Abstract This introduction sets the scene for the remainder of the book by considering first the international context of widespread concern about the improvement of numeracy skills. This is related to reform movements in the United Kingdom, the United States and other countries aimed at modernising primary (elementary) school mathematics curricula. A detailed account is given of the National Numeracy Strategy in England, a systemic government imposed response to concern about standards implemented in 1999/2000. This includes a discussion of the alternative meanings of numeracy. An earlier initiative sponsored by a United Kingdom charitable trust reacting to concern about primary numeracy was the Leverhulme Numeracy Research Programme. This large scale longitudinal study and linked set of case study projects, focusing on reasons for low attainment, took place during 1997-2002. This book, and each other in the same series, is based on results of that research. The timescale fortuitously enabled the research team to also report on some effects of the systemic reform in the National Numeracy Strategy. 1 THE INTERNATIONAL CONTEXT In many countries, there are recurring periods of national concern about the low standards of calculation skills shown by children in primary (elementary) schools. Recently, these concerns have become urgent and political with the publication of international comparisons of mathematical achievement, first at secondary and recently at primary level (e.g. Lapointe, Mead, & Askew 1992; Mullis et al., 1997).
Primary Mathematics And The Developing Professional

Designing Professional Development for Teachers of Science and Mathematics-Susan Loucks-Horsley 2009-11-24 The classic guide for designing robust science and mathematics professional development programs! This expanded edition of one of the most widely cited resources in the field of professional development for mathematics and science educators demonstrates how to design professional development experiences for teachers that lead to improved student learning. Presenting an updated professional development (PD) planning framework, the third edition of the bestseller reflects recent research on PD design, underscores how beliefs and local factors can influence PD design, illustrates a wide range of PD strategies, and emphasizes the importance of: Continuous program monitoring Combining strategies to address diverse needs Building cultures that sustain learning

Primary Mathematics and The Developing Professional-Alison Millett 2007-07-11 Abstract. This introduction sets the scene for the remainder of the book by considering first the international context of widespread concern about the improvement of numeracy skills. This is related to reform movements in the United Kingdom, the United States and other countries aimed at modernising primary (elementary) school mathematics curricula. A detailed account is given of the National Numeracy Strategy in England, a systemic government-imposed response to concern about standards implemented in 1999/2000. This includes a discussion of the alternative meanings of numeracy. An earlier initiative sponsored by a United Kingdom charitable trust reacting to concern about primary numeracy was the Leverhulme Numeracy Research Programme. This large-scale longitudinal study and linked set of case-study projects, focusing on reasons for low attainment, took place during 1997-2002. This book, and each other in the same series, is based on results of that research. The timescale fortuitously enabled the research team to also report on some effects of the systemic reform in the National Numeracy Strategy. 1. THE INTERNATIONAL CONTEXT In many countries, there are recurring periods of national concern about the low standards of calculation skills shown by children in primary (elementary) schools. Recently, these concerns have become more urgent and more political with the publication of international comparisons of mathematical achievement, first at secondary and more recently at primary level (e. g. Lapointe, Mead, & Askew 1992; Mullis et al., 1997).

The Developing Professional Identity of Primary Mathematics Specialist Teachers [PMaSTs]-Nasreen Majid 2021

Professional Development and Knowledge of Mathematics Teachers-Stefan Zehetmeier 2020-12-21 Mathematics teaching and professional development of mathematics teachers are areas where research has increased substantially in recent years. In this dynamic field, mathematics teaching practices, pedagogical knowledge of mathematics teachers and professional development via collaboration between mathematics teachers have emerged as vital domains of inquiry. Professional Development and Knowledge of Mathematics Teachers addresses the underlying characteristics of mathematics teacher education, and those professional development contexts that have a positive impact on teachers’ professional learning. Recognizing the impact of broader institutional settings on mathematics teaching and teacher professional development, the editors suggest bridging the gaps between theoretical practices and methodological approaches in the field by focusing on and conceptualizing the following relational factors: The study of mathematics teaching and classroom situations Researching teacher and teacher educator knowledge, since these issues inform the quality of mathematics teaching directly Mathematics teacher education and professional development, focusing on design principles and the impact they have on teacher professional learning Combining central issues of mathematics teaching, knowledge and professional development, the chapters in this volume address each of the above factors and provide profound considerations on both theoretical and practical levels. This book will be an essential resource for researchers, teachers and students working in the fields of mathematics teaching and mathematics teacher professional development.

Tasks in Primary Mathematics Teacher Education-Barbara Clarke 2008-10-25 Tasks in Primary Mathematics Teacher Education is intended to advance relevant research and innovative international practices in the preparation and professional development of mathematics teachers. Emerging from discussion at the ICMI study on teacher professional development, this volume, focused on primary and elementary teachers, culls a richness that can only be found by gathering wisdom from varied experiences around the world. The choice of tasks, and the associated pedagogies, is a key aspect of teaching and learning mathematics. Arguing that what students learn is largely defined by the tasks they are given, several major themes are presented. One such major strand, the form, function and focus of tasks, is discussed throughout several chapters, offering analysis, discussion of implementation, and exemplars of a broader category of illustrative techniques for developing critical understanding.

Professional Development of Primary Mathematics Teachers-Hisham Hussein 2010-09 Professional Development is the most important steps to achieve educational reform, and became a gain of great importance in the priorities of developed and developing countries alike, and because of its importance in achieving better education, which leads to the progress of society. The current work
addresses the Professional Development of Primary Mathematics teachers, which offers a program to train them in the light of contemporary global trends. The model is designed to construct the proposed training programs, and then provide standards for the construction of training programs for primary mathematics teachers, to achieve their current and future training needs and lead to developing teaching performance of teachers. This book helps Mathematics Educators, Mathematics teachers and supervisors, Educational Policy maker, Researcher, Planners of training program and anyone else who may be reconsidering in professional Development.

**CGI Professional Development in Primary Mathematics** - 1997

**Mathematical Knowledge in Teaching** - Tim Rowland 2011-01-06 The quality of primary and secondary school mathematics teaching is generally agreed to depend crucially on the subject-related knowledge of the teacher. However, there is increasing recognition that effective teaching calls for distinctive forms of subject-related knowledge and thinking. Thus, established ways of conceptualizing, developing and assessing mathematical knowledge for teaching may be less than adequate. These are important issues for policy and practice because of longstanding difficulties in recruiting teachers who are confident and conventionally well-qualified in mathematics, and because of rising concern that teaching of the subject has not adapted sufficiently. The issues to be examined in Mathematical Knowledge in Teaching are of considerable significance in addressing global aspirations to raise standards of teaching and learning in mathematics by developing more effective approaches to characterizing, assessing and developing mathematical knowledge for teaching.

**New Understandings of Teacher's Work** - Christopher Day 2011-03-02 Within educational research that seeks to understand the quality and effectiveness of teachers and school, the role emotions play in educational change and school improvement has become a subject of increasing importance. In this book, scholars from around the world explore the connections between teaching, teacher education, teacher emotions, educational change and school leadership. (For this text, "teacher" encompasses pre-service teachers, in-service teachers and headteachers, or principals). New Understandings of Teacher's Work: Emotions and Educational Change is divided into four themes: educational change; teachers and teaching; teacher education; and emotions in leadership. The chapters address the key basic and substantive issues relative to the central emotional themes of the following: teachers' lives and careers in teaching; the role emotions play in teachers' work; lives and leadership roles in the context of educational reform; the working conditions; the context-specific dynamics of reform work; school/teacher cultures; individual biographies that affect teachers' emotional well-being; and the implications for the management and leadership of educational change, and for development, of teacher education.

**Primary Mathematics: Extending Knowledge in Practice** - Alice Hansen 2008-06-09 Still the biggest concern for many on initial teacher training courses is the acquisition of subject knowledge and the ability to translate that into effective teaching. This book addresses this - building on the core subject knowledge covered in the Achieving QTS series and relating it to classroom practice. It supports trainees in extending and deepening their knowledge of Maths and demonstrating how to apply it to planning and implementing lessons. Practical and up-to-date teaching examples are used to clearly contextualize subject knowledge. A clear focus on classroom practice helps trainees to build confidence and develop their own teaching strategies.

**Developing Primary Mathematics Teaching** - Tim Rowland 2009-03-09 How can KS1/2 teachers improve their mathematics teaching? This book helps readers to become better, more confident teachers of mathematics by enabling them to focus critically on what they know and what they do in the classroom. Building on their close observation of primary mathematics classrooms, the authors provide those starting out in the teaching profession with a four-stage framework which acts as a tool of support for developing their teaching: - making sense of foundation knowledge - focusing on what teachers know about mathematics - transforming knowledge - representing mathematics to learners through examples, analogies, illustrations and demonstrations - connection - helping learners to make sense of mathematics through understanding how ideas and concepts are linked to each other - contingency - what to do when the unexpected happens. Each chapter includes practical activities, lesson descriptions and extracts of classroom transcripts to help teachers reflect on effective practice.

**EBOOK: Improving Primary Mathematics Teaching and Learning** - Mary McAteer 2013-01-16 This book stems from the authors' shared passion for primary mathematics teaching and offers an exploration of contemporary issues facing teachers. Drawing on research and case studies from practice, the book explores a wide range of concepts as starting points for professional reflection and personal development to improve teaching and learning in primary mathematics. Topics covered include: Using children's mathematical misconceptions to support teaching and learning; The role of talk in developing mathematical understanding; Evidence-based teaching and learning; Making mathematics real and purposeful beyond the classroom; The role of games in teaching and learning; Mathematics ICT and mathematics. The book illustrates the ways in which professional development that is rooted in practitioner inquiry and research enables teachers to advance their practice, resulting in improved outcomes for their pupils. Improving Primary Mathematics Teaching and Learning is appropriate for teachers undertaking professional development programmes (e.g. MaST, MA programmes), trainee teachers and staff on those programmes, both local authority and independent. Contributors: Mike Askew, Sue Bailey, Elizabeth Carruthers, Victoria Grinyer, Alice Hansen.
Primary Mathematics And The Developing Professional

International Handbook of Mathematics Teacher Education: Volume 1 - 2019-12-02 Knowledge, Beliefs, and Identity in Mathematics Teaching and Teaching Development examines teacher knowledge, beliefs, identity, practice and relationships among them. These important aspects of mathematics teacher education continue to be the focus of extensive research and policy debate globally.

Teaching Student-Centered Mathematics Access Code: John a Van De Walle 2017-01-28 NOTE: Used books, rentals, and purchases made outside of Pearson If purchasing or renting from companies other than Pearson, the access codes for the Enhanced Pearson eText may not be included, may be incorrect, or may be previously redeemed. Check with the seller before completing your purchase. This access code card provides access to the Enhanced Pearson eText. For courses in Elementary Mathematics Methods and for classroom teachers. A practical, comprehensive, student-centered approach to effective mathematical instruction for grades Pre-K-2. Helping students make connections between mathematics and their worlds and helping them feel empowered to use math in their lives is the focus of this widely popular guide. Designed for classroom teachers, the book focuses on specific grade bands and includes information on creating an effective classroom environment, aligning teaching to various standards and practices, such as the Common Core State Standards and NCTM's teaching practices, and engaging families. The first portion of the book addresses how to build a student-centered environment in which children can become mathematically proficient, while the second portion focuses on practical ways to teach important concepts in student-centered fashion. The new edition features a corresponding Enhanced Pearson eText version with links to embedded videos, blackline masters, downloadable teacher resource and activity pages, lesson plans, activities correlated to the CCSS, and tables of common errors and misconceptions. This book is part of the Student-Centered Mathematics Series, which is designed with three objectives: to illustrate what it means to teach student-centered, problem-based mathematics, to serve as a reference for the mathematics content and research-based instructional strategies suggested for the specific grade levels, and to present a large collection of high quality tasks and activities that can engage students in the mathematics that is important for them to learn. Improve mastery and retention with the Enhanced Pearson eText. This access code card provides access to the new Enhanced Pearson eText, a rich, interactive learning environment designed to improve student mastery of content. The Enhanced Pearson eText is: Engaging. The new interactive, multimedia learning features were developed by the authors and other subject-matter experts to deepen and enrich the learning experience. Convenient. Enjoy instant online access from your computer or download the Pearson eText App to read on or offline on your iPad(R) and Android(R) tablet.* Affordable. Experience the advantages of the Enhanced Pearson eText along with all the benefits of print for 40% to 50% less than a print bound book. *The Enhanced eText features are only available in the Pearson eText format. They are not available in third-party eTexts or downloads. *The Pearson eText App is available on Google Play and in the App Store. It requires Android OS 3.1-4, a 7- or 10-tablet, or iPad iOS 5.0 or later.

The Handbook of Mathematics Teacher Education: Volume 1 - 2008-01-01 Knowledge and Beliefs in Mathematics Teaching and Teaching Development addresses the “what” of mathematics teacher education, meaning knowledge for mathematics teaching and teaching development and consideration of associated beliefs.

Understanding and Teaching Primary Mathematics - Tony Cotton 2016-05-26 Written by an education consultant with widespread experience of teaching mathematics in the UK and internationally, Understanding and Teaching Primary Mathematics seamlessly combines pedagogy and subject knowledge to build confidence and equip you with all the skills and know-how you need to successfully teach mathematics to children of any age. This 3rd edition has been fully updated to reflect the latest research developments and initiatives in the field, as well as key changes to both the UK National Curriculum and International Baccalaureate, including a brand new chapter on ‘Algebra’ and a reworked focus on the early years. Extra features also include helpful call-outs to the book’s revised and updated companion website, which offers a shared site with a range of resources relevant to both this book and its new companion volume, Teaching for Mathematical Understanding. Stimulating, accessible and well-illustrated, with comprehensive coverage of subject knowledge and pedagogy, Understanding and Teaching Primary Mathematics is an essential purchase for trainee and practising teachers alike. Companion website features new to this edition include: video clips in which the author demonstrates the concepts covered in the book through teaching to a real class PowerPoint presentations which provide support for those using the book as a part of a teacher training course updated weblinks to external sites with useful teaching information and resources.

Primary Mathematics Across the Curriculum - Alice Hansen 2012-05-23 This book supports trainee teachers working towards primary QTS in teaching primary mathematics across all areas of the curriculum. This Second Edition is linked to the 2012 Teachers’ Standards. Focused on teaching a more integrated and inclusive curriculum, the text draws out meaningful cross-curricular links and embraces the latest thinking and current good practice in mathematics teaching. It begins with a section on teaching mathematics, covering all strands of the curriculum, and goes on to offer guidance.
on the use and application of mathematics more generally across subjects. A chapter on using mathematics to enhance learning highlights the importance of being able to use mathematics effectively in other aspects of the teacher’s role. Interactive activities and case studies link theory to practice and encourage the reader to rethink how mathematics is taught in primary schools. About the Transforming Primary QTS series This series reflects the new creative way schools are beginning to teach, taking a fresh approach to supporting trainees as they work towards primary QTS. Titles provide fully up to date resources focused on teaching a more integrated and inclusive curriculum, and texts draw out meaningful and explicit cross curricular links.

Mathematics Curriculum in School Education-Yeping Li 2013-11-19 Mathematics curriculum, which is often a focus in education reforms, has not received extensive research attention until recently. Ongoing mathematics curriculum changes in many education systems call for further research and sharing of effective curriculum policies and practices that can help lead to the improvement of school education. This book provides a unique international perspective on diverse curriculum issues and practices in different education systems, offering a comprehensive picture of various stages along curriculum transformation from the intended to the achieved, and showing how curriculum changes in various stages contribute to mathematics teaching and learning in different educational systems and cultural contexts. The book is organized to help readers learn not only from reading individual chapters, but also from reading across chapters and sections to explore broader themes, including: Identifying what is important in mathematics for teaching and learning in different education systems; Understanding mathematics curriculum and its changes that are valued over time in different education systems; Identifying and analyzing effective curriculum practices; Probing effective infrastructure for curriculum development and implementation. Mathematics Curriculum in School Education brings new insights into curriculum policies and practices to the international community of mathematics education, with 29 chapters and four section prefaces contributed by 56 scholars from 14 different education systems. This rich collection is indispensable reading for mathematics educators, researchers, curriculum developers, and graduate students interested in learning about recent curriculum development, research, and practices in different education systems. It will help readers to reflect on curriculum policies and practices in their own education systems, and also inspire them to identify and further explore new areas of curriculum research for improving mathematics teaching and learning.

Becoming a Primary Mathematics Specialist Teacher-Gina Donaldson 2013-08-15 What is the role of the mathematics specialist? What is deep subject knowledge in mathematics? What sort of pedagogical knowledge does a mathematics specialist need? How can you best support your colleagues to improve mathematics teaching and learning? Becoming a Primary Mathematics Specialist Teacher helps you explore the role of the specialist in promoting positive attitudes towards mathematics and developing the teaching and learning of mathematics in your primary school. Illustrated throughout with classroom-based examples and referenced to relevant research, it is designed to support your development as a reflective practitioner who can confidently review and develop practice in your own classroom, as well as challenge and move the whole school forward through collaborative professional development. Essential topics explored include: The nature of the role of the primary mathematics specialist Understanding how attitudes to mathematics evolve, and why it is crucial to challenge and change negativity What we mean by deep subject knowledge in primary mathematics Pedagogical knowledge of how mathematics is taught and learned The skills of coaching and mentoring to support teachers and teaching assistants Unpicking the principles of progression for high quality teaching in all years groups The key features of deep subject knowledge and pedagogy in three areas of the curriculum: multiplication, time and data handling. Becoming a Primary Mathematics Specialist Teacher is an essential source of guidance and ideas for all primary school teachers aiming to achieve Mathematics Specialist status or already taking this role, those studying primary mathematics as a specialism and at masters level, and for all primary mathematics co-ordinators.

Tasks in Primary Mathematics Teacher Education-Barbara Clarke 2008-11-17 Tasks in Primary Mathematics Teacher Education is intended to advance relevant research and innovative international practices in the preparation and professional development of mathematics teachers. Emerging from discussion at the ICMI study on teacher professional development, this volume, focused on primary and elementary teachers, calls a richness that can only be found by gathering wisdom from varied experiences around the world. The choice of tasks, and the associated pedagogies, is a key aspect of teaching and learning mathematics. Arguing that what students learn is largely defined by the tasks they are given, several major themes are presented. One such major strand, the form, function and focus of tasks, is discussed throughout several chapters, offering analysis, discussion of implementation, and exemplars of a broader category of illustrative techniques for developing critical understanding.

Mathematics at the Margins-Elizabeth Warren 2016-03-17 This book reports the impact a four-year longitudinal study (Representations, Oral Language and Engagement in Mathematics (RoleM)) had on teachers and students from 16 schools in disadvantaged contexts. It offers theories with regard to the interplay between teaching and learning mathematics as teachers and students in these contexts implement a mathematics program. The data are longitudinal, drawn from 154 teachers and their students (up to 1738 students) from the first four years of school (Foundation to Year 3). To ascertain the effectiveness of the RoleM Professional Learning model, teachers were interviewed three times a year and pre and post-tests were administered to students at the beginning and end of each year. Students’ results indicated that all students’ understanding of mathematics improved significantly, with the ESL students showing the greatest gains. Their results matched the norm-referenced expectations for all Australian students of this age. This book shares the journey of these teachers, Indigenous teacher aides and students. It outlines the dimensions of the research findings that supported teachers to become effective teachers of mathematics and assisted students in becoming successful learners of mathematics. The book also draws on the expertise of researchers from both Canada and New Zealand. They share the similarities and the differences between RoleM findings and their own contexts, in order to draw general conclusions for the effective teaching and
Becoming a Primary Mathematics Specialist Teacher-Gina Donaldson 2013-08-15 What is the role of the mathematics specialist? What is deep subject knowledge in mathematics? What sort of pedagogical knowledge does a mathematics specialist need? How can you best support your colleagues to improve mathematics teaching and learning? Becoming a Primary Mathematics Specialist Teacher helps you explore the role of the specialist in promoting positive attitudes towards mathematics and developing the teaching and learning of mathematics in your primary school. Illustrated throughout with classroom-based examples and referenced to relevant research, it is designed to support your development as a reflective practitioner who can confidently review and develop practice in your own classroom, as well as challenge and move the whole school forward through collaborative professional development. Essential topics explored include: The nature of the role of the primary mathematics specialist Understanding how attitudes to mathematics evolve, and why it is crucial to challenge and change negativity What we mean by deep subject knowledge in primary mathematics Pedagogical knowledge of how mathematics is taught and learned The skills of coaching and mentoring to support teachers and teaching assistants Unpacking the principles of progression for high quality teaching in all years groups The key features of deep subject knowledge and pedagogy in three areas of the curriculum: multiplication, time and data handling. Becoming a Primary Mathematics Specialist Teacher is an essential source of guidance and ideas for all primary school teachers aiming to achieve Mathematics Specialist status or already taking this role, those studying primary mathematics as a specialization and at masters level, and for all primary mathematics co-ordinators.

Becoming a Mathematics Teacher-Tony Brown 2011-02-08 The book is centered on how major curriculum reform shapes mathematics and the professional practices of teachers. This book documents in real time the implementation of a major government numeracy programme and its receipt by trainee and new teachers. It documents the complete life span of that initiative. The account is targeted at an international readership in terms of how curriculum reform more generally shapes mathematics in schools and the practices of teachers. A key dimension of the book is an alternative view of mathematics education research in which the task of teacher development is understood at policy level where large numbers of teachers were interviewed to assess how policies were being processed through individuals. The book provides an easy and accessible commentary utilising contemporary theory to describe how such teachers reconcile their personal aspirations with the external demands they encounter in negotiating their identities as professional teachers.

Developing Professional Practice 7-14-Viv Wilson 2013-11-04 Developing Professional Practice 7-14 provides a thoroughly comprehensive and cutting edge guide to developing the necessary knowledge, skills and understanding for teaching within the 7-14 age range. This book is designed to guide you through your initial teacher training programme and on into the early stages of your career, with the aim of stimulating and supporting you in the process of developing your practice. A range of pedagogical features are provided in each chapter to encourage reflection, interaction and debate. Over to you features pose questions that will encourage you to examine your own knowledge, understanding and practical skills. Working in the Classroom features will help you to envisage how the material covered might impact on your classroom practice Case studies offer extended examples that help illustrate core concepts and theories in action. Controversy features provide in-depth discussion of issues that are ongoing causes for debate Research briefing boxes explore recent research studies, and explain their bearing on day to day practice Additional resources and support are provided via the Developing Professional Practice companion website, www.pearsoned.co.uk/7-14, where you can access additional self-study questions, case studies, interactive chapter-by-chapter tutorials, interviews with practitioners and students, and a glossary of key terms. Developing Professional Practice 7-14 is essential reading for anyone training to teach in primary or secondary schools, as well as those specialising in the middle years specifically. It will also prove an invaluable resource for all those already in the early stages of their careers.

Cognitively Guided Instruction-Elizabeth Fennema 1997 An inservice program intended to familiarize educators with a Cognitively Guided Instruction (CGI) approach to teaching mathematics.

Improving Primary Mathematics Teaching And Learning-McAteer, Mary 2013-01-01 Offers an exploration of contemporary issues facing primary mathematics teachers. Drawing on research and case studies from practice, the book explores a wide range of concepts as starting points for professional reflection and personal development to improve teaching and learning in primary mathematics.

Professional Development for Math and Science- 1997

Mastery in Primary Mathematics-Tom Garry 2020-02-06 Mastery in Primary Mathematics contains clear, practical guidance for both teachers and leaders on how to implement a mastery approach in the classroom that transcends any particular context, school type or scheme currently being used. Filled with research-based evidence, case studies and concrete examples of teaching for mastery
used successfully, this is the ideal toolkit to implementing a mastery approach across a school, regardless of expertise. Moulding pupils into confident and successful mathematicians is one of the most important jobs of a primary school. It can also be one of the most difficult. Teaching for mastery gives pupils the best possible understanding of mathematics and implementing it involves a two-pronged approach: mastery must be embedded in the classroom, but will only work with the full support of the school’s leadership team. Based on educational research and school case studies, Mastery in Primary Mathematics gives practical advice on introducing and sustaining teaching for mastery, with sections for both class teachers and school leaders. In this must-have guide, Tom Garry, NCETM Maths Mastery Specialist Teacher, covers the areas of variation theory, mathematical reasoning and the use of correct mathematical language, and equips leaders with the necessary tools to make the mastery approach work across a school. With a view to planning at three levels - curricular, unit and lesson - in order to fully arm educators with the means to plan effectively, Tom draws on cognitive science as current developments in this field are crucial to understanding how children learn.

Understanding and Teaching Primary Mathematics - Tony Cotton 2020-09-03 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 mathematics to children of any age. This 4th edition has been fully updated to reflect the latest research developments and initiatives in the field, including a brand-new chapter on ‘Mastery and mathematics’ and ‘The Singapore approach’ which reflects the current international interest in these approaches to learning and teaching mathematics. Extra features also include helpful callouts to the book’s revised and updated companion website, which offers a shared site with a range of resources relevant to both this book and its companion volume, Teaching for Mathematical Understanding. Stimulating, accessible and well-illustrated, with comprehensive coverage of subject knowledge and pedagogy, Understanding and Teaching Primary Mathematics is an essential purchase for trainee and practising teachers alike.

Exploring Mathematics and Science Teachers’ Knowledge - Hamsa Venkat 2014-05-09 Globally, mathematics and science education faces three crucial challenges: an increasing need for mathematics and science graduates; a declining enrolment of school graduates into university studies in these disciplines; and the varying quality of school teaching in these areas. Alongside these challenges, internationally more and more non-specialists are teaching mathematics and science at both primary and secondary levels, and research evidence has revealed how gaps and limitations in teachers’ content understandings can lead to classroom practices that present barriers to students’ learning. This book addresses these issues by investigating how teachers’ content knowledge interacts with their pedagogies across diverse contexts and perspectives. This knowledge-practice nexus is examined across mathematics and science teaching, traversing schooling phases and countries, with an emphasis on contexts of disadvantage. These features push the boundaries of research into teachers’ content knowledge. The book’s combination of mathematics and science enriches each discipline for the reader, and contributes to our understandings of student attainment by examining the nature of specialised content knowledge needed for competent teaching within and across the two domains. Exploring Mathematics and Science Teachers’ Knowledge will be key reading for researchers, doctoral students and postgraduates with a focus on Mathematics, Science and teacher knowledge research.

The Learning and Development of Mathematics Teacher Educators - Merrilyn Goos 2021-04-07 Research in mathematics teacher education as a distinctive field of inquiry has grown substantially over the past 10-15 years. Within this field there is emerging interest in how mathematics teacher educators (MTEs) themselves learn and develop. Until recently there were few published studies on this topic, and the processes by which mathematics teacher educators learn, and the forms of knowledge they require for effective practice, had not been systematically investigated. However, researchers in mathematics education are now beginning to investigate the development of MTE expertise and associated issues. This volume draws on the latest research and thinking in this area is therefore timely to stimulate future development and directions. It will survey the emerging field of inquiry in mathematics education, combining the work of established scholars with perspectives of newcomers to the field, with the aim of influencing development of the field, invite cross-cultural comparisons in becoming a mathematics teacher educator by highlighting issues in the development of MTEs in different countries, and examine the roles of both mathematics educators and mathematicians in preparing future teachers of mathematics. The primary audience will be university-based mathematics teacher educators and MTE researchers, and postgraduate research students who are seeking academic careers as MTEs. Additional interest may come from teacher educators in disciplines other than mathematics, and education policy makers responsible for accreditation and quality control of initial teacher education programs.

Leading Primary Mathematics - Catherine Foley 2019-03-18 This book provides guidance and insight into ‘what mathematics leadership looks like in practice’ and shows readers how they can develop from a confident teacher into a curriculum subject leader. It does this through a careful blend of pedagogy and practical application, supported by a range of real-world case studies and opportunities to reflect critically on classroom practice. Key coverage includes: The planning and application that underpins subject leadership How international perspectives can influence leadership of mathematics How to develop fluency through problem solving and reasoning How to champion inclusive practice in mathematics Assessing children's understanding This is essential reading for anyone studying primary mathematics on initial teacher education courses, including undergraduate (BA Ed, BA with QTS) and postgraduate (PGCE, PGDE, School Direct and SCITT) routes, NQTs seeking to develop into curriculum leadership roles and those already leading mathematics in their school.
Cases of Mathematics Professional Development in East Asian Countries—Swee Fong Ng 2015-05-05 This book shows how video technology can be used to inform teachers' personal practice, and provides new data and real-world case studies not covered by any previous book on the subject. Initial chapters explore how practicing teachers can view their own recorded lessons and take steps to improve their methods, while subsequent chapters examine how pre-service and in-service teachers can use recorded lessons to improve how they teach selected concepts, or to better convey specific learning processes such as mathematical modeling and problem solving.

Unpacking Pedagogy—Margaret Walshaw 2010-03-01 This volume represents a serious attempt to understand what it is that structures the pedagogical experience. In that attempt there are two main objectives. One is a theoretical interest that involves examining the issue of the subjectivity of the teacher and exploring how intersubjective negotiations shape the production of classroom practice. A second objective is to apply these understandings to the production of mathematical knowledge and to the construction of identities in actual mathematics classrooms. To that end book contains substantial essays that draw on postmodern philosophies of the social to explore theory's relationship with the practice of mathematics pedagogy. Unpacking Pedagogy takes new ideas seriously and engages readers in theory development. Groundbreaking in content, the book investigates how our thinking about classroom practice in general, and mathematics teaching (and learning), in particular, might be transformed. As a key resource for interrogating and understanding classroom life, the book's sophisticated analyses allow readers to build new knowledge about mathematics pedagogy. In turn, that new knowledge will provide them with the tools to engage more actively in educational criticism and to play a role in educational change.

Intentional Talk—Elham Kazemi 2014-03-28 Not all mathematics discussions are alike. It's one thing to ask students to share how they solved a problem, to get ideas out on the table so that their thinking becomes visible but knowing what to do with students' ideas--where to go with them--can be a daunting task. Intentional Talk provides teachers with a framework for planning and facilitating purposeful mathematics discussions that enrich and deepen student learning. According to Elham Kazemi and Allison Hintz, the critical first step is to identify a discussion's goal and then understand how to structure and facilitate the conversation to meet that goal. Through detailed vignettes from both primary and upper elementary classrooms, the authors provide a window into what teachers are thinking as they lead discussions and make important pedagogical and mathematical decisions along the way. Additionally, the authors examine students' roles as both listeners and talkers and, in the process, offer a number of strategies for improving student participation and learning. A collection of planning templates included in the appendix helps teachers apply the right structure to discussions in their own classrooms. Intentional Talk provides the perfect bridge between student engagement and conceptual understanding in mathematical discussions.

New Directions for Situated Cognition in Mathematics Education—Anne Watson 2008-01-03 This book draws together a range of papers by experienced writers in mathematics education who have used the concept of situated cognition in their research within recent years. No other books are available which take this view specifically in mathematics education. Thus it provides an up-to-date overview of developments and applications to which other researchers can refer and which will inspire future research.

Navigating Numeracies—Brian V. Street 2005-11-22 Abstract. This introduction sets the scene for the remainder of the book by considering first the international context of widespread concern about the improvement of numeracy skills. This is related to reform movements in the UK, the US and other countries aimed at modernising primary (elementary) school mathematics curricula. A detailed account is given of the National Numeracy Strategy in England, a systemic government-imposed response to concern about standards implemented in 1999/2000. This includes a discussion of the alternative meanings of numeracy. An earlier initiative sponsored by a UK charitable trust reacting to concern about primary numeracy was the Leverhulme Numeracy Research Programme. This large-scale longitudinal study and linked set of case-study projects, focusing on reasons for low attainment, took place during 1997-2002. This book, and each other in the same series, is based on results of that research. The timescale fortuitously enabled the research team to also report on some effects of the systemic reform in the National Numeracy Strategy. 1. THE INTERNATIONAL CONTEXT In many countries, there are recurring periods of national concern about the low standards of calculation skills shown by children in primary (elementary) schools. Recently these concerns have become more urgent and more political with the publication of international comparisons of mathematical achievement, first at secondary and more recently at primary level (e.g. Lapointe, Mead et al. 1992; Mullis et al., 1997).

Integrating Touch-Enabled and Mobile Devices into Contemporary Mathematics Education—Meletiou-Mavrotheris, Maria 2015-07-13 Despite increased interest in mobile devices as learning tools, the amount of available primary research studies on their integration into mathematics teaching and learning is still relatively small due to the novelty of these technologies. Integrating Touch-Enabled and Mobile Devices into Contemporary Mathematics Education presents the best practices in mathematics education research and teaching practice by providing an account of current and future trends and issues in mobile mathematics learning and associated technologies and educational methodologies. This edited volume approaches a broad audience including researchers and practitioners interested in the exploitation of mobile technologies in mathematics teaching and learning, as well as mathematics teachers at all levels. This premier reference source compiles the best practices and recommended processes for effectively utilizing the vast capabilities of mobile technologies in the mathematics classroom through a collection of chapters covering topics including, but not limited to, touch-enabled virtual mapping, perceptual learning technologies, mobile teaching, statistics apps for mobile devices, smartphones for the visually impaired, pedagogical and
Instructional design, and touch screen interfaces in algebraic instruction.

**Handbook of Research on Professional Development for Quality Teaching and Learning** by Petty, Teresa 2016-06-16 As educational standards continue to transform, it has become essential for educators and pre-service teachers to receive the support and training necessary to effectively instruct their students and meet societal expectations. However, there is not a clear consensus on what constitutes teacher effectiveness and quality within the education realm. The Handbook of Research on Professional Development for Quality Teaching and Learning provides theoretical perspectives and empirical research on educator preparation and methods for enhancing the teaching process. Focusing on teacher effectiveness and support provided to current and pre-service educators, this publication is a comprehensive reference source for practitioners, researchers, policy makers, graduate students, and university faculty.

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