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Probst, D. A study of time on-task in three teachers' classrooms using different instruction modes. Technical Report No. 562. (Ph.D. dissertation) 128 pp. November 1980.

This study investigated differences occurring in student time utilization in three teachers' classes. In class A the teacher used a large-group instructional mode, in class B the teacher used a small-group instructional mode, and in class C the teacher used an individualized instructional mode. The subjects were 60 eighth-grade students drawn from three teachers' mathematics classes in a large urban middle school. A time sampling observation system was used to record student time on-task, time off-task, and sanctioned noninstructional time. Students completed a locally constructed mathematics test at the end of the study. Scores from this test were used to place students in three achievement levels.

Results of pairwise planned comparisons performed on time on-task indicated that high and middle achievers spent significantly more time on-task than low achievers. No difference was found between high and middle achievers. The pairwise comparisons also indicated no significant difference in time on-task for any one of the three levels compared between any two of the three teachers' classes. The second dependent variable tested was sanctioned noninstructional time. No significant differences were found between any two achievement levels for sanctioned noninstructional time. There were three significant comparisons between achievement levels and sets of teachers' classes. The middle achievers in class A differed from the middle achievers in class B, the low achievers in class A differed from the low achievers in class B, and the low achievers in class C differed from the low achievers in class B.

DEVELOPMENTAL ASPECTS OF
LEARNING DISABILITIES

Faculty Associate:

Sara G. Tarver, Department of Studies in Behavior Disabilities

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Tarver, S. G., & Ellsworth, P. S. The effects of stimulus presentation rate on the short-term memory of learning disabled children. Technical Report No. 536. 35 pp. April 1980.

To test the hypothesis that the developmental lag in verbal rehearsal which has been documented for the learning disabled is due to a naming speed deficit (i.e., slow retrieval of stimulus names), the serial recall performance of learning disabled children at four grade levels (1, 3, 5, and 7) was compared under three stimulus presentation conditions: (a) a standard 2-second (2S) presentation rate which served as a control condition, (b) a slower 6-second (6S) presentation rate, and (c) a subject-controlled (SC) variable stimulus exposure time. It was hypothesized that the 6S and SC conditions would facilitate the use of verbal rehearsal (as reflected in improved primacy recall) by allowing more time for retrieval and rehearsal of the names of the stimulus items (animal pictures). As predicted, the three stimulus presentation conditions affected primacy and recency recall differently: SC produced the greatest primacy; 6S produced the greatest recency in combination with moderate primacy; 2S produced a recency, but no primacy, effect. In general, the findings indicate that, for the learning disabled: (a) slow naming of stimulus items contributes to deficient verbal rehearsal under rapid stimulus presentation rates, (b) the experimental provision of additional time to retrieve and rehearse the stimulus names facilitates verbal rehearsal, and (c) developmental increases in speed of naming precede developmental increases in the use of efficient verbal rehearsal strategies.

Tarver, S. G. Characteristics of learning disabilities: A selective review. Working Paper No. 296. 22 pp. August 1980.

An empirical study of the characteristics of over 3,000 children enrolled in Child Service Demonstration Centers for learning disabilities in 21 states revealed the following demographic characteristics: (a) most of the children were in the lower elementary grades; (b) the sex

ratio was three boys to one girl; (c) approximately two-thirds of the children were referred because of reading problems; (d) the median educational retardation was one grade below the mental age reading grade expectancy; (e) retardation in arithmetic was one-half grade less than the retardation in reading and spelling; (f) the IQ distribution revealed a larger proportion with below average IQ than is found in the general population. This review covers research investigating the intellectual, attention and verbal mediation, social-affective, and language characteristics of learning disabled children.

STUDIES OF ADMINISTRATION AND ORGANIZATION FOR INSTRUCTION

COMPUTER SUPPORT FOR INDIVIDUALIZED INSTRUCTION

Faculty Associate:

Donald M. McIsaac, Department of Educational Administration

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

McIsaac, D., Bilow, C., Macrides, G., & Romstad, D. An overview of micro-CMI.
Theoretical Paper No. 88. 25 pp. November 1980.

The past year has seen the development and refinement of a Computer Managed Instruction (CMI) program on a microcomputer. Several factors have made the accomplishment possible at this time. First, the earlier development of two CMI systems at the University of Wisconsin provided an excellent knowledge base from which to begin. Second, the emergence of low-cost hardware with significant mass storage capability provided the necessary hardware. Third, the use of hardware with a mature operating system and development support software utilities enhanced the scope and speed of the project. Fourth, the availability of experienced test sites provided timely, helpful, and relevant feedback. The purpose of this study is to indicate the nature and scope of the development effort. The remainder of this overview briefly describes the antecedent projects, the current development effort, the rationale for use of a microcomputer, hardware selection concerns, a system description, and some important design considerations.

ORGANIZATION OF THE SCHOOL FOR INDIVIDUALIZED INSTRUCTION

Faculty Associate:

James M. Lipham, Department of Educational Administration

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Artis, J. B. An ethnographic case study of the administrative organization, processes, and behavior in a selected senior high school. Technical Report No. 557. (Ph.D. dissertation) 250 pp. September 1980.

The major purposes of this study were to describe and explain the administrative organization, processes, and behavior and to generate grounded theory about the administrative organization, processes, and behavior in an innovative senior high school.

The data were gathered using the ethnographic approach including participant observation, open-ended interviews, and document analysis. This study provided an understanding of the administrative organization, processes, and behaviors; the impact of the administration on the school; and generalizable propositions based on grounded theory. Numerous implications for practice and further research are suggested based on the major conclusions of the study.

Brittenham, L. R. An ethnographic case study of the administrative organization, processes, and behavior in an innovative senior high school. Technical Report No. 547. (Ph.D. dissertation) 207 pp. June 1980.

The major purposes of this study were: (a) to describe and explain the administrative organization, processes, and behavior; and (b) to generate grounded theory about the administrative organization, processes, and behavior in an innovative senior high school. The data were gathered by means of an ethnographic case study utilizing participant observation, open-ended interviews, and document analysis. This study provided a clear understanding of the administrative organization, processes, and behavior within an innovative senior high school, the impact of the administration on the school, and generalizable propositions regarding the administrative organization, processes, and behaviors necessary for an innovative senior high school to be successful.

The major conclusions of the study concerned existing change models and their implications for leadership, decision making roles within the institution, and organizational change. As a result of these conclusions, numerous implications for practice and further research were suggested.

Zimman, R. N. An ethnographic case study of the administrative organization, processes, and behavior in a model comprehensive high school. Technical Report No. 556. 270 pp. September 1980.

The major purposes of this study were: (a) to describe and explain the administrative organization, processes, and behavior; and (b) to generate grounded theory about the administrative organization, processes, and behavior in a model comprehensive high school. The school selected for this study was nationally recognized as a model for implementing individualized learning programs and other facets of innovative secondary schooling as developed at the Wisconsin R & D Center.

The data were gathered using ethnographic case study methodology including open-ended interviews, participant observation, and document analysis. The researcher, together with two coresearchers, spent 3 weeks on site and participated daily in the social system of the school. This study provided an understanding of the administrative organization, processes, and behavior within a model comprehensive high school, the impact of the administration on the school and generalizable propositions based on grounded theory regarding the administrative organization, processes, and behavior in secondary schools.

PRODUCTIVITY AND COST-EFFECTIVENESS IN
INDIVIDUALIZED SCHOOLING

Faculty Associates:

Lloyd E. Frohreich, Department of Educational Administration
Richard A. Rossmiller, Department of Educational Administration

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Broaden, S. M. The allocation of instructional time to students in elementary schools that seek to individualize instruction. Technical Report No. 554. (Ph.D dissertation) 168 pp. August 1980. ED 193 229.

First, this study investigated academic ability grouping of students in relationship to the amount of time they received from teachers in schools which seek to individualize instruction. Second, the study examined the effects of academic ability grouping on students' self-concept. Third, the study probed teachers' perceptions of students' social behavior to determine its effect on student academic ability group placement. Three major conclusions derived from the analysis of the data were: (1) A statistically significant difference existed between students' academic ability group level and the amount of instructional time students received from teachers in small-group and in a combination of one-to-one and small-group arrangement, with low-ability students receiving more of the teacher's time. (2) Nine of the 15 student social behavior characteristics were found to be statistically significant when related to the placement of students in academic ability groups. Students in the higher ability group tended to be rated more favorably on these characteristics. (3) A statistically significant relationship was found between the amount of time students spent working independently and their academic ability level, with students in the higher ability group spending more time working independently.

Jacobson, K. The relationship of individual student time allocation to reading and mathematics achievement. Technical Report No. 563. (Ph.D. dissertation) 209 pp. November 1980.

The major purposes of this study were to determine whether there are differences in student use of time in elementary schools, whether students who spend more time in reading and mathematics classes exhibit greater gains in reading and mathematics achievement, and whether there are "quality" measures of time which are related to

achievement gains. It was hypothesized that the ways in which individual students utilized time would be related significantly to their achievement gains. Third-grade students were stratified by several background variables to determine the relationship of background characteristics to time allocation measures. Some major findings include the following: (1) significant differences existed in the amount of time available to individual students in reading and mathematics classes. (2) Students with greater amounts of allocated time exhibited significantly greater achievement gains in mathematics. (3) Time-on-task rates in reading and mathematics were significantly related to the student's school, teacher, and ability level. (4) Lower-ability level students received significantly more teacher time in reading than did either high- or medium-ability level students. Medium-ability students received more teacher time than did high-ability students.

STUDIES OF SCHOOL-COMMUNITY RELATIONS IN IGE SCHOOLS

Faculty Associate:

B. Dean Bowles, Department of Educational Administration

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Oinonen, C. The relationship between school-community relations and student achievement in elementary and secondary schools. Technical Report No. 552. 665 pp. August 1980.

This study was based on a series of studies conducted through the Home-School-Community Relations Project at the Wisconsin R & D Center. This study proposed to accomplish the following: (a) consider the relationships among five variables of school-community relations (access, communication, involvement, participation, and conflict resolution); (b) measure the general relationship between parents' perceptions of school-community relations and their children's academic achievement; (c) determine the contribution of the five variables to an overall measure of effective school-community relations and to measures of achievement; and (d) examine the general relationship among perceptions of elementary and high school parents and students about school-community relations and student academic achievement.

Based on the findings of this study, it can be said that the manner in which parents view the school (effective school-community relations, support, or legitimacy) is largely a function of communication. Also, the school-community relations variables most influencing parental behavior are different from the variables influencing student behavior. A proposed model and alternate models have been developed to explain school-community relations in relationship to an identified public and a selected goal or outcome.

STUDIES IN LANGUAGE: READING AND COMMUNICATION

INFORMATION PROCESSING IN READING

Faculty Associate:

Dominic W. Massaro, Department of Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Massaro, D., Jastrzemski, J., & Lucas, P. Frequency, orthographic regularity, and lexical status in letter and word perception. Technical Report No. 550. 116 pp. August 1980.

The present research assessed the role of orthographic structure in the perceptual recognition and the judgment of letter strings. Lexical status, word frequency, bigram frequency, log bigram frequency, and regularity of letter sequencing were orthogonally varied across a series of experiments. Six-letter words and their anagrams were used as test stimuli in a target-search task. Words were recognized better than their corresponding equally well-structured anagrams, but word frequency had little effect. Orthographically regular anagrams were recognized better than irregular anagrams, whereas log bigram frequency did not have an effect. In contrast, post hoc correlations revealed that log bigram frequency did correlate significantly with individual item performance. In a final experiment, subjects judged which of a pair of letter strings most resembled English in terms of either the frequency or the regularity of letter sequences. The results revealed an influence of essentially the same dimensions of orthographic structure as was revealed by the perceptual recognition task. The results provide evidence for lexical status, regularity of letter sequencing, and frequency of letter sequencing as important dimensions in the psychologically real description of orthographic structure.

PICTURES AND IMAGERY IN
CHILDREN'S LANGUAGE-PROCESSING SITUATIONS

Faculty Associate:

Joel R. Levin, Department of Educational Psychology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Levin, J. R. The mnemonic '80s: Keywords in the classroom. Theoretical Paper No. 86. 54 pp. September 1980.

Research concerning the applied educational potential of Richard Atkinson's mnemonic "keyword method" is reported. Included are possibilities for stretching the limits of the keyword method by combining it with other mnemonic and prose-learning strategies. Ten reasons are given for why mnemonic techniques should be introduced into educational curricula.

Levin, J. R. Pictures for school learning: Practical illustrations. Theoretical Paper No. 90. 54 pp. October 1980.

Studies are reviewed in which pictures have been applied to school-learning contexts. Successes and failures are analyzed in terms of picture qualities, as well as in terms of the functions that pictures can be expected to serve. Situations are described in which maximum pictorial benefits would be anticipated. Common arguments, both for and against the inclusion of pictures in classroom curricula, are considered. Included here are arguments concerning student diversity and skill development. Finally, promising new areas of pictorial applications are indicated.

Levin, J. R., & Berry, J. K. Children's learning of all the news that's fit to picture. Working Paper No. 280. 26 pp. April 1980.

In four experiments, fourth-grade children listened to newspaper passages either with or without accompanying relevant visual illustrations. Pictures facilitated children's recall of illustrated content, even after a 2- or 3-day delay. Both single "main idea" pictures and multiple individual pictures were helpful. Moreover, a simple reinforcement/selective-attention account of the picture effect was ruled out by the final experiments. The findings parallel those based on children's learning of narrative prose passages.

Levin, J. R., Shriberg, L. K., McCormick, C. B., & Pressley, M. Transformational versus representational functions of prose-learning imagery. Working Paper No. 297. 19 pp. August 1980.

Eighth-grade students were presented fictitious passages about "famous" people and their accomplishments. The people's names (e.g., Larry Taylor) were given to half the subjects, and their occupations (e.g., a tailor) were given to the other half. For the occupation passages, imagery-instructed subjects could form direct images of the passage content (representational imagery), whereas for the name passages, before imaging, subjects first had to convert a name into its acoustically identical occupation (transformational imagery). The results were in complete accord with the hypothesis that greater prose-learning facilitation can be expected from transformational imagery than from representational imagery.

Pressley, M., Levin, J. R., & Miller, G. E. How does the keyword method affect vocabulary comprehension and usage? Working Paper No. 278. 29 pp. March 1980.

The keyword method of vocabulary learning involves forming a linkage between a to-be-learned vocabulary word and a familiar English word that sounds like part of the to-be-learned item (the keyword). Then, the learner forms an interactive image between the keyword and definition referents. In previous research, the keyword method has been found to facilitate students' recall of definitions, given vocabulary items. In this study, use of the method was also shown to increase comprehension of English vocabulary in contexts, as well as usage of that vocabulary in a novel context.

Pressley, M., Levin, J. R., & Miller, G. E. The keyword method and children's learning of foreign vocabulary with abstract meanings. Working Paper No. 282. 25 pp. April 1980.

Fifth-grade students were taught the English translations of 20 Spanish nouns; 10 possessed concrete referents and 10 did not. Three different variations of the mnemonic keyword method (imagery, sentence, and imagery-or-sentence) were compared, to each other and to a no-strategy control group. Each of the three keyword variations greatly facilitated the children's learning of both concrete and abstract words. Moreover, there were no differences among the three keyword variations. Suggestions for future research and instructional implications are included in the discussion.

Pressley, M., & Levin, J. R. The keyword method and recall of vocabulary words from definitions. Working Paper No. 286. 25 pp. June 1980.

In three experiments college students learned English vocabulary words

using either a keyword or a no-strategy control technique. Use of the keyword technique did not enhance recall of the actual vocabulary word per se integrated in memory before presentation of the vocabulary word-definition pairings. The results are discussed with reference to theories of mnemonic effectiveness and recent empirical work on backward recall of vocabulary words.

Pressley, M., Levin, J. R., & Miller, G. E. The keyword method compared to alternative vocabulary-learning strategies. Working Paper No. 294. 31 pp. August 1980.

Imagery and sentence versions of the keyword method of vocabulary learning were contrasted with three nonkeyword verbal-contextual alternatives. Subjects' definition learning in the imagery keyword condition was substantially higher than when subjects were presented the vocabulary in sentence contexts, when they generated sentence contexts for the words, when they made decisions about whether the words were used correctly in sentences, or when they were left to their own devices to learn the words. The learning benefits associated with the sentence keyword version were not as dramatic as in the imagery keyword condition. They were more evident when recall of any part of the definition was considered correct than when recall of the entire definition was necessary. These results indicate that the keyword method is a potent alternative to vocabulary-learning techniques that are regarded as effective by curriculum experts in reading.

Shriberg, L. K., Levin, J. R., & McCormick, C. B. Learning more about "famous" people via the keyword method. Working Paper No. 283. 18 pp. April 1980.

This study replicates and extends the findings of a study reported in Working Paper No. 274. In particular, it was found that eighth-grade students could successfully apply a mnemonic method to learning "famous" people's accomplishments. Both experimenter-provided illustrations and subject-generated visual imagery were helpful, although the former were more so.

Triplet, D. G. A test of two prose learning strategies: Imagery and paraphrase. Working Paper No. 288. 180 pp. May 1980.

The primary purpose of the study was to identify two learning strategies which might help students improve their prose comprehension. The two strategies selected for investigation were imagery and paraphrasing. The study further attempted to determine the efficacy of systematic training versus simple instructions regarding the use of these strategies.

The results of the analysis can be summarized as follows. Exposure of subjects to the experimental treatments did not significantly increase their performance over the performance of subjects in the control condition. There was no significant difference in performance among subjects in the experimental treatment conditions. None of the comparisons was affected by the type of question (i.e., verbatim or paraphrase) the subject was asked during the testing phase. The mean performance of subjects who received paraphrase questions was slightly lower than that of subjects who received verbatim questions during the testing phase. This was the only statistically significant comparison of those planned comparisons tested.

Several possible reasons for the failure of the learning strategies to produce significant increases in demonstrated prose comprehension are discussed.

ASSESSMENT AND ANALYSIS OF
WORD IDENTIFICATION SKILLS IN READING

Faculty Associate:

Dale D. Johnson, Department of Curriculum and Instruction

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Johnson, D. D., Pittelman, S. D., Schwenker, J., & Shriberg, L. K. Interim report: The refinement of the test battery to assess word identification skills. Technical Report No. 544. 86 pp. July 1980. ED 194 575.

The research discussed in this report is a continuation of an effort to develop a set of diagnostic subtests in phonics and structure with empirically determined mastery levels which will assess the word identification skills of elementary school children.

This report documents the revisions made in 1977 prototype test battery following a winter 78/79 and spring 1979 administration of the Phonics and Structure Subtests, and describes a study in which the revised subtests were administered to 80 second and third grade pupils.

Item analysis information was obtained for use in the preparation of the subtests for the final administration of the Word Identification Test battery, conducted in spring 1980. Minor revisions were made which should improve the diagnostic precision of the tests and eliminate concerns regarding correct response position and frequency of occurrence of specific distractor categories.

The grade level appropriateness of each subtest was evaluated. Results indicated (a) the Phonics Subtests could be administered to first graders, and (b) parts of the Structure Subtests could be administered to fourth and fifth graders.

This report is the fourth report in a series of five. The final report will conclude the research conducted over the past 3-1/2 years by the Project on the Assessment and Analysis on Word Identification Skills in Reading.

Johnson, D. D., Pittelman, S. D., Shriberg, L. K., Schwenker, J., & Dahl, S. S. The word identification test battery: A new approach to mastery and the assessment of word identification skills. Technical Report No. 553. 173 pp. September 1980. ED 194 590.

The work reported in this paper culminates four years of research by the Project on the Assessment and Analysis of Word Identification Skills in Reading. The data gathered in this study were used to examine correlations between word identification skills, as measured by the various word identification subtests, and global comprehension ability, as measured by the standardized Metropolitan reading subtest. In addition, levels of skills mastery for each of the five subskills assessed in the battery were established. This report presents some historical perspectives on word identification skills, documents the development of the test items, and summarizes the results of the analyses.

As part of the process to establish performance guidelines for the Word Identification Test battery, an extensive review of mastery learning theory was conducted and the issue of mastery learning theory and its application to reading instruction examined.

The Word Identification Test battery uses a unique approach for the establishment of mastery levels--instead of a single absolute criterion for mastery, the performance guidelines for each subtest in the battery take into account a child's grade level and comprehension ability.

CHILDREN'S COMPREHENSION OF SYNTACTIC STRUCTURE

Faculty Associates:

W. Charles Read, Department of English and Linguistics
Peter A. Schrieber, Department of English and Linguistics

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Schrieber, P. A. On the acquisition of reading fluency. Theoretical Paper
No. 82. 28 pp. May 1980.

The acquisition of reading fluency crucially involves the beginning reader's tacit recognition that he or she must learn to compensate for the absence of graphic signals corresponding to certain prosodic cues by making better use of the morphological and syntactic cues that are preserved. I argue that the success of the method of repeated readings and similar reading instruction techniques results from the fact that these methods facilitate discovery of the appropriate syntactic phrasing in the written signal. I suggest that the crucial step comes with the beginning reader's recognition that parsing strategies other than those which rely on prosody or its somewhat haphazard graphic analogues are required in order to read with sense.

COMMUNICATION SKILLS STUDY

Faculty Associate:

W. Patrick Dickson, Department of Child and Family Studies

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Dickson, W. P., & Moskoff, M. A meta-analysis of referential communication studies: A computer readable literature review. Theoretical Paper No. 83. 179 pp. May 1980

This paper reports a computer-assisted analysis of studies of referential communication. A literature search located 66 publications in which communication skills were studied using referential tasks. These publications reported 80 experiments involving 114 referential tasks. Each study was coded on 22 dimensions, including total number of subjects, their ages, sex, socioeconomic status, and ability, plus a number of task characteristics. The studies were entered into a statistical software package (SPSS) system file and analyzed with respect to the characteristics of the subjects and experimental designs, factors influencing referential communication performance, and changes in research over time.

Analysis of changes in the field over the period from 1960 to 1979 revealed a number of trends. The age of children studied has decreased during this time. In early experimental designs, pairs of children communicated with each other, while more recently designs in which children communicate with an experimenter in standardized settings have become popular. The types of referential tasks used have tended toward simpler and less challenging tasks, with picture-choosing tasks involving pictures with fixed attributes becoming most common. This paper concludes with a discussion of future directions for research on children's oral communication skills.

STUDIES RELATED TO OBJECTIVE-BASED READING INSTRUCTION

Faculty Associate:

Wayne Otto, Department of Curriculum and Instruction

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Camperell, K. Identification of seventh-grade students' insights about the strategies they used to study and understand an expository text. Technical Report No. 566. (Ph.D. dissertation) 269 pp. November 1980.

The major purpose of this study was to determine if seventh-grade students' insights about the strategies they used to study and understand an expository passage were similar to basic types of comprehension skills developed in many instructional reading programs. Secondary purposes of the study involved determining if (a) good and poor readers differed in the types of strategies they said they used, and (b) students' verbal reports were reliable in the sense that they could be used to discriminate between students on a recall test of comprehension and to predict students' classification as masters or nonmasters of criterion-referenced tests of comprehension skill development.

The major conclusion from the study was that students' insights about their reading-study behavior are similar to traditional types of comprehension skills. Although good and poor readers were not found to differ in the kinds of strategies they said they used, they did differ in frequency with which they said they used some of the strategies identified. Further analysis of the student responses indicated that their verbal reports could be used to (a) discriminate between students on a probed-recall test, and (b) predict students' classification as masters or nonmasters of comprehension skills, as measured by criterion-referenced tests.

Dana, C. M. The effects of using a graphic advance organizer before, during, and after reading on the comprehension of written text: A study conducted with sixth-grade students. Technical Report No. 545. (Ph.D. dissertation) 132 pp. June 1980. ED 193 606.

This study tested the effects of a graphic advance organizer used before, during, and after reading on the comprehension of written text. About 200 sixth-grade students in a middle school in western Wisconsin were assigned to a graphic advance organizer group or a reading-only control

group. Students completed test materials at their own pace. After a student completed reading a unit, he or she was given a multiple-choice subtest covering the content of that unit. A comprehensive-comprehension test was given after all the units were completed and 1 week after completing the comprehensive-comprehension test, each student was given a short-answer delayed comprehension test. The scores from the composite, comprehensive, and delayed comprehension tests were analyzed.

The findings indicate that although the graphic advance organizer did not facilitate comprehension of single-theme text, it did facilitate comprehension of multithematic text. The graphic advance organizer appeared to strengthen retention of content, and below-level, at-level, and above-level readers seemed to benefit similarly from the use of the organizer.

Johnson, L. L. The effects of word frequency, sentence length and sentence structure on the readability of two college textbook passages. Technical Report No. 551. (Ph.D. dissertation) 243 pp. July 1980.

The purpose of this study was to determine the effects of sentence length, sentence structure, and word frequency on the readability of two 1000-word college textbook passages whose content was held constant. For children, word frequency and sentence length are associated with the reading difficulty of short passages, but how these factors might be responsible for the difficulty of textbooks intended for mature readers need to be examined.

Two college textbook passages were rewritten with shortened sentences, more frequently occurring nontechnical words, and cumulative sentences containing a short base clause followed by free modifiers. Combinations of the three variables formed the remaining treatment conditions. Reading efficiency, the number of comprehension test items answered correctly per minute of reading time, was the main measure of readability.

When the mean scores on the original versions were contrasted with the rewritten versions, certain of the stylistic factors appeared to aid reading efficiency, although the statistical tests did not reach statistical significance. To the degree that difficulties in the original passages were corrected in the rewritten versions, readability was likely to be improved.

Kamm, K. Strategies for implementing skill-based reading instruction. Technical Report No. 533. 57 pp. March 1980. ED 185 537. \$3.25.

This paper presents some practical strategies for implementing a skill-centered approach to reading instruction. The first two strategies pertain to the beginning implementation stage: making a commitment to a skills approach, and paying attention to principles for educational change. We stress the need for school personnel to make a conscious

decision to make skills the basis of their curriculum, since in many school settings materials, instead, are the basis.

We discuss the importance of observing principles for change because we believe that current inservice work, which centers mainly on specific skill-centered materials, is inadequate. Teachers need to be better prepared for the personal changes in teaching styles, responsibilities, and management and instructional techniques that they must make to use a skill-centered approach.

In the section on whole-staff involvement in the whole-school reading program, we talk in detail about two kinds of inservice sessions--those to inform (pertaining to use of materials) and those to involve (pertaining to preparing teachers for change). We also discuss implementation issues that naturally arise in schools using a skill-centered approach, and present three specific issues that commonly develop: pacing implementation steps, problem solving, and scheduling planning time and progress reports. We suggest that these issues can be resolved relatively easily, if they are addressed early instead of avoided until they become sources of major controversy.

Young, P. Effect of inference-making aids on poor readers' comprehension. Technical Report No. 555. (Ph.D. dissertation) 205 pp. August 1980.

The effect of adjunct aids on comprehension of expository text by seventh-grade poor readers was investigated. The adjunct aids were activities designed to invite readers to make inferences required in order to understand the text, a 1,300-word passage on the Kalahari Desert. Two treatment groups received activities with graphic locational aids, one simultaneously with the reading and one after an initial reading of text. Two treatment groups received the same activities without graphic aids, one simultaneously with and one after reading. The two control groups did not receive activities. One control group read the text for as long as the subjects wished. The other read for approximately as long as the average time the treatment groups spent reading and doing activities. The inference-making activities were concluded to be effective at increasing comprehension with these subjects and materials. The presentation of activities after text was read was concluded to be a critical factor in enhancing comprehension by means of inference-making activities. Embellishing the activities with graphic locational aids was concluded to be unimportant in facilitating comprehension by means of inference-making activities.

Otto, W., White, S., & Camperell, K. Text comprehension research to classroom application: A progress report. Theoretical Paper No. 87. 143 pp. October 1980.

The goal of the Wisconsin R & D Center's project on Improving Student's

Understanding of Content-area Texts is to design procedures for helping students both to develop and to apply effective behaviors for understanding expository text. The projects' early efforts were focused on helping students develop and apply specific comprehension skills, and more recently the scope of focus has been broadened to include the development of more general teacher and student-directed strategies for understanding content-area materials. In this paper the projects' developmental efforts to date are summarized and promising directions for future work are examined. Specifically, the paper is intended to (a) clarify the goals of the project, (b) describe an instructional technique that is being developed to pursue the overall goal, (c) present the results and implications of two pilot studies, (d) examine selected literature for additional direction, and (e) discuss possible next steps for refining the technique being developed.

Morrison, B. Content-area reading staff development for secondary teachers: Comments and guidelines for the reading specialist. Practical Paper No. 23. 192 pp. October 1980. \$6.50.

This paper is a resource for the reading specialist concerned with presenting staff development sessions. The purposes of these sessions are to motivate teachers to think about the impact of the reading process for learning in their content-area, and to initiate communication with content-area teachers. The paper is divided into four sections: (1) Reading education as part of staff development: A rationale. Specific reasons why funds ought to be allocated for staff development are presented. Particular attention is given to why professional growth is necessary for teachers, why reading education ought to be part of that growth, and why teachers of grades 7 through 12 need to be concerned with reading education. (2) Guidelines for preparing staff development experiences. Three types of considerations--logistic, content, and procedural--must be taken into account by the individual responsible for implementing reading staff development. This section offers suggestions for providing these considerations. (3) Suggested topics for staff development in content-area reading. Each topic suggested is based on results of a survey of about 400 teachers who identified the reading/learning skills essential for effective study in their content-area. Eleven topics are discussed. (4) Prototypic staff development sessions. The 11 identified topics are elaborated on in this section. Of the 11 topics, 5 are complete with prototypic text, transparencies, and activities.

Witte, P. Using gloss to help fifth and sixth graders comprehend social studies text: An informal study of a learning aid. Working Paper No. 295. 74 pp. August 1980.

Glossing or the writing of notes, questions, and commentary to accompany text as an aid to comprehension is a technique that many of us have used as we read and study. This study, which is part of

a larger work effort to develop a technique for improving readers' ability to deal with printed text was designed to look at the glossing technique in a less formal, more naturalistic context. Specifically, the purpose of this is to examine the gloss technique when it is used with student texts during a regularly scheduled social studies class and in combination with the discussions and other activities the teacher would normally use for that particular unit. The report of this informal tryout of gloss focuses on three different activities: (a) developing some specifications for glossing texts currently used in classrooms, (b) conducting a small scale study to determine if texts glossed to these specifications improve comprehension in the classroom setting, and (c) collecting verbal protocols from two students who discussed what they were doing as they worked through the gloss activities. In a classroom setting, gloss was found helpful in encouraging students to become involved with the text and to remember important concepts for a short time. However, students may need training in how to use the gloss techniques.

White, S., & Camperell, K. Investigations into students' understanding of the reading process and their perceptions of their ability to read content material. Working Paper No. 302. 142 pp. November 1980.

This paper reports three studies conducted by the Wisconsin R & D Center's project on Improving Student's Understanding of Content-area Texts. The purpose was to obtain information about students' insights into, or knowledge of, the skills and strategies they use to understand printed material. In each of the three studies, students were asked to talk about their understanding of the reading process and about the strategies they used to read and study texts. These studies were an exploratory effort to identify the interview procedures and conditions that would be most effective in getting students to express their insights. The procedures, results, and implications of the three studies are described, with a focus on the effectiveness of the interview procedures. Results of all three studies suggest that students are able to talk about what they do when they read a text. In addition, the results of Study 2 indicate that student responses can be classified into categories of reading-study behavior common to many instructional reading programs. The data collected in these studies help to identify effective interview procedures for future studies.

STUDIES IN MATHEMATICS

INTEGRATED STUDIES ON MATHEMATICAL SKILLS

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TECHNICAL REPORTS, THEORETICAL PAPERS,
 PRACTICAL PAPERS, AND WORKING PAPERS

Carnahan, R. S., Jr. The effects of teacher planning on classroom processes.
 Technical Report No. 541. (Ph.D. dissertation) 751 pp. May 1980. \$6.00.

Hypotheses examined in the study included (a) that teachers given information about student aptitudes and motivation strategies would evidence higher planning quality than teachers not given such information, (b) that higher planning quality would predict greater observed and student perceived teacher clarity as well as greater motivation strategy use, (c) that greater motivation strategy use would predict greater student engagement, and (d) that greater observed and student perceived teacher clarity would also predict greater student engagement.

To test the above hypotheses, each of nine fifth-grade teachers, with their mathematics classes, was randomly assigned to one of three experimental treatments. Preinstructional student measures, student outcome measures, classroom observation, and teacher written planning statements were collected.

Results indicated no treatment effect on quality of written planning done. Written planning was not related to motivation strategy use or student perceived teacher clarity. Student engaged time was not related to motivation strategy use but was related to observed and student perceived teacher clarity. Limitations and conclusions of the study are discussed.

Hiebert, J., Carpenter, T. P., & Moser, J. M. Cognitive development and performance on verbal addition and subtraction problems. Technical Report No. 560. 52 pp. August 1980. ED 194 337.

This study investigated the relationships between Piagetian logical reasoning abilities and an information processing capacity, and first-grade children's performance on verbal addition and subtraction problems. The logical reasoning abilities of interest were number conservation, class inclusion, and transitive inference. Information processing capacity was considered to be the number of

information pieces that could be simultaneously processed in working memory and was measured by backward digit span. The arithmetic problems varied systematically in semantic structure, number size, and availability of objects to aid the solution process.

Statistically significant differences between the developmental groups were found for some of the cognitive variables on some problem types, but no clear pattern emerged to suggest that a particular cognitive ability was especially important for solving a specific problem type or using a specific solution strategy. Multiple regression analyses showed that backward digit span was the best predictor of performance accuracy and of the frequency with which advanced solution strategies were used. Transitive reasoning and class inclusion rarely made significant contributions to the regression models. The R^2 's for all models were statistically significant, and generally ranged from .10 to .20.

None of the cognitive abilities was required to solve any of the arithmetic problem types or to use a given solution strategy. Some children who had not yet developed a particular ability solved at least some of the problems of each type, and occasionally applied the more advanced strategies to do so. This calls into question the use of these cognitive tasks as readiness variables for arithmetic instruction.

Romberg, T. A., & Collis, K. F. The assessment of children's cognitive processing capabilities. Technical Report No. 539. 101 pp. June 1980. \$4.00.

This paper reports the results of the second of a series of collaborative studies examining how young children acquire the skills to represent and solve verbal addition and subtraction problems. The purpose of this study was to identify the cognitive processing capabilities for a group of children. Fifteen cognitive tests were administered to 122 children of ages 4 to 8.

From the data it was evident that five of the tests failed to differentiate the children. The correlation of the test scores, while all positive, were not particularly high. A factor analysis of the test correlations revealed one primary factor which reflects quantitative skills influenced by the ability to count. A second, and less important factor was suggested which reflects qualitative transformations.

Finally, the relationship of test scores was related to the four memory (M-space) tests given earlier to the same population. A combined factor analysis revealed the same two-dimensional structure with the memory tests loading on the first qualitative factor. The pattern of responses on the cognitive tests for the six groups identified via a cluster analysis of the M-space data demonstrated systematic differences between five of the six groups.

Romberg, T. A., & Collis, K. F. The assessment of children's M-space. Technical Report No. 540. 96 pp. May 1980. \$4.00.

This paper reports the results of the first of a series of collaborative studies examining how young children acquire the skills to represent and solve verbal addition and subtraction problems. The purpose of this study was to identify the working memory capacity (M-space) for a group of children. Four M-space tests were administered to 139 children of ages 4 to 8.

The data made it apparent that there is no abrupt shift in M-space level, the test context may give students a cue which helps them answer questions above their M-space level, and a few children incorporate a strategy of chunking information so they could solve problems beyond their indicated M-space level.

The correlations of the absolute level scores for the four tests, while all positive, were not particularly high. Pairwise cross tabulations of scores showed that the tests classify children in different ways. A factor analysis of the test correlations revealed one primary factor which reflects quantitative skills.

Cluster analyses of the data yielded six groups of children. The contextual setting of a test, number or spatial orientation has a significant effect on the child's ability to respond. Spatial development and number development appear to be interwoven and occur close together in time, but some groups achieve number skill prior to spatial skill and others vice versa. The six groups identified will be used in the later studies of how children learn to solve verbal addition and subtraction problems.

Cookson, C., & Moser, J. M. Coordinated study individual interview procedures. Working Paper No. 290. 36 pp. May 1980.

This paper describes the various procedures associated with the individual interviews that are part of the data gathering processes of the Coordinated Study being carried out by the Mathematics Work Group of the Wisconsin Research and Development Center for Individualized Schooling. The first major section describes the six basic verbal addition and subtraction problem types used in the study, how they were selected and how they are varied by substitution of verbal and numerical terms. The second section briefly characterizes the general interview procedures and verbal protocols. The final section gives definitions of the various student behaviors that can be expected in response to the presentation of the verbal problems. The behaviors are classified by models, correctness, strategies, and errors.

Hiebert, J., & Carpenter, T. P. Information processing capacity, logical reasoning ability, and the development of measurement concepts. Working Paper No. 299. 63 pp. October 1980.

This study investigated the relation between the development of information processing capacity and the development of certain basic logical reasoning abilities characterized by Piaget and how the development of these sets of cognitive abilities related to children's acquisition of certain measurement concepts. A group of 40 first-grade children were individually administered tests of conservation of length, conservation of number, transitivity of length, three measures of information processing capacity, and a test of basic length measurement concepts.

The basic Piagetian measures of logical reasoning were positively correlated with information processing capacity, but the measures of information processing capacity failed to account for much of the variability of performance on the logical reasoning tasks. Some children at the highest levels of processing capacity failed the logical reasoning tasks and some at the lowest level passed them. This suggests that the logical reasoning tasks are not simply measures of information processing capacity. Furthermore, using step-down regression techniques in which the information processing measures were entered first, conservation of length accounted for a significant portion of the variance on the mathematical concepts test not accounted for by information processing capacity. Information processing measures accounted for 25% of the variance in children's performance on the linear measurement tasks and length conservation accounted for an additional 23%. Although these two measures accounted for almost half of the variance, it is not clear that they represent prerequisites for learning basic length measurement concepts. Some children at low levels on both measures successfully completed the measurement tasks.

Kouba, V. L., & Moser, J. M. Development and validation of curriculum units related to two-digit addition and subtraction algorithms. Working Paper No. 287. 331 pp. April 1980.

This report presents the formative evaluation of four curriculum units related to addition and subtraction algorithms involving two-digit numbers. These units are used as the instructional materials for a coordinated study carried out by the Mathematics Work Group of the Wisconsin Research and Development Center for Individualized Schooling. These units and related earlier units were tried during the 1977-1980 school years at a single elementary school located in Madison, Wisconsin.

Information including in-class observation, reports from teachers, pupil assessment, and notes from pupil comments was gathered from using the materials with children in their third year of elementary school.

The information is summarized by topic or unit and suggested revisions are stated. Copies of the newly developed units are contained in the Appendix to the report.

Kouba, V. L., Moser, J. M., Buchanan, A. E., Carpenter, T. P., Cookson, C. J., & Anick, C. M.

This series of reports presents data from the individual interviews of the longitudinal study conducted by the Mathematics Work Group of the Wisconsin Research and Development Center for Individualized Schooling. Interviews administered during September, January and May of each of three school years, consist of six verbal problems (two addition and four subtraction) given under four distinct conditions. Data include individual student's responses categorized by type of modeling behavior, correctness, strategies used, and errors, if any. Contrasts are made between various problem types and between various interview conditions.

Results from first individual interview (October 1978), coordinated study #1. Working Paper No. 281. 108 pp. March 1980.

Results from second individual interview (January 1979), coordinated study #1. Working Paper No. 285. 110 pp. May 1980.

Results from third individual interview (May 1979), coordinated study #1. Working Paper No. 289. 111 pp. May 1980.

Results from fourth individual interview (September 1979), coordinated study #1. Working Paper No. 292. 97 pp. June 1980.

Results from fifth individual interview (January 1980), coordinated study #1. Working Paper No. 293. 95 pp. July 1980.

Results from sixth individual interview (May 1980), coordinated study #1. Working Paper No. 300. 87 pp. October 1980.

Results from seventh individual interview (September 1980), coordinated study #1. Working Paper No. 303. 86 pp. December 1980.

STUDIES OF IMPLEMENTATION OF INDIVIDUALIZED SCHOOLING

STUDIES OF IMPLEMENTATION OF INDIVIDUALIZED SCHOOLING

Faculty Associates:

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TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Coley, T. G. The implementation of planned educational change: A multi-variate analysis of the decision source for change, organizational commitment, and job satisfaction among elementary school teachers. Technical Report No. 548. (Ph.D. dissertation) 119 pp. June 1980.

This research sought to identify and interrelate factors which affect the change process in selected schools and to explore the relationship of these factors to subsequent adaptations in innovative practice. The specific objective was to examine the relationship between external decisions for planned educational change and how the change is implemented in a school as indicated by a teacher's organizational commitment and job satisfaction.

The sample design included 80 teachers from six schools currently using IGE in an urban midwestern city. The data tended to support the null hypothesis, which states "whether the decision for change is internally or externally initiated makes no difference in a teacher's organizational commitment and job satisfaction." This finding, however, cannot be considered conclusive, and in the discussion and implication of the study's finding, several areas for further research are identified. Observations from the data suggest researchers and practitioners should give closer attention to the motives and interests of implementors and to the nature of policy decision sources impacting efforts to implement planned educational change.

Fleming, P. J. Staff development needs in elementary schools that individualize instruction. Technical Report No. 543. (Ph.D. dissertation) 210 pp. June 1980.

The purpose of this study was to identify the staff development needs and preferred strategies of teachers as related to the number of years their schools have been engaged in individualized schooling. The theoretical and conceptual foundation for this study included change theory as well as the literature on staff development and teacher participation. Four major theoretical models and their interrelationships were presented.

A field study methodology was employed using both questionnaire and interview techniques. The data were presented in tabular form and analyzed using a two-group discriminate analysis.

The findings show that the greatest staff development needs identified by both principals and their staffs deal with interpersonal or human relations topics. Teachers and principals indicated quite strongly that they wanted to participate in all aspects of inservice program development. The staff development needs of teachers in the early and late phases of the implementation process appear quite similar. Based on findings reported in this study, a number of implications for practice and for future research were addressed.

Gaynor, A. K., Barrows, L., & Klenke, W. A systems dynamics model of implementation of an innovation. Technical Report No. 542. 81 pp. May 1980.

The Studies of Implementation was proposed as a 3-year longitudinal investigation of planned educational change. Specifically, the research was concerned with the process by which an innovation was implemented into and became a pattern of individualized schooling. Data were collected to answer four research questions. The research reported in this technical report investigated the fourth question: What factors affect the decision to abandon or replace the innovation (the IPM)? Specifically, the purpose of the research was to learn about the dynamics of curriculum change (i.e., the use of DMP) in Mercury School and to depict this in the form of a continuous simulation model.

In the analysis, three elements were identified as critical in the failure of DMP to sustain itself at Mercury School. These included the actual and perceived fit of the innovation with the developmental learning characteristics of the students and the relationship between the school's curriculum and that of the rest of the school district. Carriers of the school district norms and practices in the situation studied were the standardized tests and the effects of transfer students on the teachers who had to deal with them. Our analysis suggests that to the extent that the innovation is inconsistent with important norms and practices in the school district, it may, by its very implementation create the pressures that ultimately lead to its discontinuation.

Klenke, W. H., & Barrows, L. K. The measurement of educational change: The application of the level of use (LoU) approach. Technical Report No. 538. 81 pp. March 1980.

The Studies of Implementation project was proposed as a 3-year longitudinal investigation of planned educational change. Specifically, the focus of the study was to explore the process by which an innova-

tion is implemented and becomes a pattern of individualized schooling. Thirteen schools, committed to using the Instructional Programming Model (IPM), a component of the more comprehensive innovation known as Individually Guided Education (IGE), were selected for participation in the study. The behaviors related to the use of the innovation were documented and analyzed. The behaviors were representative of the full range of the change process, i.e., adoption, implementation, and adaptation.

The purpose of this report is to describe the work group's attempts to measure change using the LoU approach and the difficulties encountered during its application in a research setting. The report will be presented in three parts. Part I focuses on a description of the LoU approach including a description of the Concerns-Based Adoption Model (CBAM), the theoretical model on which the LoU is based. Part II details the procedures followed by the work group in applying the LoU and the difficulties encountered with the LoU in a research setting. Part III briefly sketches an alternative to the LoU procedure for measuring the use of an innovation.

Klenke, W., & Barrows, L. School climate and decision participation: Baseline data for the studies of implementation. Technical Report No. 549. 127 pp. October 1980.

The Studies of Implementation was proposed as an extensive 3-year longitudinal investigation of planned educational change. Specifically, the research concerned the process by which an innovation was implemented into and became a pattern of individualized schooling. The innovation studied was the Instructional Programming Model (IPM), a component of the more comprehensive innovation known as Individually Guided Education (IGE).

Thirteen school sites committed to using the IPM were selected for participation in the study. During the course of the investigation, behaviors related to the use of the innovation were documented and analyzed. The behaviors were representative of the full range of the change process: adoption, implementation, and adaptation. The present report describes only the baseline data in 3 of the 13 research sites.

Coley, T. G. The implementation of planned educational change: A theoretical discussion. Theoretical Paper No. 85. 39 pp. September 1980.

Most researchers view the impetus for a decision to implement planned change as the recognition of a "performance gap" which originates from within the organization. Until recently, there has been little research on organizational planned change that is assessed and mandated by external agencies. The inclusion of external decisions along with internal decisions for change should provide a more dynamic view of change implementation. This paper reviews the literature to provide

a theoretical basis for understanding the relationship between external decisional relations and the implementation of change. Attention is given to decision source, organizational commitment to change, and constraints and control over the task performance required by the change. The author draws the conclusion that individual/organizational self-interests should be the focus for understanding the implementation process, which involves efforts to integrate demands for change with the autonomy of individuals and organizations to pursue their own interests while accomplishing the goals or tasks required by the change.

Young, I. P., & Kasten, K. The relationship between school climate and implementation of an innovation in elementary schools. Theoretical Paper No. 89. 49 pp. November 1980.

The Wisconsin R & D Center's project, Studies of Implementation, identified factors that retard or promote change by tracking the adoption and implementation of Individually Guided Education in 10 elementary schools. One factor of particular importance is school climate. The paper begins with a review of research on school climate. Following a description of the sample, instrumentation, and design used in this study, data related to school climate in the 10 sample schools are reported. Statistical analysis showed a significant difference in the climates of the 10 schools between the first and second administrations of the instrument. Stepwise regression indicated that a significant amount of the variance in the change in the perceptions of teachers could be accounted for by two variables: the amount of teaching experience a teacher had with IGE and the length of time a teacher had been employed within an IGE school. The paper concludes with some suggestions for future research on the relationship between school climate and change. Specifically, the researchers recommend that researchers use a school as its own control and track changes in the perceived climate of a particular school over the life of an innovation.

Fleming, P. J. Inservice education and planned educational change: A review and critique of the literature. Working Paper No. 298. 34 pp. September 1980.

As part of the Studies of Implementation project this research study seeks to identify factors that promote or inhibit change by following the adoption and implementation of Individually Guided Education in 10 elementary schools in Wisconsin.

The literature on planned change, specifically in education settings, suggests that staff development is a key factor in the adoption and implementation of an innovation. This paper examines the role staff development plays in the process of planned educational change. A brief discussion of the problems within public education today is followed by the background of the study. The review of the related

literature dealing with the role staff development plays in the planned change process includes various models of change.

Staff development in the planned change process demands both inservice and preservice programs. Literature describing staff development programs as a vehicle for change is reviewed, along with a model of an instructional system design that serves as an outline from which to review the staff development literature.

The paper examines the role of teacher participation in the various staff development programs and the impact of teacher motivation and level of involvement in the staff development process. Participation and decisional involvement by teachers, their staff development needs, and the involvement of others in the participation process are discussed, and some questions for further research are offered.

Kasten, K. L. School climate and planned educational change: A review and critique of the literature. Working Paper No. 279. 50 pp. December 1979.

The Wisconsin Research and Development Center's project Studies of Implementation is a 3-year longitudinal investigation of planned change in selected elementary schools. The study seeks to identify factors or conditions that promote or retard change by tracking the adoption and implementation of Individually Guided Education in 10 elementary schools in Wisconsin. This paper, written as part of that project, examines the concept of school climate.

Using three major reviews of the literature on climate that appeared in the mid-1970's as a base, the author defines climate, examines variables that have been used as part of climate constructs, examines the distinctions which have been drawn between climate and other organizational variables, and discusses key measurement problems related to climate.

Next, past research on the organizational climate in schools is examined. Discussion centers on Halpin and Croft's Organizational Climate Description Questionnaire and Likert's Profile of a School. Studies which have used these instruments to examine change in schools are summarized.

Finally, the author discusses the limitations of existing instruments to measure school climate and makes suggestions for future research.

MINORITY WOMEN IN SCIENCE AND MATH

Faculty Associate:

Cora Marrett, Department of Afro-American Studies and Sociology

TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Harris, R. J. Relationship of counseling factors to minority females' participation in mathematics and science. Technical Report No. 570. 177 pp. November 1980.

The purpose of this investigation was to examine the relationship between selected school counselor characteristics and enrollment of black female students in nonrequired mathematics and science courses. Specifically, the investigator sought to determine whether the enrollment of black female students in these courses varied according to the characteristics of counselors, the characteristics of guidance programs, and counseling and guidance practices. A direct mail survey was used.

None of the demographic characteristics of counselors were statistically related to enrollment. In the category, characteristics of guidance programs, only the "autonomy of counselors" variables were statistically related to both dependent variables. In the category, counseling and guidance practices, the variable, "special efforts used to encourage black females to enroll in nonrequired mathematics and science courses" was significantly related to enrollment of black female students in mathematics courses. The "amount of involvement counselors report in specific counseling and guidance practices" variable was statistically significant in relation to enrollment of black female students in nonrequired science courses.

EVALUATION OF PRACTICES IN INDIVIDUALIZED SCHOOLING

PHASE I: LARGE SAMPLE BASIC STUDY

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TECHNICAL REPORTS, THEORETICAL PAPERS,
PRACTICAL PAPERS, AND WORKING PAPERS

Stewart, D. M. Results of IGE Evaluation: Phase I. Working Paper No. 291.
65 pp. May 1980.

This report is the second and last developed specifically for schools participating in Phase I of the IGE evaluation. It includes both the scores used in the in-depth analysis and the results of that analysis. Phase I provides the base for the entire evaluation activity. Staff and student questionnaires and student tests were administered in over 150 IGE schools in October 1977. Data analysis was directed toward answering the following questions: (1) To what extent has IGE been implemented in participating schools? (2) What is the relationship of IGE implementation to means of instruction? to staff outcomes? to student outcomes?

A contract was awarded to Research Triangle Institute (RTI) to carry out work related to Phase II during spring 1978. In addition to verifying Phase I results, Phase II dealt with implementation history and cost data and provided more information about the means of instruction variables. Using a sample of six IGE schools reported to be exemplary in their implementation of the IGE system, Phase III studied the extent to which reform and renewal have permeated the day-to-day operations of each school. Details about features of the means of instruction and about their relationship to student achievement are being studied in Phase IV. In spring 1978, data were collected to describe the use and effectiveness in IGE schools of the Center's curriculum programs: the Wisconsin Design for Reading Skill Development (Design), Developing Mathematical Processes (DMP), and the PreReading Skills Program. The purpose of Phase V is to synthesize the results of Phases I through IV and to interpret those findings in terms of more general issues about schooling. By using data from all phases of the evaluation, Phase V will explore several major themes about schooling such as change, stability, and the relationship of organizational issues to learning and to instruction.

PHASE IV: CURRICULAR PRODUCT EVALUATION

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TECHNICAL REPORTS, THEORETICAL PAPERS,
 PRACTICAL PAPERS, AND WORKING PAPERS

Webb, N. L., Nerenz, A. G., Romberg, T. A., & Stewart, D. M. IGE evaluation phase IV: DMP descriptive study final report. Technical Report No. 558. 134 pp. August 1980.

This report is part of Phase IV of the IGE Evaluation carried out by the Wisconsin R & D Center for Individualized Schooling. Individually Guided Education (IGE) is a complex educational system intended to enable the elementary school to provide an environment where students learn at a rate and in a manner appropriate to their own learning styles. Phase IV included five studies, three descriptive and two comparative. This descriptive study concerns the implementation of the Developing Mathematical Processes (DMP) instructional program, which was created at the R & D Center to be compatible with the IGE system. The study was carried out at two schools; grades 2 and 5 participated at each school. Data were collected through tests on general objectives of the program, observations, teacher logs, and interviews. Profiles by school for each grade on means of instruction (pacing, grouping, materials, and interactions), time use (allocated, nonapplied, available, and engaged time), and achievement provide a basis for discussing the relationships among variables. Analysis of the data resulted in anticipated and unanticipated findings which have implications for educational research and for elementary schooling as a whole.

Nerenz, A. G., Webb, N. L., Romberg, T. A., & Stewart, D. M. IGE evaluation phase IV: WDRSD descriptive study final report. Technical Report No. 559. 133 pp. August 1980.

This report is part of Phase IV of the IGE Evaluation carried out by the Wisconsin R & D Center. IGE (Individually Guided Education) is a complex educational system intended to enable the elementary school to provide an environment where students learn at a rate and in a manner appropriate to their own learning styles. Phase IV included five studies, three descriptive and two comparative. This descriptive study concerns the implementation of the Wisconsin Design for Reading Skill

Development (WDRSD), an instructive management system which was created at the R & D Center to be compatible with the IGE system. Grades 2 and 5 participated at each school, and data were collected through tests on general objectives of the program, observations, teacher logs, and interviews. Profiles by school for each grade on means of instruction (pacing, grouping, materials, and interactions), time use (allocated, nonapplied, available, and engaged time), and achievement provide a basis for discussing the relationships among variables.

Stewart, D. M., Nerenz, A. G., Webb, N. L. & Romberg, T. A. IGE evaluation phase IV: PRS descriptive study final report. Technical Report No. 568. 43 pp. November 1980.

This report is part of Phase IV of the IGE Evaluation carried out by the Wisconsin R & D Center. IGE (Individually Guided Education) is a complex educational system intended to enable the elementary school to provide an environment where students learn at a rate and in a manner appropriate to their own learning styles. Phase IV included five studies, three descriptive and two comparative. This descriptive study concerns the implementation of the Pre-Reading Skills Program (PRS) which was created at the R & D Center to be compatible with the IGE system. It was carried out at three IGE schools using PRS. Data were collected through tests on general objectives of the program, observations, teacher logs, and interviews. Profiles by school on means of instruction (pacing, grouping, materials, and interactions), time use (allocated, available, and engaged time), and achievement provide a basis for discussing the relationships among variables.

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