

● Selected for Review

Reviewers: James D. Gates
David Turney

Mathematics in Elementary School

Building Mathematical Competence in the Elementary School. Peter L. Spencer and Marguerite Brydegaard. New York: Holt, Rinehart and Winston, Inc., 1966. 411 p.

Mathematics for Teachers of the Middle Grades. J. Maurice Kingston. New York: John Wiley & Sons, Inc., 1966. 328 p. \$6.95.

P-T Aids to Mathematics. Joseph S. Schicker. New York: Vantage Press, Inc., 1965. 81 p. \$3.00.

Preparatory Mathematics for Elementary Teachers. Ralph Crouch, George Baldwin and Robert J. Wisner. New York: John Wiley & Sons, Inc., 1965. 514 p. \$8.75.

Teaching Contemporary Mathematics in the Elementary School. Charles F. Howard and Enoch Dumas. New York: Harper and Row, 1966. 321 p.

The Teaching of Elementary School Mathematics. Klaas Kramer. Boston: Allyn and Bacon, Inc., 1966. 436 p. \$7.50.

Understanding and Teaching Elementary School Mathematics. David Rappaport. New York: John Wiley & Sons, Inc., 1966. 230 p. \$5.95.

Reviewed by JAMES D. GATES, Executive Secretary, National Council of Teachers of Mathematics, NEA, Washington, D.C.

The seven books listed here include five which may be used for preservice or in-service education of elementary school teachers, one which may be used for preservice or in-service education of teachers in grades 4 through 9, and one book which is aimed at parents.

P-T Aids to Mathematics, by Joseph S. Schicker, is written for parents, students and teachers. This small book is a series of separate, rather disconnected, units which are about modern mathematics. It is claimed to be a complement to one's studies in mathematics.

The other book in this group which is designed principally for a different audience, is *Mathematics for Teachers of the Middle Grades*. In this book J. Maurice Kingston emphasizes contemporary mathematics content for teachers of grades 4 through 9. The text contains many exercises with answers to the odd-numbered ones. The book also contains groups of questions with the answers in the back. The "central theme" is concentrated on the structure of our number system and material included is felt to be needed in providing minimum background.

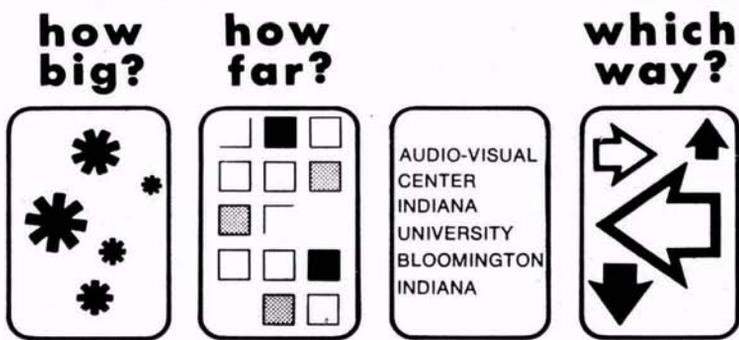
The other five books are written specifically for elementary school teachers. The book, *The Teaching of Elementary School Mathematics*, by Klaas Kramer, is divided into three parts. The first part discusses past and present trends in the teaching of elementary school mathematics; the second part includes selected topics in contemporary mathematics; and the third part deals with the content of elementary school programs, procedures, and techniques for evaluation. This text includes a glossary, drill problems with answers, and answers to selected exercises from throughout the book. Each chapter includes a list of selected references and the third part includes research findings.

Understanding and Teaching Elementary School Mathematics, by David Rappaport, deals with various concepts and meanings of modern mathematics

and covers some ideas on how one might teach various topics. The text includes exercises and questions on teaching methods (without answers). It also has supplementary reading references at the end of each chapter.

The text by Crouch, Baldwin and Wisner is devoted principally to the development of the real number system. *Preparatory Mathematics for Elementary Teachers* also includes remarks on the teaching of the various topics in each chapter and the relationship of the textual material to its role in the elementary school classroom. The book has many exercises with answers to some.

Howard and Dumas have written a text which introduces the subject matter content through suggestions for various teaching procedures. *Teaching Contemporary Mathematics in the Ele-*



Three 16mm films designed to help primary and intermediate grade children develop concepts relating to size, direction, and distance. These ten minute Indiana University films are available in color for \$100 per print or black/white for \$50. Rental prints may be ordered through the Audio-Visual Center or your usual rental source. Preview prints for purchase consideration are available at no cost other than return postage. Simply send your name and address, the film title, and desired preview date to: Indiana University, Audio-Visual Center, Bloomington, Indiana 47401.

THREE ELEMENTARY MEASUREMENT FILMS

mentary School has many exercises and pedagogical questions, with answers to the exercises. There is information on the preparation and use of teaching materials as well as a list of supplementary books and articles.

One of the most interesting of the texts is *Building Mathematical Competence in the Elementary School* by Peter L. Spencer and Marguerite Brydegaard. A special feature of this text is the inclusion of illustrative lessons on the various topics considered. These lessons have been written for several

grade levels and serve to illustrate actual classroom situations. This book is a revision of an earlier text by the same authors under a different title. Additions have been made and some chapters have been rewritten. Discussion questions and suggested readings are to be found throughout the book.

The last five books reviewed here make fine additions to the growing list of content and method books which are fast becoming available for use in the preservice and in-service education of elementary school teachers. ☞

With a Focus on Research

A Cross-Section of Educational Research. *Edwin Wandt.* New York: David McKay Company, Inc., 1965. (Paperbound, 289 p.)

Tactics of Scientific Research: Evaluating Experimental Data in Psychology. *Murray Sidman.* New York: Basic Books, Inc., 1960. (Paperbound, 410 p.)

Foundations of Behavioral Research: Educational and Psychological Inquiry. *Fred N. Kerlinger.* New York: Holt, Rinehart and Winston, Inc., 1964. 687 p.

The Nature of Educational Method. *Jack R. Frymier.* Columbus, Ohio: Charles E. Merrill Books, Inc., 1965. 326 p.

Reviewed by DAVID TURNEY, Assistant Dean for Instruction and Graduate Studies, Kent State University, Kent, Ohio.

Three of the books reviewed here are concerned with the nature of educational research or the development of

educational researchers. The fourth book is directed to the relationships between research and educational method.

Wandt's collection of forty educational research articles, *A Cross-Section of Educational Research*, published in forty different journals during the period 1960-1964 is intended as a representative sample that would be typical of the articles accepted for publication during this period of time. The articles are not intended for use as models. Rather they constitute a collection of studies suitable for analysis by the graduate student in education who is preparing himself to be an intelligent consumer of research or possibly a research worker.

The collected studies are prefaced by a section entitled "Evaluating Educational Research" that contains a summary of a report compiled by the American Educational Research Association on the evaluation of educational research published in journals, and a

series of suggestions by the author of ways in which students may evaluate the studies in the collection presented. This section is thoughtfully written and very useful.

The collection of studies presented varies so greatly in quality and in the nature of the problems under investigation that generalizations about the book are simply not possible. Techniques employed in the various studies range from the observational case study to multiple correlation. The quality of the studies included ranges from examples of classroom action research reports in which design factors have been largely ignored to tightly controlled, sophisticated designs.

The reviewer had the occasion to use this compilation of studies during the winter of 1966 with a graduate research seminar. The book proved to be most useful in terms of providing basic materials for study, analysis, criticism and redesign. The fact that many of the studies are truly bad examples of educational research is one of its most useful features.

One might hope that in a future revision some examples of factor analytic studies could be included and, in addition, one or two more examples of reinforcement type studies in which the behavior of an individual subject is manipulated.

Murray Sidman's book first available in 1960 in hard covers has now been issued in paperback form. It contains a blueprint of the development of psychological research in terms of the operant conditioning theory of B. F. Skinner. For those researchers concerned chiefly with the laboratory investigation of the behavioral characteristics of individual

subjects, this is undoubtedly the most complete source book of design components of such experiments that can be found. Most particularly, Part IV of the book devoted to an examination of experimental design, contains chapters on: "Pilot Studies," "Steady States," "Transition States," "Selection of an Appropriate Baseline," and "Control Techniques." All of these chapters are well illustrated with examples from experimental studies.

The first four sections of the book, however, are completely theoretical in nature and are devoted to a lengthy discussion of some basic research problems—e.g., reliability and generality of data, replication and its relationship to generality, and variability.

Dr. Sidman's general position is that a statistical approach to the study of human or animal behavior is not a very profitable undertaking. The arguments presented are nicely developed and carefully documented. The reasoning should be familiar to every educational researcher whether or not he is willing to accept these propositions.

Actually the presentation might be more convincing if the author did not appear to be so completely certain of everything. One is inclined to be a little suspicious when an author reaches the conclusion that the only right way to do research is exactly the way he and his associates have been doing it. In this connection we quote Bachrach's first law of research: "People don't usually do research the way people who write books about research say that people do research."¹

¹ Arthur J. Bachrach. *Psychological Research, An Introduction*. New York: Random House, 1962. p. ii.

Fred N. Kerlinger's book is designed as a text for a two-semester course for graduate students in educational research. It presupposes some elementary background in psychology, statistics and measurement. The general approach is integrative. As the author says in his preface, "Stress is always on the research problem, the design of research, and the relation between the two."

Throughout the book the author has used the notions of set, relation, and variance to tie together and illuminate the complexities of the problems and designs discussed.

The book is organized into the following sections:

Part One: The Language and Approach of Science

Part Two: Sets, Relations and Variance

Part Three: Probability and Statistical Inference

Part Four: Designs of Research

Part Five: Types of Research

Part Six: Measurement

Part Seven: Methods of Observation and Data Collection

Part Eight: Analysis and Interpretation.

Each section of the text is richly illustrated with examples of published research studies and many concepts are presented through the use of simple numerical examples in which the numbers used are only those between 0 and 9. The organization of presentation is one of an experienced teacher who has learned to show each new concept in a number of ways. Carefully planned study suggestions follow each chapter.

It would be difficult to find another text of this kind in which so much pains had been taken to provide many operational definitions for each term, concept or technique introduced. The re-

viewer predicts that this text will be gratefully received by those teachers who work with student researchers and that this volume will remain a standard reference for a long time.

In *The Nature of Educational Method*, Jack R. Frymier has attempted to specify a set of generalizations about educational method which are clearly related to a large body of psychological research findings, and of insights from clinical experience, sociological and anthropological investigations.

In chapters one and two the basic premise of the book is set forth; that is: The schools constitute a system of behavior control that has a moral purpose—to "develop boys and girls who behave in democratic ways." In the chapter immediately following, the author documents this thesis by reference to an impressive number of research studies.

Chapters three, four and five are devoted to an exposition of research on learning and motivation. The section on learning does not purport to be a general review of learning theory but instead examines the concept of learning from a perceptual point of view. The chapter on motivation is especially well done, carrying with it 336 bibliographical references.

The two chapters on "structure" are among the most interesting in the book. "Structure," as Frymier uses the term, means "the extent to which the various aspects of learning are affected by the teacher" and he lists six kinds of structure that he feels are possible:

- Manipulative
- Directive
- Persuasive
- Disussive

Supportive
Nondirective.

This discussion of structure is central to the purpose of the book since the author treats the teacher as the most potent factor in the teaching-learning process.

The chapter on "Encouraging and Evaluating Achievement" begins with a thoughtful analysis of present grading and evaluation problems and concludes with a practical solution for the dilemma in the form of the contract plan. As the author points out, this is not a new educational idea but his particular presentation is fresh and appealing.

Chapter nine, "The Dynamics of Improvement" again returns to an older idea, that of action research, and re-analyzes this particular route to the improvement of instruction. Once again the author manages to present this idea

in new terms and with great persuasive force.

The final chapter contains a dramatic plea for increased professionalism in the teaching profession.

This is a book that will be genuinely helpful to many classroom teachers. It appears to be well suited for use as a text in college classes operating under a title such as "Improving Classroom Teaching."

The book is based on some rather widely held assumptions about the nature of the educative process and is written from the point of view of the perception psychologist.

If the assumptions and point of view match those of the reader, this will undoubtedly become one of his favorite books. If not, it will surely be one of the really stimulating books to cross his desk. ☞

YOU ASKED FOR IT!

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Newsome, Wetmore
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BUILDING READING SKILLS—Hargrave and Armstrong
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