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Understanding Numbers in Elementary School Mathematics Hung-Hsi Wu 2011 This is a textbook for pre-service elementary school teachers and for current teachers who are taking professional development courses. By emphasizing the precision of mathematics, the exposition achieves a logical and coherent account of school mathematics at the appropriate level for the readership. Wu provides a comprehensive treatment of all the standard topics about numbers in the school mathematics curriculum: whole numbers, fractions, and rational numbers. Assuming no previous knowledge of mathematics, the presentation develops the basic facts about numbers from the beginning and thoroughly covers the subject matter for grades K through 7. Every single assertion is established in the context of elementary school mathematics in a manner that is completely consistent with the basic requirements of mathematics. While it is a textbook for pre-service elementary teachers, it is also a reference book that school teachers can refer to for explanations of well-known but hitherto

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unexplained facts. For example, the sometimes-puzzling concepts of percent, ratio, and rate are each given a treatment that is down to earth and devoid of mysticism. The fact that a negative times a negative is a positive is explained in a leisurely and comprehensible fashion.

Knowing and Learning Mathematics for Teaching National Research Council 2001-02-25 There are many questions about the mathematical preparation teachers need. Recent recommendations from a variety of sources state that reforming teacher preparation in postsecondary institutions is central in providing quality mathematics education to all students. The Mathematics Teacher Preparation Content Workshop examined this problem by considering two central questions: What is the mathematical knowledge teachers need to know in order to teach well? How can teachers develop the mathematical knowledge they need to teach well? The Workshop activities focused on using actual acts of teaching such as examining student work, designing tasks, or posing questions, as a medium for teacher learning. The Workshop proceedings, Knowing and Learning Mathematics for Teaching, is a collection of the papers presented, the activities, and plenary sessions that took place.

Helping Children Learn Mathematics National Research Council 2002-07-31 Results from national and international assessments indicate that school children in the United States are not learning mathematics

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well enough. Many students cannot correctly apply computational algorithms to solve problems. Their understanding and use of decimals and fractions are especially weak. Indeed, helping all children succeed in mathematics is an imperative national goal. However, for our youth to succeed, we need to change how weâ€™re teaching this discipline. Helping Children Learn Mathematics provides comprehensive and reliable information that will guide efforts to improve school mathematics from pre--kindergarten through eighth grade. The authors explain the five strands of mathematical proficiency and discuss the major changes that need to be made in mathematics instruction, instructional materials, assessments, teacher education, and the broader educational system and answers some of the frequently asked questions when it comes to mathematics instruction. The book concludes by providing recommended actions for parents and caregivers, teachers, administrators, and policy makers, stressing the importance that everyone work together to ensure a mathematically literate society.

Answers to Your Biggest Questions About Teaching Elementary Math John J. SanGiovanni 2021-09-21 Your guide to grow and learn as a math teacher! Let’s face it, teaching elementary math can be hard. So much about how we teach math today may look and feel different from how we learned it. Today, we recognize placing the student at the center of their learning increases

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engagement, motivation, and academic achievement soars. Teaching math in a student-centered way changes the role of the teacher from one who traditionally "delivers knowledge" to one who fosters thinking. Most importantly, we must ensure our practice gives each and every student the opportunity to learn, grow, and achieve at high levels, while providing opportunities to develop their agency and authority in the classroom which results in a positive math identity. Whether you are a brand new teacher or a veteran, if you find teaching math to be quite the challenge, this is the guide you want by your side. Designed for just-in-time learning and support, this practical resource gives you brief, actionable answers to your most pressing questions about teaching elementary math. Written by four experienced math educators representing diverse experiences, these authors offer the practical advice they wish they received years ago, from lessons they´ve learned over decades of practice, research, coaching, and through collaborating with teams, teachers and colleagues—especially new teachers—every day. Questions and answers are organized into five areas of effort that will help you most thrive in your elementary math classroom: 1. How do I build a positive math community? 2. How do I structure, organize, and manage my math class? 3. How do I engage my students in math? 4. How do I help my students talk about math? 5. How do I know what my students know and move

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them forward? Woven throughout, you´ll find helpful sidebar notes on fostering identity and agency; access and equity; teaching in different settings; and invaluable resources for deeper learning. The final question—Where do I go from here?— offers guidance for growing your practice over time. Strive to become the best math educator you can be; your students are counting on it! What will be your first step on the journey?

How People Learn National Research Council 2000-09-11 First released in the Spring of 1999, How People Learn has been expanded to show how the theories and insights from the original book can translate into actions and practice, now making a real connection between classroom activities and learning behavior. This edition includes far-reaching suggestions for research that could increase the impact that classroom teaching has on actual learning. Like the original edition, this book offers exciting new research about the mind and the brain that provides answers to a number of compelling questions. When do infants begin to learn? How do experts learn and how is this different from non-experts? What can teachers and schools do-with curricula, classroom settings, and teaching methods--to help children learn most effectively? New evidence from many branches of science has significantly added to our understanding of what it means to know, from the neural processes that occur during learning to the influence of culture on what people see and absorb. How People Learn

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examines these findings and their implications for what we teach, how we teach it, and how we assess what our children learn. The book uses exemplary teaching to illustrate how approaches based on what we now know result in in-depth learning. This new knowledge calls into question concepts and practices firmly entrenched in our current education system. Topics include: How learning actually changes the physical structure of the brain. How existing knowledge affects what people notice and how they learn. What the thought processes of experts tell us about how to teach. The amazing learning potential of infants. The relationship of classroom learning and everyday settings of community and workplace. Learning needs and opportunities for teachers. A realistic look at the role of technology in education. Teacher Noticing: Bridging and Broadening Perspectives, Contexts, and Frameworks Edna O. Schack 2017-05-16 This book reflects on the continuing development of teacher noticing through an exploration of the latest research. The authors and editors seek to clarify the construct of teacher noticing and its related branches and respond to challenges brought forth in earlier research. The authors also investigate teacher noticing in multiple contexts and frameworks, including mathematics, science, international venues, and various age groups. Elementary Mathematics for Teachers Thomas H. Parker 2004 Textbook on numbers, arithmetic, and prealgebra for elementary school

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mathematics teachers. Designed to be used with five Primary Mathematics books (textbooks 3A, 4A, 5A, 6A, and workbook 5A; all U.S. ed.), part of an elementary mathematics curriculum designed by Singapore's Ministry of Education and adapted for use in the U.S.

Beyond Constructivism Richard A. Lesh 2003-05-01 This book has two primary goals. On the level of theory development, the book clarifies the nature of an emerging "models and modeling perspective" about teaching, learning, and problem solving in mathematics and science education. On the level of emphasizing practical problems, it clarifies the nature of some of the most important elementary-but-powerful mathematical or scientific understandings and abilities that Americans are likely to need as foundations for success in the present and future technology-based information age. Beyond Constructivism: Models and Modeling Perspectives on Mathematics Problem Solving, Learning, and Teaching features an innovative Web site housing online appendices for each chapter, designed to supplement the print chapters with digital resources that include example problems, relevant research tools and video clips, as well as transcripts and other samples of students' work: http://tcct.soe.purdue.edu/booksULandULjournals/modelsULandUL modeling/ This is an essential volume for graduate-level courses in mathematics and science education, cognition and learning, and critical

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and creative thinking, as well as a valuable resource for researchers and practitioners in these areas.

Hands Down, Speak Out Kassia Omohundro Wedekind 2020 "Hands Down, Speak Out is an innovative book that looks at how we can teach students how to talk and listen to one another, without all discourse running through the teacher. Kassia is a math coach and Christy is a literacy coach. Together, they show how to teach dialogue "micro-lessons" alongside content, both within and across math and literacy, so students become increasingly skilled and independent in conversations. Their hope is that students will have better, deeper discourse within the content areas, and also beyond the classroom"--

Phonics Pathways Dolores G. Hiskes 2010-05-11

Learning and Teaching Early Math Douglas H. Clements 2009-04-01 In this important new book for pre- and in-service teachers, early math experts Douglas Clements and Julie Sarama show how "learning trajectories" help teachers become more effective professionals. By opening up new windows to seeing young children and the inherent delight and curiosity behind their mathematical reasoning, learning trajectories ultimately make teaching more joyous. They help teachers understand the varying level of knowledge and thinking of their classes and the individuals within them as key in serving the needs of all children. In straightforward, no-nonsense language, this book summarizes what is known about how children

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learn mathematics, and how to build on what they know to realize more effective teaching practice. It will help teachers understand the learning trajectories of early mathematics and become quintessential professionals.

How Students Learn National Research Council 2005-01-28 How Students Learn: Science in the Classroom builds on the discoveries detailed in the best-selling How People Learn. Now these findings are presented in a way that teachers can use immediately, to revitalize their work in the classroom for even greater effectiveness. Organized for utility, the book explores how the principles of learning can be applied in science at three levels: elementary, middle, and high school. Leading educators explain in detail how they developed successful curricula and teaching approaches, presenting strategies that serve as models for curriculum development and classroom instruction. Their recounting of personal teaching experiences lends strength and warmth to this volume. This book discusses how to build straightforward science experiments into true understanding of scientific principles. It also features illustrated suggestions for classroom activities.

Elementary Mathematics Curriculum Materials Janine T. Remillard 2020-03-16 The book presents comparative analyses of five elementary mathematics curriculum programs used in the U.S. from three different perspectives: the mathematical emphasis, the pedagogical approaches,

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and how authors communicate with teachers. These perspectives comprise a framework for examining what curriculum materials are comprised of, what is involved in reading and interpreting them, and how curriculum authors can and do support teachers in this process. Although the focus of the analysis is 5 programs used at a particular point in time, this framework extends beyond these specific programs and illuminates the complexity of curriculum materials and their role in teaching in general. Our analysis of the mathematical emphasis considers how the mathematics content is presented in each program, in terms of sequencing, the nature of mathematical tasks (cognitive demand and ongoing practice), and the way representations are used. Our analysis of the pedagogical approach examines explicit and implicit messages about how students should interact with mathematics, one another, the teacher, and the textbook around these mathematical ideas, as well as the role of the teacher. In order to examine how curriculum authors support teachers, we analyze how they communicate with teachers and what they communicate about, including the underlying mathematics, noticing student thinking, and rationale for design elements. The volume includes a chapter on curriculum design decisions based on interviews with curriculum authors. **Keep Talking** Friederike Klippel 1984 This practical book contains over 100 different speaking exercises,

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including interviews, guessing games, problem solving, role play and story telling with accompanying photocopiable worksheets.

Guided Math Workshop Laney Sammons 2017-03-01 This must-have resource helps teachers successfully plan, organize, implement, and manage Guided Math Workshop. It provides practical strategies for structure and implementation to allow time for teachers to conduct small-group lessons and math conferences to target student needs. The tested resources and strategies for organization and management help to promote student independence and provide opportunities for ongoing practice of previously mastered concepts and skills. With sample workstations and mathematical tasks and problems for a variety of grade levels, this guide is sure to provide the information that teachers need to minimize preparation time and meet the needs of all students.

How Children Learn Number Concepts Kathy Richardson 2012 This book was written to help Pre-K through 4th educators recognize the complexities of the mathematics young children are expected to learn, and to identify what is required for children to develop an understanding of number concepts.

The Art and Science of Teaching Primary Reading Christopher Such 2021-07-07 The essential guide to the science behind reading and its practical implications for classroom teaching in primary schools. Teaching children to read is one of the most

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important tasks in primary education and classroom practice needs to be underpinned by a secure foundation of knowledge. Teachers need to know what reading entails, how children learn to read and how it can be taught effectively. This book is an essential guide for primary teachers that explores the key technical and practical aspects of how children read with strong links to theory and how to translate this into the classroom. Bite-size chapters offer accessible research-informed ideas across all major key topics including phonics, comprehension, teaching children with reading difficulties and strategies for the classroom. Key features include: · Discussions of implications for the classroom · Questions for further professional discussions · Retrieval quizzes · Further reading suggestions · Glossary of key terms Christopher Such is a primary school teacher and the author of the education blog Primary Colour. He can be found on Twitter via @Suchmo83.

One Size Fits Few Susan Ohanian 1999 Susan Ohanian recounts her quest to make sense of the Standards educational movement.

Elementary Mathematics for Teachers Donald F. Devine 1991-02-26 An introduction to teaching elementary and junior-high school mathematics, it incorporates recommendations of the NCTM. Focuses on the ``how'' and `^why'' of each mathematical topic, with stress on good pedagogy and development of problem-solving skills. The Second Edition contains a new chapter on the Logo

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computer language. References to NCTM standards now appear in every chapter and there are many new problems. The Legacy of Felix Klein Hans-Georg Weigand 2018-12-11 This open access book provides an overview of Felix Klein's ideas, highlighting developments in university teaching and school mathematics related to Klein's thoughts, stemming from the last century. It discusses the meaning, importance and the legacy of Klein's ideas today and in the future, within an international, global context. Presenting extended versions of the talks at the Thematic Afternoon at ICME-13, the book shows that many of Klein's ideas can be reinterpreted in the context of the current situation, and offers tips and advice for dealing with current problems in teacher education and teaching mathematics in secondary schools. It proves that old ideas are timeless, but that it takes competent, committed and assertive individuals to bring these ideas to life. Throughout his professional life, Felix Klein emphasised the importance of reflecting upon mathematics teaching and learning from both a mathematical and a psychological or educational point of view. He also strongly promoted the modernisation of mathematics in the classroom, and developed ideas on university lectures for student teachers, which he later consolidated at the beginning of the last century in the three books on elementary mathematics from a higher standpoint. *Knowing and Teaching*

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Elementary Mathematics Liping Ma 2010-03-26 Studies of teachers in the U.S. often document insufficient subject matter knowledge in mathematics. Yet, these studies give few examples of the knowledge teachers need to support teaching, particularly the kind of teaching demanded by recent reforms in mathematics education. Knowing and Teaching Elementary Mathematics describes the nature and development of the knowledge that elementary teachers need to become accomplished mathematics teachers, and suggests why such knowledge seems more common in China than in the United States, despite the fact that Chinese teachers have less formal education than their U.S. counterparts. The anniversary edition of this bestselling volume includes the original studies that compare U.S and Chinese elementary school teachers' mathematical understanding and offers a powerful framework for grasping the mathematical content necessary to understand and develop the thinking of school children. Highlighting notable changes in the field and the author's work, this new edition includes an updated preface, introduction, and key journal articles that frame and contextualize this seminal work.

Figuring Out Fluency in Mathematics Teaching and Learning, Grades K-8 Jennifer M. Bay-Williams 2021-03-11 Because fluency practice is not a worksheet. Fluency in mathematics is more than adeptly using basic facts or implementing algorithms. Real fluency involves reasoning and creativity, and it

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varies by the situation at hand. Figuring Out Fluency in Mathematics Teaching and Learning offers educators the inspiration to develop a deeper understanding of procedural fluency, along with a plethora of pragmatic tools for shifting classrooms toward a fluency approach. In a friendly and accessible style, this hands-on guide empowers educators to support students in acquiring the repertoire of reasoning strategies necessary to becoming versatile and nimble mathematical thinkers. It includes: "Seven Significant Strategies" to teach to students as they work toward procedural fluency. Activities, fluency routines, and games that encourage learning the efficiency, flexibility, and accuracy essential to real fluency. Reflection questions, connections to mathematical standards, and techniques for assessing all components of fluency. Suggestions for engaging families in understanding and supporting fluency. Fluency is more than a toolbox of strategies to choose from; it's also a matter of equity and access for all learners. Give your students the knowledge and power to become confident mathematical thinkers. *Common Mistakes in Teaching Elementary Math—And How to Avoid Them* Fuchang Liu 2017-03-27 Learn the most effective ways to teach elementary math, no matter how much experience you have with the subject. In this book, Fuchang Liu takes you through many common mistakes in math instruction and explains the misunderstandings behind them. He points out practices that

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should be avoided, helping you to adjust your lessons so that all students can achieve success. You'll discover how to... - Increase your confidence with core math principles and reasoning - Set your students on the path toward eventually developing more complex math skills - Improve student achievement by approaching problems in logical yet creative ways - Overcome common challenges faced by students and teachers - Teach problem solving for different learning styles Every chapter reconsiders well-established ways of teaching all areas of elementary math, from addition and subtraction to statistics and graphs. Helpful examples and tips are scattered throughout the book, offering revisions to the way these topics are often presented in the classroom. Also included are group study ideas for principals and instructional coaches so your school or district can work on the book together. With this practical guide, you'll be ready to help students truly develop their math understanding.

Approaches to Learning and Teaching Mathematics Charlie Gilderdale 2017-08-31 A subject-specific guide for international secondary teachers to supplement learning and provide resources for lesson planning. Approaches to learning and teaching Mathematics is the result of close collaboration between Cambridge University Press and Cambridge International Examinations. Considering the local and global contexts when planning and teaching an international syllabus,

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the title presents ideas for Mathematics with practical examples that help put theory into context. Teachers can download online tools for lesson planning from our website. This book is ideal support for those studying professional development qualifications or international PGCEs.

Understanding the Math We Teach and How to Teach It, K-8 Marian Small 2019 Marian Small has written the kind of book teachers will keep on their closest shelf as they explore and return to the big ideas of mathematics. In her new resource, Understanding the Math We Teach and How to Teach It, Marian brings the support and insight teachers need to teach math with clarity and confidence. With this new resource, new and experienced teachers alike will focus on the big ideas and practices in mathematics, deepening your own understanding and content knowledge, learn how to teach those big ideas using a student-centered, problem-solving approach, and anticipate student thinking and explore effective tools, models, and rich mathematical questions that nudge student thinking forward. This readable and relatable resource will give you a well-founded base of mathematical knowledge, leading to better math instruction that will capture your students' interest. It is sure to become a trusted treasure you return to again and again.

Teaching Elementary Mathematics to Struggling Learners Bradley S. Witzel 2016-01-25 Packed with effective instructional strategies, this book

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explores why certain K-5 students struggle with math and provides a framework for helping these learners succeed. The authors present empirically validated practices for supporting students with disabilities and others experiencing difficulties in specific areas of math, including problem solving, early numeracy, whole-number operations, fractions, geometry, and algebra. Concrete examples, easy-to-implement lesson-planning ideas, and connections to state standards, in particular the Common Core standards, enhance the book's utility. Also provided is invaluable guidance on planning and delivering multi-tiered instruction and intervention.

Knowing and Teaching Elementary Mathematics Liping Ma 2010-03-26 Studies of teachers in the U.S. often document insufficient subject matter knowledge in mathematics. Yet, these studies give few examples of the knowledge teachers need to support teaching, particularly the kind of teaching demanded by recent reforms in mathematics education. Knowing and Teaching Elementary Mathematics describes the nature and development of the knowledge that elementary teachers need to become accomplished mathematics teachers, and suggests why such knowledge seems more common in China than in the United States, despite the fact that Chinese teachers have less formal education than their U.S. counterparts. The anniversary edition of this bestselling volume includes the original studies that compare U.S and Chinese elementary

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school teachers' mathematical understanding and offers a powerful framework for grasping the mathematical content necessary to understand and develop the thinking of school children. Highlighting notable changes in the field and the author's work, this new edition includes an updated preface, introduction, and key journal articles that frame and contextualize this seminal work.

MATHEMATICS FOR ELEMENTARY TEACHERS. (PRODUCT ID 23864410). MICHELLE. MANES 2018

Success from the Start Kathy Ernst 2014 This book highlights how students learn math and the pedagogy behind it. Using vignettes based on real classroom discussions, the authors illustrate effective teaching practices to support math learning. Success from the Start: Your First Years Teaching Elementary Mathematics acts as a supportive and reassuring companion that you can return to throughout your journey as an elementary mathematics teacher. As a beginning elementary mathematics teacher you might already be asking yourself these questions: How can I differentiate my teaching to meet the diverse needs of my students? What assessments best advance student learning? How can students understand math if I do not show them different strategies and tell them about the underlying mathematical structures and properties? What advice do I give parents about how to support their children's math learning?

Elementary Mathematics Pedagogical Content Knowledge James E.

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Schwartz 2008 Schwartz Powerful Ideas in Elementary Mathematics: Pedagogical Content Knowledge for Teachers, 1/e ISBN: 0205493750 "This book would be a great tool for helping [today's future elementary teachers] acquire a 'gut level' understanding of mathematics concepts." - Hester Lewellen, Baldwin-Wallace College, OH "The writing in this text is very clear and would easily be understood by the intended audience. The real-world examples put the various math concepts into a context that is easily understood. The vignettes at the beginning of each chapter are interesting and they get the reader to begin thinking about the math concepts that will follow. Each of the chapters seem to build on one another and the author often refers back to activities and concepts from previous chapters which is meaningful to the reader because it lets the reader know that the information they are learning builds their conceptual understanding of other mathematical concepts. " - Melany L. Rish, University of South Carolina, Aiken Organized around five key concepts or "powerful ideas" in mathematics, this text presents elementary mathematics content in a concise and nonthreatening manner for teachers. Designed to sharpen teachers' mathematics pedagogical content knowledge, the friendly writing style and vignettes relate math concepts to "real life" situations so that they may better present the content to their students. The five "powerful ideas"

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(composition, decomposition, relationships, representation, and context) provide an organizing framework and highlight the interconnections between mathematics topics. In addition, the text thoroughly integrates discussion of the five NCTM process strands. Features: Icons highlighting the NCTM process standards appear throughout the book to indicate where the text relates to each of these. Practice exercises and activities and their explanations reinforce math concepts presented in the text and provide an opportunity for reflection and practice. Concise, conversational chapters and opening vignettes present math contents simply enough for even the most math-anxious pre-service teachers.

What Does Understanding Mathematics Mean for Teachers? Yuichi Handa 2013-05-13 This book opens up alternative ways of thinking and talking about ways in which a person can "know" a subject (in this case, mathematics), leading to a reconsideration of what it may mean to be a teacher of that subject. In a number of European languages, a distinction is made in ways of knowing that in the English language is collapsed into the singular word know. In French, for example, to know in the savoir sense is to know things, facts, names, how and why things work, and so on, whereas to know in the connaître sense is to know a person, a place, or even a thing—namely, an other—in such a way that one is familiar with, or in relationship with this

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other. Primarily through phenomenological reflection with a touch of empirical input, this book fleshes out an image for what a person’s connaître knowing of mathematics might mean, turning to mathematics teachers and teacher educators to help clarify this image. *The Schools We Need* E.D. Hirsch, Jr. 2010-02-17 This paperback edition, with a new introduction, offers a powerful, compelling, and unassailable argument for reforming America's schooling methods and ideas--by one of America's most important educators, and author of the bestselling Cultural Literacy. For over fifty years, American schools have operated under the assumption that challenging children academically is unnatural for them, that teachers do not need to know the subjects they teach, that the learning "process" should be emphasized over the facts taught. All of this is tragically wrong. Renowned educator and author E. D. Hirsch, Jr., argues that, by disdaining content-based curricula while favoring abstract--and discredited--theories of how a child learns, the ideas uniformly taught by our schools have done terrible harm to America's students. Instead of preparing our children for the highly competitive, information-based economy in which we now live, our schools' practices have severely curtailed their ability, and desire, to learn. With an introduction that surveys developments in education since the hardcover edition was published, The Schools We Need is a passionate and thoughtful book that

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will appeal to the millions of people who can't understand why America's schools aren't educating our children.

Activating Math Talk Paola Sztajn 2020-10-06 Achieve High-Quality Mathematics Discourse With Purposeful Talk Techniques Engaging students in high quality discourse is important for their conceptual learning, but successfully promoting such discourse in elementary classrooms—with attention to the needs of every learner—can be a challenge. Based on research, Activating Math Talk tackles this challenge by bringing 11 practical, math-specific, productive discourse techniques to the classroom. You will be guided through each technique with · Classroom examples spanning grades K–5 · Reflection moments to help you relate to your own instruction · Classroom vignettes that illustrate the techniques in action · Group discussion questions for engaging with colleagues

Mathematics Content for Elementary Teachers Douglas K. Brumbaugh 2004-09-22 THE book for elementary education mathematics content courses! Designed to help prospective teachers of elementary school mathematics learn content beyond the rote level, this text stimulates readers to think beyond just getting the problem right and fosters their development into thoughtful, reflective, self-motivated, life-long learners. It stresses the what and why of elementary school mathematics content. Hints are provided about how to teach the content but this is mostly left

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to courses and texts that are dedicated to that purpose. The text is organized around the National Council for Teachers of Mathematics' Principles and Standards for School Mathematics. The Standards dictate the basic sections of the text. Within each section, appropriate specific topics are developed, intertwined with technology, problem solving, assessment, equity issues, planning, teaching skills, use of manipulatives, sequencing, and much more. In addition, major focal points of the Standards are emphasized throughout: effective teachers of mathematics should be able to motivate all students to learn, should understand the developmental levels of how children learn, should concentrate on what children need to become active participants in the learning environment, and should be engaged in ongoing investigations of new mathematical concepts and teaching strategies. Mathematics Content for Elementary Teachers is based on several fundamental premises: *The focus of mathematics education should be on the process, not the answer. *Elementary teachers should know the mathematics content they are teaching, know more than the content they are teaching, and teach from the overflow of knowledge. *It is important for teachers to be flexible in allowing students to use different procedures--teaching from the "overflow of knowledge" implies knowing how to do a given operation more than one way and being willing to examine many different ways. *Teachers need to learn to carefully cover the

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topics to be taught, to reflect upon them, and to be able to organize them. To help prospective elementary teachers concentrate on the mathematics content they will be expected to teach and begin to build the foundation for the methods they will use, this text includes only elementary mathematics content and does not address middle school concepts. Pedagogical features: *The text is organized according to NCTM Standards. *An informal writing style speaks directly to readers and is geared to pre-service teachers. *Focus is given to multiple methods of problem solving at four developmental levels. *Questions, exercises, and activities are interspersed throughout each section rather than gathered at the end of each chapter. *Complete solutions for exercises are provided.

Mathematics for Elementary Teachers Sybilla Beckmann 2009-07-01 This activities manul includes activities designed to be done in class or outside of class. These activities promote critical thinking and discussion and give students a depth of understanding and perspective on the concepts presented in the text.

The Professional Education and Development of Teachers of Mathematics Ruhama Even 2008-11-16 The premise of the 15th ICMI Study is that teachers are key to students' opportunities to learn mathematics. What teachers of mathematics know, care about, and do is a product of their experiences and socialization, together with the impact of their professional education.

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The Professional Education and Development of Teachers of Mathematics assembles important new international work-development, research, theory and practice - concerning the professional education of teachers of mathematics. As it examines critical areas to reveal what is known and what significant questions and problems warrant collective attention, the volume also contributes to the strengthening of the international community of mathematics educators. The Professional Education and Development of Teachers of Mathematics is of interest to the mathematics education community as well as to other researchers, practitioners and policy makers concerned with the professional education of teachers.

Developing Mathematical Proficiency for Elementary Instruction Yeping Li 2021-04-23 The need to improve the mathematical proficiency of elementary teachers is well recognized, and it has long been of interest to educators and researchers in the U.S. and many other countries. But the specific proficiencies that elementary teachers need and the process of developing and improving them remain only partially conceptualized and not well validated empirically. To improve this situation, national workshops were organized at Texas A&M University to generate focused discussions about this important topic, with participation of mathematicians, mathematics educators and teachers. Developing Mathematical Proficiency for Elementary Instruction is a

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collection of articles that grew out of those exciting cross-disciplinary exchanges. Developing Mathematical Proficiency for Elementary Instruction is organized to probe the specifics of mathematical proficiency that are important to elementary teachers during two separate but inter-connected professional stages: as pre-service teachers in a preparation program, and as in-service teachers teaching mathematics in elementary classrooms. From this rich and inspiring collection, readers may better understand, and possibly rethink, their own practices and research in empowering elementary teachers mathematically and pedagogically, as educators or researchers.

Elementary Mathematics Specialists Maggie McGatha 2017

The Teacher Development Continuum in the United States and China National Research Council 2010-10-28 In 1999, Liping Ma published her book Knowing and Teaching Elementary Mathematics: Teachers' Understanding of Fundamental Mathematics in the United States and China, which probed the kinds of knowledge that elementary school teachers need to convey mathematical concepts and procedures effectively to their students. Later that year, Roger Howe, a member of the U.S. National Commission on Mathematics Instruction (USNC/MI), reviewed the book for the Notices of the American Mathematical Society, concluding that it 'has lessons for all educational policymakers.' Intrigued

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by the idea of superrank teachers, the USNC/MI sponsored a workshop entitled 'The Teacher Development Continuum in the United States and China'. The purpose of the workshop was to examine the structure of the mathematics teaching profession in the United States and China. The main presentations and discussion from the workshop are summarized in this volume.

Beyond Classical Pedagogy Terry Wood 2014-04-04 The emergence of the National Council of Teachers of Mathematics Standards in 1989 sparked a sea change in thinking about the nature and quality of mathematics instruction in U.S. schools. Much is known about transmission forms of mathematics teaching and the influence of this teaching on students' learning, but there is still little knowledge about the alternative forms of instruction that have evolved from the recent widespread efforts to reform mathematics education. Beyond Classical Pedagogy: Teaching Elementary School Mathematics reports on the current state of knowledge about these new instructional practices, which differ in significant ways from the traditional pedagogy that has permeated mathematics education in the past. This book provides a research-based view of the nature of facilitative teaching in its relatively mature form, along with opposing views and critique of this form of pedagogy. The focus is on elementary school mathematics classrooms, where the majority of the reform-based efforts have occurred, and on the micro level of teaching (classroom

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interaction) as a source for revealing the complexity involved in teaching, teachers' learning, and the impact of both on children's learning. The work in elementary mathematics teaching is situated in the larger context of research on teaching. Research and insights from three disciplinary perspectives are presented: the psychological perspective centers on facilitative teaching as a process of teachers' learning; the mathematical perspective focuses on the nature of the mathematical knowledge teachers need in order to engage in this form of teaching; the sociological perspective attends to the interactive process of meaning construction as teachers and students create intellectual communities in their classrooms. The multidisciplinary perspectives presented provide the editors with the necessary triangulation to provide confirming evidence and rich detail about the nature of facilitative teaching. Audiences for this book include scholars in mathematics education and teacher education, teacher educators, staff developers, and classroom teachers. It is also appropriate as a text for graduate courses in mathematics education, teacher education, elementary mathematics teaching methods, and methods of research in mathematics education.

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