[Books] Knowing And Teaching Elementary Mathematics Teachers Understanding Of Fundamental Mathematics In China And The United States Studies In Mathematical Thinking And Learning Series

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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 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.

Knowing and Teaching Elementary Mathematics-Liping Ma 1999

Although Chinese students typically outperform U.S. students on comparisons of mathematics competency, Chinese teachers receive far less education than U.S. teachers. This book describes the development of the profound understanding of fundamental mathematics that elementary teachers need.

Knowing and Teaching Elementary Mathematics-Liping Ma 2020-01-15

The 20th anniversary edition of this groundbreaking and bestselling volume offers powerful examples of the mathematics that can develop the thinking of elementary school children. 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 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. Teachers' knowledge is a mirror that reflects the mathematics they teach and were taught. Along with the original studies of U.S. and Chinese teachers' mathematical understanding, this 20th anniversary edition includes a new preface and a 2013 journal article by Ma, "A Critique of the Structure of U.S. Elementary School Mathematics" that describe differences in U.S. and Chinese elementary mathematics. These are augmented by a new series editor's introduction and two key journal articles that frame and contextualize this seminal work.

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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 programs and evaluating their effects is a national priority. 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.

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 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 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
Knowing and Teaching Elementary Mathematics: Teachers’ Understanding of Fundamental Mathematics 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 provided the kind 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 by the idea of superannuated 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.

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 reader’s background. 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 8. Each single assertion is established in the context of elementary school mathematics as 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 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.

Teaching Students to Communicate Mathematically—Laney Sammons 2018-04-04 Students learning math are expected to do more than just solve problems; they must also be able to demonstrate their thinking and share their ideas, both orally and in writing. As many classroom teachers have discovered, these can be challenging tasks for students. The good news is, mathematical communication can be taught and mastered. In Teaching Students to Communicate Mathematically, Laney Sammons provides practical strategies for teaching students how to speak and write about math. Sammons also presents useful suggestions for helping students incorporate correct vocabulary and appropriate representations when presenting their mathematical ideas. This must-have resource will help you help your students improve their understanding of and their skill and confidence in mathematical communication.

Elementary Mathematics for Teachers—Thomas H. Parker 2004 Textbook on numbers, arithmetic, and prealgebra for elementary school 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.

The Mathematical Education of Teachers—Conference Board of the Mathematical Sciences 2001 Now is a time of great interest in mathematics education. Student performance, curriculum, and teacher education are the subjects of much scrutiny and debate. Students on the mathematical knowledge of prospective and practicing U. S. teachers suggest ways to improve their mathematical educations. It is often assumed that because the topics covered in K-12 mathematics are so basic, they should be easy to teach. However, research in mathematics education has shown that to teach well, substantial mathematical understanding is necessary—even to teach whole-number arithmetic. Prospective teachers need a solid understanding of mathematics so that they can teach it as a coherent, reasoned activity and communicate its power. This volume gathers and reports current thinking on curriculum and policy issues affecting the mathematical education of teachers. It considers two general themes: (1) the intellectual substance in school mathematics; and (2) the special nature of the mathematical knowledge needed for teaching. The underlying study was funded by a grant from the U.S. Department of Education. The mathematical knowledge needed for teaching is quite different from that required by students pursuing other mathematics-related professions. Material here is geared toward stimulating efforts on individual campuses to improve programs for prospective teachers. This report contains general recommendations for all grades and extensive discussions of the specific mathematics of knowledge required for teaching elementary, middle, and high-school grades, respectively. It is also designed to marshal efforts in the mathematical sciences community to back important national initiatives to improve mathematics education and to expand professional development opportunities. The book will be an important resource for mathematics faculty and other parties involved in the mathematical education of teachers.

Adding It Up—National Research Council 2001-11-13 Adding It Up explores how students in pre-K through 8th grade learn mathematics and recommends how teaching, curricula, and teacher education should change to improve mathematics learning during these critical years. The committee identifies five interdependent components of mathematical proficiency and describes how students develop this proficiency. With examples and illustrations, the book presents a portrait of mathematics learning: Research findings on what children know about numbers by the time they arrive in pre-K and the implications for mathematics instruction. Details on the processes by which students develop proficiency with whole numbers, rational numbers, and integers, as well as beginning algebra, geometry, measurement, and probability and statistics. The committee discusses what is known from research about teaching for mathematics proficiency, focusing on the interactions between teachers and students around educational materials and how teachers develop proficiency in teaching mathematics.

A Focus on Fractions—Marjorie M. Petit 2015-07-24 A Focus on Fractions is a groundbreaking effort to make the mathematics education research on how students develop their understanding of fraction concepts readily accessible and understandable to pre- and in-service K-8 mathematics educators. Using extensive annotated samples of student work, as well as vignettes characteristic of classroom teachers’ experiences, this book equips educators with the knowledge and tools to reveal students’ thinking so that they can modify their teaching and improve student learning of fraction concepts. A Focus on Fractions 2nd edition includes sections on the Common Core State Standards for Mathematics and the Ongoing Assessment Project (OGAP) Fraction Framework integrated into each chapter as well as a new chapter on the OGAP Fraction Progression and how it can be used for formative assessment purposes. This updated edition assists teachers in translating research findings into their classroom practice by conveying detailed information about how students develop fraction understandings. Additional images and examples serve to flesh out and supplement the newly-introduced concepts in this updated and expanded edition. Special Features: Looking Back Questions at the end of each chapter provide teachers the opportunity to analyze student thinking and consider instructional strategies for their own students. Instructional Links help teachers relate concepts from the chapter to their own instructional materials and programs. Big Ideas frame the chapters and provide a platform for meaningful exploration of the teaching of fractions. Answer Key posted online offers extensive explanations of in-chapter questions. New sections devoted to the CCSSM and OGAP Fraction Progression are woven throughout the book as well as a new stand alone chapter on the OGAP Fraction Progression. The OGAP Fraction Framework is an all-new eResource, now available as a free download from the book’s website: www.routledge.com/9781138816442.

Book Review—Roger Howe 2000 How Chinese Acquire and Improve Mathematics Knowledge for Teaching—Yeping Li 2018-03-01 How Chinese Acquire and Improve Mathematics Knowledge for Teaching takes a unique approach to present new research that views knowledge acquisition and improvement as part of teachers’ long-professional learning process in China.

How Students Learn—National Research Council 2005-01-28 How Students Learn
Elementary Mathematics Specialists - Maggie B. McGatha 2017-02-01
Elementary mathematics specialists are teacher leaders who are responsible for supporting effective PK-6 mathematics instruction and student learning. The Association of Mathematics Teacher Educators (AMTE), the Association of State Supervisors of Mathematics, the National Council of Teachers of Mathematics, and the National Council of Teachers of Mathematics, in a 2010 joint position paper on Elementary Mathematics Specialists (EMSs), all advocate for the use of EMSs to support the teaching and learning of mathematics. The specific roles and expectations of EMSs will vary according to the needs of each setting. “but their expertise and successful experience at the elementary level is critical” (p 1). Elementary Mathematics Specialists: Developing, Refining, and Examining Programs that Support Mathematics Teaching and Learning is AMTE’s latest resource supporting the important work of EMSs. It has five sections related to the preparation and professional development of EMSs: (a) Overview and Current State of Affairs; (b) Models of EMS Program Development & Delivery; (c) Supporting EMSs in the Field; (d) The Mathematics Specialist: A Professional Educator; and (e) Future Directions. The book provides support to EMS practitioners, program providers/developers, and researchers seeking to answer important questions about how to prepare Mathematics Specialists, support them in the field, and research their effectiveness.

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 distilling content-based curricula while favoring abstract—and accredited—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 will appeal to the millions of people who can’t understand why America’s schools aren’t educating our children.

Every Math Learner, Grades K-6 - Nanci N. Smith 2017-02-01
Differentiation that shifts your instruction and boosts ALL student learning! Nationally recognized math differentiation expert Nanci Smith debunks the myths surrounding differentiated instruction, revealing a practical approach to real learning differences. Theory-lite and practice-heavy, this book provides a concrete and manageable framework for helping all students know, understand, and even enjoy doing mathematics. Busy K-6 mathematics educators learn how to: Review and reteach past concepts and skills Analyze lesson plans for rigor, challenge, and engagement Use manipulative tools to make complex math concepts more concrete and relatable Identify math-related learning gaps as they occur, and provide the most effective time to meet the surface, deep, and transfer learning needs of all students. A how-to guide for teachers of struggling learners, it also offers support to EMS practitioners, program providers/developers, and researchers seeking to answer important questions about how to prepare Mathematics Specialists, support them in the field, and research their effectiveness.

The Key Elements of Classroom Management - Joyce McLeod 2003 An easy-to-read guide offers an introduction to effective classroom management, including tips on setting up a classroom, establishing routines, and pacing the curriculum.

Literacy Strategies for Improving Mathematics Instruction - Joan M. Kenney 2005 Provides teachers with classroom-proven ways to prepare students to be successful math learners by teaching the vocabulary and comprehension skills needed to understand mathematics.

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 joyful. 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 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.

Growing Mathematical Minds - Jennifer S. McCray 2018-08-08 Growing Mathematical Minds is the documentation of an innovative, bi-directional process of connecting research and practice in early childhood mathematics. The book translates research on early mathematics from developmental psychology into terms that are meaningful to teachers and readily applicable in early childhood classrooms. It documents teacher responses, and conveys their thoughts and questions back to representative researchers, who reply in turn. In so doing, this highly useful book creates a conversation, in which researchers and teachers each bring their expertise to bear; their communication about these topics--informed by the thinking, commitment, and experience of both groups--helps us better understand how developmental psychology can improve math teaching, and how math teaching can, in turn, inform developmental science. The book bridges the gap between research and practical classrooms. The book will be especially useful for teachers, pre-service teachers, and researchers who 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 will appeal to the millions of people who can’t understand why America’s schools aren’t educating our children.

The Mathematics Lesson-Planning Handbook, Grades 3-5 - Ruth Harbin Miles 2018-07-13 YOU are the architect in the mathematics classroom. This daily reference offers practical guidance for when and how to pull together mathematics rationales, resources, and effective teaching techniques into a coherent and manageable set of lesson plans. This resource will Lead teachers through a process of lesson planning based on various learning objectives Set the stage for lesson planning using relatable vignettes Offer sample lesson plans for Grades 3-5 Create opportunities to reflect on each component of a mathematics lesson Suggest next steps for building a unit from the lessons Provide teachers the space and tools to create their own lesson plans going forward

Keep Talking - Friederike Klippel 1984 This practical book contains over 100 different speaking exercises, including interviews, guessing games, problem solving, role play and story telling with accompanying photocopiable worksheets.

Teaching Mathematics in the Visible Learning Classroom, Grades K-2 - John Almarode 2019-01-09 Select the right task, at the right time, for the right phase of learning How can you best help K-2 students to become assessment-capable visible learners in mathematics? This book answers that question by showing Visible Learning strategies in action in high-impact mathematics instruction. Walk in the shoes of K-2 teachers as they mix and match strategies, tasks and assessment capers to get the most out of their students. This book is not only what works, but when. A decision-making matrix and grade-leveled examples help you leverage the most effective teaching practices at the most effective time to meet the surface, deep, and transfer learning needs of every young student.

Mathematics for Elementary Teachers Via Problem Solving - Donna Mcbryde 2005 Written by an experienced teacher and teacher educator with widespread experience of teaching mathematics in the UK and internationally, Understanding and Teaching Primary Mathematics combines pedagogy and subject knowledge to build confidence and equip you with all the skills and know how you need to successfully teach
These findings and their implications for what we teach, how we teach it, and how children learn most effectively? New evidence from many branches of research that could increase the impact that classroom teaching has on learning behavior. This edition includes far-reaching suggestions for practice, now making a real connection between classroom activities and the theories and insights from the original book can translate into actions and 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.

**Learning Mathematics Successfully**
Clark J Hickman 2019-09-01 The goal of this book is to bring together the concept of self-efficacy theory with practical how-to strategies for both teachers and parents to use in heightening their students' levels of self-efficacy. The book examines how self-efficacy theory relates to the acquisition of mathematical competence. The text also provides specific and practical how-to strategies for both teachers and parents in applying these principles to classroom mathematics instruction and activities. The self-efficacy practices and applications to mathematics are also suitable for families working with learners outside the school environment. Acquiring mathematical skills requires more than knowing arithmetic tables, memorizing rules, and knowing proofs. It requires a basic belief in one's ability to gain this information, to make sense of it, and applying and generalizing it in mathematical problems. In addition, a student must believe that obtaining these skills leads to a positive outcome, whether it is perceived to be a good or passing grade, comfort-level in tackling mathematical problems, being able to advance to the next mathematics course, being able to score highly on the math section of the SAT and/or be competitive for a desired job, the ability of students to achieve and exceed grade level competence in mathematics is addressed through the lens of Albert Bandura's Self-Efficacy Theory. This theoretical position states that one will persist in mastering a behavior (in this case, mastering mathematical principles and skills), in the face of obstacles or failures. To the extent that one believes he or she has the ability to do so, and that there is a desired outcome for doing so. The research literature on the role of self-efficacy in mathematical instruction is examined to demonstrate the validity of using this concept to increase student (and parent/teacher) confidence in learning and applying grade-appropriate math content. Specific teaching methodologies will be provided that fuel self-efficacy strategies for students. Lastly, teachers and parents are provided strategies to increase their own self-efficacy when it comes to conveying mathematics principles to their child or student, as well as strategies to assess their students' level of self-efficacy over time. Teaching and learning mathematics so that students achieve success at their grade level or above can present a variety of challenges. One barrier that affects learners is the belief that one is not capable of learning mathematics or not naturally talented in the field, not a "math person." As a result, learners may not believe they are capable of a positive outcome for achieving mathematics success. This book is an important resource for pre-service and in-service teachers, as well as families in applying the theory of self-efficacy to support learners in becoming confident and assuring they have a more accessible and apply mathematical principles and procedures. Coupled with classroom ready mathematics instructional strategies, the book provides readers with the background, tools and strategies needed to carry content success and confidence forward to remain persistent in solving all future mathematical problems.

**Critical Variables in Mathematics Education**
Edward Griffith Begle 1979

**How People Learn**
National Research Council 2000-08-11 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 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.

**Euclid in Greek**
Thomas L. Heath 2011-02-17 Originally published in 1920, this volume contains book one of Euclid's Elements in Greek, together with an introduction and notes section written in English. It was created to provide young students with a contextual understanding of geometry and the development of geometrical principles, one which was increasingly neglected in the standard school textbooks of the time. By returning to the Elements in their original form it was hoped that students would gain a fundamental understanding of the ideas put forward in the text, one which would increase their knowledge and enthusiasm. It was also hoped that the dual process of learning Greek and geometry would be an effective way of impressing content on the mind of the learner. This volume will be of value to anyone with an interest in geometry and the development of pedagogy.

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

**Proficiency and Beliefs in Learning and Teaching Mathematics**
Yeping Li 2013-09-04 Efforts to improve mathematics education have led educators and researchers to not only study the nature of proficiency, beliefs, and practices in mathematics learning and teaching, but also identify and assess possible influences on students' and teachers' proficiencies, beliefs, and practices in learning and teaching mathematics. The complexity of these theories has fascinated researchers from various back-grounds, including psychologists, cognitive or learning scientists, mathematicians, and mathematics educators. Among these researchers, two scholars with a similar background – Alan Schoenfeld in the United States and Günter Törner in Germany, are internationally recognized for their contributions to these topics. To celebrate their 65th birthdays in 2012, this book brought together many scholars to reflect on how their own work has built upon and continued Alan and Günter's work in mathematics education. The book contains 17 chapters by 33 scholars from six different education systems. This collection describes recent research and provides new insights into these topics of interest to mathematics educators, researchers, and policy makers that wish to learn about the trajectory and direction of research on these issues.

**Values and Valuing in Mathematics Education**
Philip Clarkson 2019-04-24 This engaging open access book discusses how a values and valuing perspective can contribute to the development of more effective mathematics pedagogical experience, and allows readers to explore multiple applications of the values perspective across different education systems. It also clearly shows that teaching mathematics involves not only reasoning and feelings, but also students' interactions with their cultural setting and each other. The book brings together the work of world leaders and new thinkers in mathematics educational research to improve the learning and teaching of mathematics. Addressing themes such as discovering hidden cultural values, a multicultural society and methodological issues in the investigation of values in mathematics, it stimulates readers to consider these topics in cross-cultural ways, and offers suggestions for research and classroom practice. It is a valuable resource for scholars of mathematics education, from early childhood through to higher education and an inspiring read for all mathematics teachers.

**Math Fact Fluency**
Jennifer Bay-Williams 2019-01-14 Mastering the basic facts for addition, subtraction, multiplication, and division is an essential goal for all students. Most educators also agree that success at higher levels of math hinges on this fundamental skill. But what's the best way to get there? Are flash cards, drill, and timed tests the answer? If so, then why do students go into the upper elementary grades (and beyond) still counting on their fingers or experiencing math anxiety? What does research say about teaching basic math facts so they will stick? In Math Fact Fluency, experts Jennifer Bay-Williams and Gina Kling provide the answers to these questions—and so much more. This book offers everything a teacher needs to teach, assess, and communicate with parents about basic math fact instruction, including The five fundamentals of fact fluency, which provide a
research-based framework for effective instruction in the basic facts. Strategies students can use to find facts that are not yet committed to memory. More than 40 easy-to-make, easy-to-use games that provide engaging fact practice. More than 20 assessment tools that provide useful data on fact fluency and mastery. Suggestions and strategies for collaborating with families to help their children master the basic math facts. Math Fact Fluency is an indispensable guide for any educator who needs to teach basic facts. This approach to facts instruction, grounded in years of research, will transform students’ learning of basic facts and help them become more confident, adept, and successful at math.

Preparing Teachers-National Research Council 2010-07-25 Teachers make a difference. The success of any plan for improving educational outcomes depends on the teachers who carry it out and thus on the abilities of those attracted to the field and their preparation. Yet there are many questions about how teachers are being prepared and how they ought to be prepared. Yet, teacher preparation is often treated as an afterthought in discussions of improving the public education system. Preparing Teachers addresses the issue of teacher preparation with specific attention to reading, mathematics, and science. The book evaluates the characteristics of the candidates who enter teacher preparation programs, the sorts of instruction and experiences teacher candidates receive in preparation programs, and the extent that the required instruction and experiences are consistent with converging scientific evidence. Preparing Teachers also identifies a need for a data collection model to provide valid and reliable information about the content knowledge, pedagogical competence, and effectiveness of graduates from the various kinds of teacher preparation programs. Federal and state policy makers need reliable, outcomes-based information to make sound decisions, and teacher educators need to know how best to contribute to the development of effective teachers. Clearer understanding of the content and character of effective teacher preparation is critical to improving it and to ensuring that the same critiques and questions are not being repeated 10 years from now.

Studyguide for Knowing and Teaching Elementary Mathematics by Liping Ma, ISBN 9780805829099-Cram101 Textbook Reviews 2012-01 Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9780805829099 .

Mathematics, Education, and Other Endangered Species-Shlomo Vinner 2019-04-26 This book examines the critical roles and effects of mathematics education. The exposition draws from the author’s forty-year mathematics career, integrating his research in the psychology of mathematical thinking into an overview of the true definition of math. The intention for the reader is to undergo a “corrective” experience, obtaining a clear message on how mathematical thinking tools can help all people cope with everyday life. For those who have struggled with math in the past, the book also aims to clarify that math learning difficulties are likely a result of improper pedagogy as opposed to any lack of intelligence on the part of the student. This personal treatise will be of interest to a variety of readers, from mathematics teachers and those who train them to those with an interest in education but who may lack a solid math background.