Korta bokanmälningar

Det kommer en ström av nya böcker som behandlar olika delar av vårt vetenskapsområde. Produktionen har nog aldrig varit så omfattande som under det senaste året. Vi ger här några exempel på nya böcker från tre av de många förlag som satsar stort på matematikdidaktisk litteratur.

Nya böcker från SUNY Press:

The Development of Multiplicative Reasoning in the Learning of Mathematics. Editors: Guershon Harel and Jere Confrey.

Two of the most important concepts children develop progressively throughout their mathematics education years are additivity and multiplicativity. Additivity is associated with situations that involve adding, joining, affixing, subtracting, separating, and removing. Multiplicativity is associated with situations that involve duplicating, shrinking, stressing, sharing equally, multiplying, dividing, and exponentiating.

This book presents multiplicativity in terms of a multiplicative conceptual field (MCF), not as individual concepts. It is presented in terms of interrelations and dependencies within, between, and among multiplicative concepts. The authors share the view that research on mathematical, cognitive, and instructional aspects of multiplicative concepts must be situated in an MCF framework.

Integrating Research on Teaching and Learning Mathematics. Reform in Mathematics Education. Authors: Elizabeth Fennema, Thomas P. Carpenter, and Susan J. Lamon.

During the last decade there were significant advances in the study of students' learning and problem solving in mathematics, and in the study of classroom instruction. Because these two research programs usually have been conducted individually, it is generally agreed now that there is an increasing need for an integrated research program. This book represents initial discussions and developments of a unified paradigm for studying teaching in mathematics that builds upon both cognitive as well as instructional research.

Math World. Philosophical and Social Studies of Mathematics and Mathematics Education. Editors: Sal Restivo, Jean Paul Van Bendegem, and Roland Fischer

An international group of distinguished scholars brings a variety of resources to bear on the major issues in the study and teaching of mathematics, and on the problem of understanding mathematics as a cultural and social phenomenon. All are guided by the notion that our understanding of mathematical knowledge must be grounded in and reflect the realities of mathematical practice.

Chapters on the philosophy of mathematics illustrate the growing influence of a pragmatic view in a field traditionally dominated by platonic perspectives. In a section on mathematics, politics, and pedagogy, the emphasis is on politics and values in mathematics education. Issues addressed include gender and mathematics, applied mathematics and social concerns, and the reflective and dialogical nature of mathematical knowledge. The

concluding section deals with the history and sociology of mathematics, and with mathematics and social change. Contributors include Philip J. Davis, Helga Jungwirth, Nel Noddings, Yehuda Rav, Michael D. Resnick, Ole Skovsmose, and Thomas Tymoczko.

Mathematics Assessment and Evaluation. Imperatives for Mathematics Educators. Editor: Thomas A. Romberg.

Are current testing practices consistent with the goals of the reform movement in school mathematics? If not, what are the alternatives? How can authentic performance in mathematics be assessed?

Questions about tests and their uses have forced those advocating change to examine the way in which mathematical performances data is gathered and used in American schools. This book provides recent views on the issues surrounding mathematics tests, such as the need for valid performance data, the implications of the Curriculum and Evaluation Standards for School Mathematics for test development, the identification of valid items and tests in terms of Standards, the procedures now being used to construct a sample of state assessment tests, gender differences in test taking, and methods of reporting student achievement.

In Measure, Number, and Weight. Studies in Mathematics and Culture. Author: Jens Høyrup.

Jens Høyrup, recognised as the leading authority in social studies of pre-modern mathematics, provides a social study of the changing mode of mathematics thought through history. His "anthropology" of mathematics is a unique approach to its history, in which he examines its pursuit and developments as conditioned by wider social and cultural context.
Høyrup moves from comparing features of Sumero-Babylonian, Mesopotamian, Ancient Greek, and Latin Medieval mathematics, to looks at the impact of ideologies and philosophy on mathematics from Latin High Middle ages through the late Renaissance. Finally, he examines modern and contemporary mathematics, drawing out recurring themes in mathematical knowledge.

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Nya böcker från Kluwer:

Didactics of Mathematics as a Scientific Discipline. Editors: Rolf Biehler, Roland W. Scholz, Rudolf Strässer, Bernard Winkelmann. (Mathematics Education Library 13)

This book describes the state of the art in a new branch of science. Starting from general perspective on the didactics of mathematics, the 30 original contributors to the book, drawn from 10 different countries, go on to identify certain subdisciplines and suggest an overall structure or 'topology' of the field.
The book is devided into eight sections;

(1) Preparing Mathematics for Students;

(2) Teacher Education and Research on Teaching;

(3) Interaction in the Classroom;

(4) Technology and Mathematics Education;

(5) Psychology of Mathematical Thinking;

(6) Differential Didactics;

(7) History and Epistemology of Mathematics Education;

(8) Çultural Framing of Teaching and Learning Mathematics.

Cultural Perspectives on the Mathematics Classroom. Editor: Stephen Lerman. (Mathematics Education Library 14)

Mathematics teaching and learning have been dominated by a concern for intellectual readiness of the child, debates over rote learning versus understanding and, recently, mathematical processes and thinking. The gaze into today's mathematics classroom is firmly focused on the individual learner. Recently, however, studies of mathematics in social practices, including the market place and the home, have initiated a shift of focus. Culture has become identified as a key to understanding the basis on which the learner appropriates meaning. The chapters in this timely book attempt to engage with this shift a focus and offer original contributions to the debate about mathematics teaching and learning. They adopt theoretical perspectives while drawing on the classroom as both the source of investigation and the site of potential change and development.

Towards a Philosophy of Critical Mathematics Education. Author: Ole Skovsmose. (Mathematics Education Library 15)

What does 'critical mathematics education' mean? This is the essential question in this new book from Kluwer. The question forms the basis of an approach to the clarification of such notions as: crises, democracy, the Vico-paradox, mathematical formatting, reflective knowing, learning as action, personal fatalism and underground intentions. The subject matter considered is the project-organised mathematics education undertaken in primary and secondary school. It is shown that the concept of critical mathematics education is crucial for every educational theory. As the book explains, if humanity is submerged in technology, and if technology is to great extent constituted by mathematics, then the implicit and explicit functions of mathematics education assume a fundamental importance.

Böckerna från Kluwer kan beställas från:

Kluwer Academic Publishing Group
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3300 AH Dordrecht, The Netherlands
Tel: +31 78 524 400
Fax: +31 78 183 273

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Nya böcker från Lawrence Erlbaum:

Rational Numbers. An Integration of Research. Editors: Thomas P. Carpenter, Elizabeth Fennema, Thomas A. Romberg

This book presents a content analysis of rational numbers that considers the mathematical complexity and application of the domain of rational numbers, and then demonstrates the implications of such an analysis for conducting research on teaching, learning, and assessment of mathematics.

The last section of the book offers interpretations of research for curriculum development. Using the theme of integration of research on teaching, learning, and assessment, the implications of research on rational numbers for teacher education, instructional activities, and assessment procedures are discussed. A school-based project where principles gained from research on rational numbers has given direction to the development of instructional activities and assessment procedures is described in detail.

Integrating Research on the Graphical Representation of Function.
Editors: Thomas P. Romberg, Elizabeth Fennema, Thomas P. Carpenter

This volume focuses on the important mathematical idea of functions which can be dynamically represented with technology in ways that have not been possible previously. The book's editors contend that as a result of recent technological developments and the integrated knowledge available from research on teaching, instruction, students thinking, and assessment, we are faced with an unprecedented opportunity for making dramatic curriculum change.

The book presents content considerations where the mathematics of graphs and functions as they relate to curriculum are explored. It also considers content in a carefully considered integration of research that conveys where the field stands and where it might go. Drawing heavily on their own work, the chapter authors reconceptualize research in their specific areas so that this knowledge is integrated with other strands. This model for synthesizing research can serve as a paradigm for how research in mathematics education can – and probably should – proceed.

Mathematical Thinking and Problem Solving. Editor: Alan H. Schoenfeld

In the early 1980s there was virtually no serious communication among the various groups that contribute to mathematics education - mathematicians, mathematics educators, classroom teachers, and cognitive scientists. Members of these groups came from different perspectives, and rarely gathered in the same place to discuss issues of common interest. Part of the problem was that there was no common ground for the discussions - given the disparate traditions and perspectives.

As one way of addressing this problem, the Sloan Foundation funded two conferences in the mid-1980s, bringing together members of the different communities in a ground clearing effort, designed to establish a base for communication. In those conferences, interdisciplinary teams reviewed major topic areas and put together distillations of what was known about them. A more recent conference – upon which this volume is based – offered a forum in which various people involved in education reform would present their work, and members of the broad communities gathered would comment on it. The focus was primarily on college mathematics, informed by developments in K-12 mathematics. The main issues of the conference were mathematical thinking and problem solving.

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