

# **a pathway to equitable math instruction**

## **A Pathway to Equitable Math Instruction: Cultivating Mathematical Confidence and Achievement for All**

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Publisher: The National Council of Teachers of Mathematics (NCTM), a leading organization dedicated to improving mathematics teaching and learning for all students. NCTM possesses decades of experience in developing resources and advocating for effective mathematics education, including a strong commitment to equity.

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Summary: This guide provides a comprehensive pathway to equitable math instruction, detailing best practices for creating inclusive classrooms where all students, regardless of their background or identity, can thrive mathematically. It highlights common pitfalls to avoid and offers actionable strategies to foster mathematical confidence and achievement for every learner. The guide emphasizes culturally responsive teaching, addressing the unique needs of diverse learners, and promoting equitable assessment practices.

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## **Introduction: Embarking on A Pathway to Equitable Math Instruction**

For too long, mathematics education has perpetuated inequities, leaving many students – particularly those from marginalized communities – behind. A pathway to equitable math instruction is not simply a matter of providing equal access; it demands a fundamental shift in our approach, recognizing and addressing the systemic biases that have historically disadvantaged certain groups. This guide illuminates that pathway, offering

practical strategies and a framework for creating truly inclusive mathematics classrooms.

## **H1: Understanding the Landscape of Inequity in Math Education**

Before embarking on a pathway to equitable math instruction, we must acknowledge the existing inequities. These are often rooted in:

Implicit bias: Teachers, often unconsciously, hold lower expectations for certain student groups.

Culturally irrelevant pedagogy: Teaching methods that fail to connect with students' backgrounds and experiences.

Tracking and ability grouping: Systems that often segregate students based on perceived ability, reinforcing existing inequalities.

Standardized testing: Assessments that may not accurately reflect the knowledge and skills of all students.

Lack of access to resources: Unequal distribution of resources across schools and districts.

## **H2: Building a Foundation: Key Principles of Equitable Math Instruction**

A pathway to equitable math instruction relies on several core principles:

Culturally Responsive Teaching: This approach centers students' cultural backgrounds and experiences, making learning relevant and engaging. It involves incorporating diverse perspectives, representations, and examples into lessons.

Growth Mindset: Fostering a belief that intelligence and mathematical ability can be developed through effort and perseverance.

Student Agency and Voice: Empowering students to take ownership of their learning, express their ideas, and contribute to classroom discussions.

Differentiated Instruction: Providing tailored support and challenges to meet the diverse learning needs of all students.

Equitable Assessment: Employing a variety of assessment methods that accurately capture students' understanding, avoiding biases inherent in standardized tests.

## **H3: Practical Strategies: Navigating A Pathway to Equitable Math Instruction in the Classroom**

Creating Inclusive Classroom Environments: Establish a safe and welcoming space where all students feel valued and respected.

Using Inclusive Language: Avoid gendered or culturally biased language in mathematical problems and discussions.

Utilizing Diverse Representations: Represent mathematical concepts using a variety of images, contexts, and examples that reflect the diversity of the classroom.

Implementing Collaborative Learning: Encourage students to work together, share their ideas, and learn from one another.

Providing Targeted Support: Offer individualized support to students who need extra help,

while also challenging high-achieving students.

Addressing Math Anxiety: Recognize and address math anxiety, employing strategies to build confidence and create a positive learning environment.

## **H4: Avoiding Common Pitfalls: Obstacles on A Pathway to Equitable Math Instruction**

Ignoring Systemic Issues: Focusing solely on individual student performance without addressing systemic inequities.

Tokenism: Including superficial representations of diversity without genuine integration into the curriculum.

Low Expectations: Holding lower expectations for certain student groups based on stereotypes.

Lack of Teacher Training: Failing to provide teachers with the necessary professional development to implement equitable practices.

## **H5: Assessment and Evaluation: Measuring Success on A Pathway to Equitable Math Instruction**

Equitable assessment goes beyond standardized tests. It involves using a variety of methods, including:

Formative Assessments: Ongoing assessments to monitor student progress and adjust instruction accordingly.

Performance Tasks: Tasks that allow students to demonstrate their understanding in more authentic ways.

Self and Peer Assessment: Empowering students to evaluate their own work and the work of their peers.

## **Conclusion: Embracing the Journey**

A pathway to equitable math instruction is not a destination but an ongoing journey. It requires constant reflection, adaptation, and commitment to creating a learning environment where all students can reach their full mathematical potential. By embracing the principles and strategies outlined in this guide, educators can work towards a more just and equitable future for mathematics education.

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## **FAQs**

1. What is culturally responsive teaching in mathematics? Culturally responsive teaching adapts math instruction to reflect the students' cultural backgrounds and experiences, making learning relevant and meaningful.

1. How can I address math anxiety in my classroom? Create a supportive and low-pressure environment, encourage collaboration, and focus on effort rather than innate ability.
  
1. What are some examples of inclusive language in math? Avoid gendered terms (e.g., use "person" instead of "man") and use culturally neutral examples in word problems.
  
1. How can I differentiate instruction to meet the needs of all learners? Offer varied learning activities, provide targeted support for struggling students, and challenge high-achieving students with extension tasks.
  
1. How can I assess student learning equitably? Use a variety of assessment methods, including formative assessments, performance tasks, and self/peer assessment.
  
1. What role do parents play in equitable math education? Parents can support their children by fostering a positive attitude towards math and communicating with teachers.
  
1. What is the importance of growth mindset in math education? A growth mindset helps students believe that their abilities can improve through effort and perseverance, leading to increased resilience and achievement.
  
1. How can I create a classroom environment that promotes student agency? Encourage student participation in decision-making, provide choice in learning activities, and value student perspectives.
  
1. What resources are available to support equitable math instruction? Many organizations, including NCTM, offer resources, professional development, and support for teachers aiming for equitable math instruction.

## Related Articles

1. "Addressing Implicit Bias in Mathematics Education": This article explores how unconscious biases affect teaching practices and offers strategies for mitigating their impact.
1. "Culturally Relevant Pedagogy in Mathematics: A Case Study": A detailed case study illustrating the implementation of culturally responsive teaching in a diverse classroom setting.
1. "The Impact of Tracking on Mathematics Achievement": This article examines the negative effects of ability grouping on student outcomes and proposes alternative approaches.
1. "Developing a Growth Mindset in Mathematics Learners": Strategies for fostering a growth mindset in students and empowering them to believe in their mathematical abilities.
1. "Equitable Assessment in Mathematics: Beyond Standardized Tests": A discussion of alternative assessment methods that provide a more comprehensive picture of student understanding.
1. "Overcoming Math Anxiety: A Guide for Teachers and Students": Practical strategies for addressing math anxiety and creating a positive learning environment.
1. "The Role of Collaboration in Equitable Mathematics Classrooms": This article highlights the benefits of collaborative learning and provides examples of effective collaborative activities.

1. "Integrating Diverse Representations in Mathematics Instruction": Strategies for incorporating diverse perspectives and examples into mathematics lessons to promote inclusivity.
1. "Professional Development for Equitable Math Instruction": This article explores effective professional development programs that equip teachers with the skills and knowledge to implement equitable practices.

**a pathway to equitable math instruction:** *Five Practices for Orchestrating Productive Mathematics Discussions* Margaret Schwan Smith, Mary Kay Stein, 2011 Describes five practices for productive mathematics discussions, including anticipating, monitoring, selecting, sequencing, and connecting.

**a pathway to equitable math instruction:** *Strengths-Based Teaching and Learning in Mathematics* Beth McCord Kobett, Karen S. Karp, 2020-02-27 This book is a game changer! *Strengths-Based Teaching and Learning in Mathematics: 5 Teaching Turnarounds for Grades K-6* goes beyond simply providing information by sharing a pathway for changing practice. . . Focusing on our students' strengths should be routine and can be lost in the day-to-day teaching demands. A teacher using these approaches can change the trajectory of students' lives forever. All teachers need this resource! Connie S. Schrock Emporia State University National Council of Supervisors of Mathematics President, 2017-2019 NEW COVID RESOURCES ADDED: A Parent's Toolkit to *Strengths-Based Learning in Math* is now available on the book's companion website to support families engaged in math learning at home. This toolkit provides a variety of home-based activities and games for families to engage in together. Your game plan for unlocking mathematics by focusing on students' strengths. We often evaluate student thinking and their work from a deficit point of view, particularly in mathematics, where many teachers have been taught that their role is to diagnose and eradicate students' misconceptions. But what if instead of focusing on what students don't know or haven't mastered, we identify their mathematical strengths and build next instructional steps on students' points of power? Beth McCord Kobett and Karen S. Karp answer this question and others by highlighting five key teaching turnarounds for improving students' mathematics learning: identify teaching strengths, discover and leverage students' strengths, design instruction from a strengths-based perspective, help students identify their points of power, and promote strengths in the school community and at home. Each chapter provides opportunities to stop and consider current practice, reflect, and transfer practice while also sharing · Downloadable resources, activities, and tools · Examples of student work within Grades K-6 · Real teachers' notes and reflections for discussion It's time to turn around our approach to mathematics instruction, end deficit thinking, and nurture each student's mathematical strengths by emphasizing what makes them each unique and powerful.

**a pathway to equitable math instruction:** *Mathematics Framework for California Public Schools* California. Curriculum Development and Supplemental Materials Commission, 1999

**a pathway to equitable math instruction:** *Catalyzing Change in Early Childhood and Elementary Mathematics* DeAnn Huinker, 2020 *Catalyzing Change in Elementary and Early Childhood Mathematics* presents four key recommendations to guide conversations that take a critical look at current mathematics programs in order to identify practices, policies, and instructional approaches that hinder any child from becoming confident and capable mathematics learners. The book uses classroom vignettes and student work to illustrate how the eight effective

mathematics teaching practices form a framework for equitable instruction and to discuss the teaching of important mathematics topics in number and operations, early algebra, geometry, and data--

**a pathway to equitable math instruction: *Equity by Design*** Mirko Chardin, Katie Novak, 2020-07-20 Our calling is to drop our egos, commit to removing barriers, and treat our learners with the unequivocal respect and dignity they deserve. --Mirko Chardin and Katie Novak When it comes to the hard work of reconstructing our schools into places where every student has the opportunity to succeed, Mirko Chardin and Katie Novak are absolutely convinced that teachers should serve as our primary architects. And by teachers they mean legions of teachers working in close collaboration. After all, it's teachers who design students' learning experiences, who build student relationships . . . who ultimately have the power to change the trajectory of our students' lives. *Equity by Design* is intended to serve as a blueprint for teachers to alter the all-too-predictable outcomes for our historically under-served students. A first of its kind resource, the book makes the critical link between social justice and Universal Design for Learning (UDL) so that we can equip students (and teachers, too) with the will, skill, and collective capacity to enact positive change. Inside you'll find: Concrete strategies for designing and delivering a culturally responsive, sustainable, and equitable framework for all students Rich examples, case studies, and implementation spotlights of educators, students (including Parkland survivors), and programs that have embraced a social justice imperative Evidence-based application of best practices for UDL to create more inclusive and equitable classrooms A flexible format to facilitate use with individual teachers, teacher teams, and as the basis for whole-school implementation Every student, Mirko and Katie insist, deserves the opportunity to be successful regardless of their zip code, the color of their skin, the language they speak, their sexual and/or gender identity, and whether or not they have a disability. Consider *Equity by Design* a critical first step forward in providing that all-important opportunity. Also From Corwin: *Hammond/Culturally Responsive Teaching & the Brain*: 9781483308012 *Moore/The Guide for White Women Who Teach Black Boys*: 9781506351681 *France/Reclaiming Professional Learning*: 9781544360669

**a pathway to equitable math instruction: *Mapping Time, Space and the Body*** Mariana Kawall Leal Ferreira, 2015-01-20 *Mapping Time, Space and the Body: Indigenous Knowledge and Mathematical Thinking in Brazil* brings people, land and numbers together in the fight for justice. On this extraordinary voyage through ancestral territories in central and southern Brazil, the Xavante, Suyá, Kayabi, and other local nations use mapping as a tool to protect their human rights to lands and resources they have traditionally owned and acquired. Mathematics activities inside the classroom and in everyday life help explain how Indigenous Peoples understand the cosmos and protect the living beings that helped create it. The book is a welcome contribution to a growing literature on the mathematical and scientific thinking of Indigenous Peoples around the globe. It makes mathematics alive and culturally relevant for students of all national backgrounds worldwide. "A brilliant marriage of ethnography and mathematics written with deep understanding and obvious affection for the peoples she observed." – James A. Wiley, Ph.D. Professor, University of California at San Francisco, USA "This original and beautifully illustrated book offers a vivid study of Indigenous Peoples in Brazil. The author develops theoretical approaches and research methodologies to understand the way cultural groups deal with their natural and social environments." – Ubiratan D'Ambrosio, Ph.D. Emeritus Professor, Universidade Estadual de Campinas, Brazil "Mapping Time, Space and the Body is destined to create new and enlightened research in Ethnomathematics. It is an essential read for all of us working with culture and social justice in the realm of mathematics." – Daniel Clark Orey, Ph.D. Professor, Universidade Federal de Ouro Preto, Minas Gerais, Brazil. Emeritus Professor, California State University, Sacramento, USA Cover photo by Mariana K. Leal Ferreira, 1998: Romdó Suyá, ceremonial leader of the Suyá people in the Xingu Indigenous Park

**a pathway to equitable math instruction: *Inventing the Mathematician*** Sara N. Hottinger, 2016-03-01 Considers how our ideas about mathematics shape our individual and cultural relationship to the field. Where and how do we, as a culture, get our ideas about mathematics and

about who can engage with mathematical knowledge? Sara N. Hottinger uses a cultural studies approach to address how our ideas about mathematics shape our individual and cultural relationship to the field. She considers four locations in which representations of mathematics contribute to our cultural understanding of mathematics: mathematics textbooks, the history of mathematics, portraits of mathematicians, and the field of ethnomathematics. Hottinger examines how these discourses shape mathematical subjectivity by limiting the way some groups—including women and people of color—are able to see themselves as practitioners of math. *Inventing the Mathematician* provides a blueprint for how to engage in a deconstructive project, revealing the limited and problematic nature of the normative construction of mathematical subjectivity.

**a pathway to equitable math instruction: *Encyclopedia of Curriculum Studies*** Craig Kridel, 2010-02-16 The study of curriculum, beginning in the early 20th century, first served the areas of school administration and teaching and was used to design and develop programs of study. The field subsequently expanded and drew upon disciplines from the arts, humanities, and social sciences to examine larger educational forces and their effects upon the individual, society, and conceptions of knowledge. Curriculum studies now embraces an array of academic scholarship in relation to personal and institutional needs and interests while it also focuses upon a diverse and complex dynamic among educational experiences, practices, settings, actions, and theories. The *Encyclopedia of Curriculum Studies* provides a comprehensive introduction to the academic field of curriculum studies for the scholar, student, teacher, and administrator. This two-volume set serves to inform and to introduce terms, events, documents, biographies, and concepts to assist the reader in understanding aspects of this rapidly changing, expansive, and contested field of study. Key Features Displays different perspectives by having authors contribute independent essays on the nature and future of curriculum studies Presents a unique and in-depth treatment of the *Twenty-Sixth Yearbook of the National Society for the Study of Education (NSSE)*, a 1927 publication that has taken on legendary dimensions for the field of curriculum studies Contains bibliographic entries which feature specific publications by curriculum leaders that helped to define the field Helps readers to learn unfamiliar terms and concepts, to become more comfortable with specialized phrases, and to understand the many significant and perplexing concepts and questions that characterize the field Key Themes Biography and Prosopography Concepts and Terms Content Descriptions Influences on Curriculum Studies Inquiry and Research Nature of Curriculum Studies Organizations, Schools, and Projects Publications Theoretical Perspectives Types of Curricula The *Encyclopedia of Curriculum Studies* offers the careful reader a surprisingly revealing depiction of the conventions, mores, and accepted research and writing practices of the field of curriculum studies as it continues to expand and change. Availability in print and electronic formats provides students with convenient, easy access, wherever they may be.

**a pathway to equitable math instruction: *Culturally Responsive Teaching*** Geneva Gay, 2010 The achievement of students of color continues to be disproportionately low at all levels of education. More than ever, Geneva Gay's foundational book on culturally responsive teaching is essential reading in addressing the needs of today's diverse student population. Combining insights from multicultural education theory and research with real-life classroom stories, Gay demonstrates that all students will perform better on multiple measures of achievement when teaching is filtered through their own cultural experiences. This bestselling text has been extensively revised to include expanded coverage of student ethnic groups: African and Latino Americans as well as Asian and Native Americans as well as new material on culturally diverse communication, addressing common myths about language diversity and the effects of English Plus instruction.

**a pathway to equitable math instruction: *Redesigning America's Community Colleges*** Thomas R. Bailey, Shanna Smith Jaggars, Davis Jenkins, 2015-04-09 In the United States, 1,200 community colleges enroll over ten million students each year—nearly half of the nation's undergraduates. Yet fewer than 40 percent of entrants complete an undergraduate degree within six years. This fact has put pressure on community colleges to improve academic outcomes for their students. *Redesigning America's Community Colleges* is a concise, evidence-based guide for



educational leaders whose institutions typically receive short shrift in academic and policy discussions. It makes a compelling case that two-year colleges can substantially increase their rates of student success, if they are willing to rethink the ways in which they organize programs of study, support services, and instruction. Community colleges were originally designed to expand college enrollments at low cost, not to maximize completion of high-quality programs of study. The result was a cafeteria-style model in which students pick courses from a bewildering array of choices, with little guidance. The authors urge administrators and faculty to reject this traditional model in favor of “guided pathways”—clearer, more educationally coherent programs of study that simplify students’ choices without limiting their options and that enable them to complete credentials and advance to further education and the labor market more quickly and at less cost. Distilling a wealth of data amassed from the Community College Research Center (Teachers College, Columbia University), *Redesigning America’s Community Colleges* offers a fundamental redesign of the way two-year colleges operate, stressing the integration of services and instruction into more clearly structured programs of study that support every student’s goals.

**a pathway to equitable math instruction:** *Culturally Responsive Teaching and The Brain* Zaretta Hammond, 2014-11-13 A bold, brain-based teaching approach to culturally responsive instruction To close the achievement gap, diverse classrooms need a proven framework for optimizing student engagement. Culturally responsive instruction has shown promise, but many teachers have struggled with its implementation—until now. In this book, Zaretta Hammond draws on cutting-edge neuroscience research to offer an innovative approach for designing and implementing brain-compatible culturally responsive instruction. The book includes: Information on how one’s culture programs the brain to process data and affects learning relationships Ten “key moves” to build students’ learner operating systems and prepare them to become independent learners Prompts for action and valuable self-reflection

**a pathway to equitable math instruction: Catalyzing Change in High School Mathematics** , 2018 *Catalyzing Change in High School Mathematics : Initiating Critical Conversations* is written for classroom teachers; counselors, coaches, specialists, and instructional leaders; school, district, and state administrators; curriculum developers; and policymakers at all levels with the goal of beginning a serious discussion of the issues for high school mathematics that are outlined in this document.--

**a pathway to equitable math instruction:** *Invigorating High School Math* Steven Leinwand, Eric Milou, 2021-08-31 Dramatically Improving High School Mathematics Must Start Now! High school math is failing many students. Out-of-date and stale curricula are not only dull, but perpetuate inequity by limiting opportunities and failing to prepare a majority of students for life in the 21st century. Even traditionalists recognize that the status quo is no longer acceptable. Major shifts in course organization, mathematical content, pedagogy, and assessment are long overdue. Practical Guidance for Meaningful Transformation *Invigorating High School Math* is a clarion call for meaningful transformation. Throughout the book, Steven Leinwand and Eric Milou address the most critical challenges facing high school mathematics and provide practical guidance for: addressing challenges and excuses that often short-circuit new approaches making the case for the importance of and rationale for changing high school math creating core integrated math courses for grades 9 and 10 and coherent pathways for grades 11 and 12 making critical shifts in pedagogy and classroom practice designing high-quality assessments and using them effectively developing and executing a rational implementation plan A Stimulus for Discussion and a Road Map for Change Many of these ideas will not be broadly popular. It's likely that none of them will be easy to implement. That's no surprise: For nearly a century, the basic structure of high school mathematics has barely changed-not because of its effectiveness, but because the status quo is a powerful force requiring purposeful action to break. This book was written for every high school math educator and leader-as both a stimulus for discussion and a road map for change. Our hope, say the authors, is that this book stimulates change, empowers teachers, and guides the profession on this critical journey to invigorate high school mathematics.

**a pathway to equitable math instruction:** *Engage Every Family* Steven M. Constantino, 2015-11-17 Reach beyond theory and engage every family in student success Family engagement increases student achievement but how do schools connect with families who don't participate yet? Educators can easily become frustrated trying to reach the disconnected and often fall back to engaging the already engaged. Is it possible to win over everyone? Discover how to move beyond theory to change your culture for better family engagement and student achievement. Through practical steps, reflections, and case studies, you will discover and address: How and where family engagement breaks down, and How to create a truly inviting culture for successful community and family partnerships

**a pathway to equitable math instruction:** *Systems for Instructional Improvement* Paul Cobb, Kara Jackson, Erin Henrick, Thomas M. Smith, 2020-01-15 In *Systems for Instructional Improvement*, Paul Cobb and his colleagues draw on their extensive research to propose a series of specific, empirically grounded recommendations that together constitute a theory of action for advancing instruction at scale. The authors outline the elements of a coherent instructional system; describe productive practices for school leaders in supporting teachers' growth; and discuss the role of district leaders in developing school-level capacity for instructional improvement. Based on the findings of an eight-year research-practice partnership with four large urban districts investigating their efforts to enhance middle school math instruction, the authors seek to bridge the gap between the literature on improving teaching and learning and the literature on policy and leadership. They look at the entire education system and make recommendations on improvement efforts with a focus on student learning and teachers' instructional vision. In particular, the authors offer insights on the interplay among various supports for teacher learning, including pullout professional development, coaching, collaborative inquiry, the most instructionally productive uses of principals' time, and the tensions that tend to emerge at the district level. They provide a guide for district-level leaders in organizing their work to support significant teacher learning. *Systems for Instructional Improvement* provides an invaluable resource for school and district leaders, while outlining a clearly focused agenda for future research.

**a pathway to equitable math instruction:** *Principles to Actions* National Council of Teachers of Mathematics, 2014-02 This text offers guidance to teachers, mathematics coaches, administrators, parents, and policymakers. This book: provides a research-based description of eight essential mathematics teaching practices ; describes the conditions, structures, and policies that must support the teaching practices ; builds on NCTM's Principles and Standards for School Mathematics and supports implementation of the Common Core State Standards for Mathematics to attain much higher levels of mathematics achievement for all students ; identifies obstacles, unproductive and productive beliefs, and key actions that must be understood, acknowledged, and addressed by all stakeholders ; encourages teachers of mathematics to engage students in mathematical thinking, reasoning, and sense making to significantly strengthen teaching and learning.

**a pathway to equitable math instruction:** *Building Thinking Classrooms in Mathematics, Grades K-12* Peter Liljedahl, 2020-09-28 A thinking student is an engaged student Teachers often find it difficult to implement lessons that help students go beyond rote memorization and repetitive calculations. In fact, institutional norms and habits that permeate all classrooms can actually be enabling non-thinking student behavior. Sparked by observing teachers struggle to implement rich mathematics tasks to engage students in deep thinking, Peter Liljedahl has translated his 15 years of research into this practical guide on how to move toward a thinking classroom. *Building Thinking Classrooms in Mathematics, Grades K-12* helps teachers implement 14 optimal practices for thinking that create an ideal setting for deep mathematics learning to occur. This guide Provides the what, why, and how of each practice and answers teachers' most frequently asked questions Includes firsthand accounts of how these practices foster thinking through teacher and student interviews and student work samples Offers a plethora of macro moves, micro moves, and rich tasks to get started Organizes the 14 practices into four toolkits that can be implemented in order and

built on throughout the year. When combined, these unique research-based practices create the optimal conditions for learner-centered, student-owned deep mathematical thinking and learning, and have the power to transform mathematics classrooms like never before.

**a pathway to equitable math instruction: How to Support Struggling Students** Robyn Renee Jackson, Claire M. Lambert, 2010 Provides proactive learning support to enable teachers to give students the right kind of assistance and get those who are struggling back on track. Covers the steps of building a plan and provides all the strategies needed to support students before, during, and after instruction.

**a pathway to equitable math instruction: Computational Thinking and Coding for Every Student** Jane Krauss, Kiki Prottzman, 2016-10-28 Empower tomorrow's tech innovators Our students are avid users and consumers of technology. Isn't it time that they see themselves as the next technological innovators, too? Computational Thinking and Coding for Every Student is the beginner's guide for K-12 educators who want to learn to integrate the basics of computer science into their curriculum. Readers will find Practical strategies for teaching computational thinking and the beginning steps to introduce coding at any grade level, across disciplines, and during out-of-school time Instruction-ready lessons and activities for every grade Specific guidance for designing a learning pathway for elementary, middle, or high school students Justification for making coding and computer science accessible to all A glossary with definitions of key computer science terms, a discussion guide with tips for making the most of the book, and companion website with videos, activities, and other resources Momentum for computer science education is growing as educators and parents realize how fundamental computing has become for the jobs of the future. This book is for educators who see all of their students as creative thinkers and active contributors to tomorrow's innovations. Kiki Prottzman and Jane Krauss have been at the forefront of the rising popularity of computer science and are experts in the issues that the field faces, such as equity and diversity. In this book, they've condensed years of research and practitioner experience into an easy to read narrative about what computer science is, why it is important, and how to teach it to a variety of audiences. Their ideas aren't just good, they are research-based and have been in practice in thousands of classrooms...So to the hundreds and thousands of teachers who are considering, learning, or actively teaching computer science—this book is well worth your time. Pat Yongpradit Chief Academic Officer, Code.org

**a pathway to equitable math instruction: Critical Race Theory in Mathematics Education** Julius Davis, Christopher Jett, 2019-04-30 Critical Race Theory in Mathematics Education brings together scholarship that uses critical race theory (CRT) to provide a comprehensive understanding of race, racism, social justice, and experiential knowledge of African Americans' mathematics education. CRT has gained traction within the educational research sphere, and this book extends and applies this framework to chronicle the paths of mathematics educators who advance and use CRT. This edited collection brings together scholarship that addresses the racial challenges thrust upon Black learners and the gatekeeping nature of the discipline of mathematics. Across the ten chapters, scholars expand the uses of CRT in mathematics education and share insights with stakeholders regarding the racialized experiences of mathematics students and educators. Collectively, the volume explains how researchers, practitioners, and policymakers can use CRT to examine issues of race, racism, and other forms of oppression in mathematics education for Black children and adults.

**a pathway to equitable math instruction: White Teachers, Diverse Classrooms** Julie Landsman, Chance Wayne Lewis, 2006 Encourages reflection and self-examination, calls for understanding of how students can achieve and be expected to perform at their best. It demonstrates what is involved in terms of recognizing often-unconscious biases, confronting institutional racism where it occurs, surmounting stereotyping, adopting culturally relevant teaching, connecting with parents and the community, and integrating diversity in all activities. Gives examples of practice and insights that will engage teachers in practice or in service. From publisher description.

**a pathway to equitable math instruction: *Objectivity*** Lorraine Daston, Peter Galison, 2021-02-02 *Objectivity* has a history, and it is full of surprises. In *Objectivity*, Lorraine Daston and Peter Galison chart the emergence of objectivity in the mid-nineteenth-century sciences — and show how the concept differs from alternatives, truth-to-nature and trained judgment. This is a story of lofty epistemic ideals fused with workaday practices in the making of scientific images. From the eighteenth through the early twenty-first centuries, the images that reveal the deepest commitments of the empirical sciences — from anatomy to crystallography — are those featured in scientific atlases: the compendia that teach practitioners of a discipline what is worth looking at and how to look at it. Atlas images define the working objects of the sciences of the eye: snowflakes, galaxies, skeletons, even elementary particles. Galison and Daston use atlas images to uncover a hidden history of scientific objectivity and its rivals. Whether an atlas maker idealizes an image to capture the essentials in the name of truth-to-nature or refuses to erase even the most incidental detail in the name of objectivity or highlights patterns in the name of trained judgment is a decision enforced by an ethos as well as by an epistemology. As Daston and Galison argue, atlases shape the subjects as well as the objects of science. To pursue objectivity — or truth-to-nature or trained judgment — is simultaneously to cultivate a distinctive scientific self wherein knowing and knower converge. Moreover, the very point at which they visibly converge is in the very act of seeing not as a separate individual but as a member of a particular scientific community. Embedded in the atlas image, therefore, are the traces of consequential choices about knowledge, persona, and collective sight. *Objectivity* is a book addressed to any one interested in the elusive and crucial notion of objectivity — and in what it means to peer into the world scientifically.

**a pathway to equitable math instruction: *Coaching for Equity*** Elena Aguilar, 2020-07-14 *Your Guide to Creating Equitable Schools* If we hope to interrupt educational inequities and create schools in which every child thrives, we must open our hearts to purposeful conversation and hone our skills to make those conversations effective. With characteristic honesty and wisdom, Elena Aguilar inspires us to commit to transforming our classrooms, lays bare the hidden obstacles to equity, and helps us see how to overcome these obstacles, one conversation at a time. *Coaching for Equity* is packed with the resources necessary to implement Transformational Coaching in any organization. In addition to an updated coaching framework and corresponding rubrics, a comprehensive set of coaching tools puts success in every coach's hands. Extensive personal narratives demonstrate what coaching for equity looks like and help us see how we can make every conversation count towards building a more just and equitable world. *Coaching for Equity* covers critical topics in the larger conversation about racial equity, and helps readers develop the knowledge, dispositions and skills to be able to: Talk productively about race, Build trust to support vulnerability, Unpack mental models and change someone's mind, Observe classrooms and collect data to support equitable outcomes, Inspire others and deepen commitment, Evaluate and celebrate growth. Perfect for teachers, teacher leaders, coaches and administrators, *Coaching for Equity* offers extensive strategies for talking about race, power, and systems of oppression. In framing the rationale for transformational conversations, *Coaching for Equity* gives us the context we need to enter into this work. In laying out the strategies, tools and models for critical conversations, it gives us the way forward. Comprehensive, concrete, and deeply human, *Coaching for Equity* is the guide for those who choose to accept responsibility for interrupting inequities in schools. It is for all educators who know there is a better way.

**a pathway to equitable math instruction: *Teaching Mathematics for Social Justice, Grades K-12*** Dr. Kristopher J. Childs, Dr. John W. Staley, 2024-06-18 Your journey to becoming a social justice mathematics educator begins here. Every journey has a beginning—a starting point—where you take a moment to set your sights on your next destination carefully. *Teaching mathematics for social justice (TMSJ)* means reimagining your mathematics classroom in a way that serves more children better—as a place that lifts mathematics up as a tool for students to analyze and understand the worlds around them, celebrate their unique identities and their communities, and become agents of change. For any K-12 educator who values these goals *Teaching Mathematics for*

Social Justice, Grades: A Guide for Moving from Mindset to Action can be the start of a transformational journey. Guiding you in planning, implementing, assessing, and showcasing social justice mathematics lessons and helping children apply their learning beyond the classroom, this book: Encourages self-reflection on the why of your teaching and examines your own mindset about mathematics Provides a step-by-step action plan for creating equitable and socially just mathematics classrooms that focus on rich and collaborative mathematics learning Incorporates interactive reflection prompts, self-assessments, and activities throughout the journey Describes culturally responsive teaching practices to better respond to the instructional needs of the diverse individuals in your classroom Offers activities to identify what current events and social issues are important to children and their families Inspires you to remain steadfast in their journey of growth toward becoming a social justice mathematics educator Complete with sample lessons, online resources, and practical tools, this guide will empower you to better understand the children in your classroom, leverage their strengths, and make mathematics learning relevant and useful as they use mathematics to address the issues they care about. Start your journey towards becoming a social justice mathematics educator today.

**a pathway to equitable math instruction: Faith Versus Fact** Jerry A. Coyne, 2016-05-17 “A superbly argued book.” —Richard Dawkins, author of *The God Delusion* The New York Times bestselling author of *Why Evolution is True* explains why any attempt to make religion compatible with science is doomed to fail In this provocative book, evolutionary biologist Jerry A. Coyne lays out in clear, dispassionate detail why the toolkit of science, based on reason and empirical study, is reliable, while that of religion—including faith, dogma, and revelation—leads to incorrect, untestable, or conflicting conclusions. Coyne is responding to a national climate in which more than half of Americans don’t believe in evolution, members of Congress deny global warming, and long-conquered childhood diseases are reappearing because of religious objections to inoculation, and he warns that religious prejudices in politics, education, medicine, and social policy are on the rise. Extending the bestselling works of Richard Dawkins, Daniel Dennett, and Christopher Hitchens, he demolishes the claims of religion to provide verifiable “truth” by subjecting those claims to the same tests we use to establish truth in science. Coyne irrefutably demonstrates the grave harm—to individuals and to our planet—in mistaking faith for fact in making the most important decisions about the world we live in. Praise for *Faith Versus Fact*: “A profound and lovely book . . . showing that the honest doubts of science are better . . . than the false certainties of religion.” —Sam Harris, author of *The End of Faith*

**a pathway to equitable math instruction: Promoting Equity in Approximations of Practice for Mathematics Teachers** Wilkerson Lee, Carrie, Bondurant, Liza, Sapkota, Bima, Howell, Heather, 2024-11-07 Within the field of mathematics teacher (PST) education, a profound challenge echoes—the persistent gap between theoretical understanding and practical application. This lingering divide raises a critical concern, one that finds its focus in the exploration of transformative tools known as approximations of practice. These tools aim to provide a realistic and contextualized environment for PSTs to cultivate their teaching skills. However, the broader, often overlooked issue permeating this educational terrain is the question of equity in mathematics instruction—an issue that this book endeavors to unravel and reshape, positioning equity at the forefront of pedagogical considerations. *Promoting Equity in Approximations of Practice for Mathematics Teachers*, a compelling work that not only delves into the transformative role of approximations but also champions equity as a cornerstone in reshaping the landscape of mathematics education. This groundbreaking work has a dual objective—firstly, to furnish mathematics teacher educators and researchers with a comprehensive overview of the current landscape of approximations in mathematics education. It moves beyond a mere survey, encouraging readers to critically analyze frameworks and design choices that either foreground or dismiss equity in these pedagogical spaces. Divided into three sections, the book delves into the spectrum of work characterizing approximations in mathematics teacher education. The first section surveys diverse approaches, acknowledging the current lack of focus on equity. The second section critically

examines the intersection of equity and approximations, fostering collaborations between experts in mathematics education and equity-focused researchers. The third section takes a forward-looking stance, envisioning the future of equity-focused approximations in mathematics education.

**a pathway to equitable math instruction:** Modeling Mathematical Ideas Jennifer M. Suh, Padmanabhan Seshaiyer, 2016-12-27 Modeling Mathematical Ideas combining current research and practical strategies to build teachers and students strategic competence in problem solving. This must-have book supports teachers in understanding learning progressions that addresses conceptual guiding posts as well as students' common misconceptions in investigating and discussing important mathematical ideas related to number sense, computational fluency, algebraic thinking and proportional reasoning. In each chapter, the authors opens with a rich real-world mathematical problem and presents classroom strategies (such as visible thinking strategies & technology integration) and other related problems to develop students' strategic competence in modeling mathematical ideas.

**a pathway to equitable math instruction:** Serving Educational Equity Sonya Murray-Darden, Gwendolyn Y. Turner, 2023-05-23 Connect theory to practice with this timely, comprehensive whole-child approach to accelerated learning. Planning for equitable accelerated learning is analogous to preparing a meal. Similar to a chef selecting the menu, gathering ingredients, and planning the occasion, educators choose aligned curricula to prioritize learning, organize and internalize instruction, and plan for opportunities to advance student learning. Grounded in research and employing the Science of Learning Development (SoLD) principles, this book offers bold new thinking about unfinished learning, equity, and student success. The five-course framework guides educators through the process of Assessing the current school conditions and mindset for acceleration versus remediation Reflecting on empowerment Surveying and reimagining curriculum Understanding and embracing diversity and equity Establishing and implementing effective foundational instruction Promoting, expanding, and reflecting on student engagement Including frequent opportunities for reader reflection, real-world vignettes, and tools that can be brought directly into the classroom, this book delivers everything educators need to adopt a whole-child approach to advancing student learning and engagement.

**a pathway to equitable math instruction:** Preparing Teachers for Deeper Learning Linda Darling-Hammond, Jeannie Oakes, 2021-02-08 Preparing Teachers for Deeper Learning answers an urgent call for teachers who educate children from diverse backgrounds to meet the demands of a changing world. In today's knowledge economy, teachers must prioritize problem-solving ability, adaptability, critical thinking, and the development of interpersonal and collaborative skills over rote memorization and the passive transmission of knowledge. Authors Linda Darling-Hammond and Jeannie Oakes and their colleagues examine what this means for teacher preparation and showcase the work of programs that are educating for deeper learning, equity, and social justice. Guided by the growing knowledge base in the science of learning and development, the book examines teacher preparation programs at Alverno College, Bank Street College of Education, High Tech High's Intern Program, Montclair State University, San Francisco Teacher Residency, Trinity University, and University of Colorado Denver. These seven programs share a common understanding of how people learn that shape similar innovative practices. With vivid examples of teaching for deeper learning in coursework and classrooms; interviews with faculty, school partners, and novice teachers; surveys of teacher candidates and graduates; and analyses of curriculum and practices, Preparing Teachers for Deeper Learning depicts transformative forms of teaching and teacher preparation that honor and expand all students' abilities, knowledges, and experiences, and reaffirm the promise of educating for a better world.

**a pathway to equitable math instruction:** Mindset Mathematics Jo Boaler, Jen Munson, Cathy Williams, 2017-08-28 Engage students in mathematics using growth mindset techniques The most challenging parts of teaching mathematics are engaging students and helping them understand the connections between mathematics concepts. In this volume, you'll find a collection of low floor, high ceiling tasks that will help you do just that, by looking at the big ideas at the first-grade level

through visualization, play, and investigation. During their work with tens of thousands of teachers, authors Jo Boaler, Jen Munson, and Cathy Williams heard the same message—that they want to incorporate more brain science into their math instruction, but they need guidance in the techniques that work best to get across the concepts they needed to teach. So the authors designed Mindset Mathematics around the principle of active student engagement, with tasks that reflect the latest brain science on learning. Open, creative, and visual math tasks have been shown to improve student test scores, and more importantly change their relationship with mathematics and start believing in their own potential. The tasks in Mindset Mathematics reflect the lessons from brain science that: There is no such thing as a math person - anyone can learn mathematics to high levels. Mistakes, struggle and challenge are the most important times for brain growth. Speed is unimportant in mathematics. Mathematics is a visual and beautiful subject, and our brains want to think visually about mathematics. With engaging questions, open-ended tasks, and four-color visuals that will help kids get excited about mathematics, Mindset Mathematics is organized around nine big ideas which emphasize the connections within the Common Core State Standards (CCSS) and can be used with any current curriculum.

**a pathway to equitable math instruction: The Impact of Identity in K-8 Mathematics Learning and Teaching** Julia Aguirre, Danny Bernard Martin, 2013 Each teacher and student brings many identities to the classroom. What is their impact on the student's learning and the teacher's teaching of mathematics? This book invites K-8 teachers to reflect on their own and their students' multiple identities. Rich possibilities for learning result when teachers draw on these identities to offer high-quality, equity-based teaching to all students. Reflecting on identity and re-envisioning learning and teaching through this lens especially benefits students who have been marginalized by race, class, ethnicity, or gender. The authors encourage teachers to reframe instruction by using five equity-based mathematics teaching practices: Going deep with mathematics; leveraging multiple mathematical competencies; affirming mathematics learners' identities; challenging spaces of marginality; and drawing on multiple resources of knowledge. Special features of the book: Classroom vignettes, lessons, and assessments showing equity-based practices Tools for teachers' self-reflection and professional development, including a mathematics learning autobiography and teacher identity activity at [nctm.org/more4u](http://nctm.org/more4u) Suggestions for partnering with parents and community organisations End-of-chapter discussion questions

**a pathway to equitable math instruction: An Agenda for Equity** Searetha Smith-Collins, 2012 The vast numbers of new educational policies, programs, and practices being implemented as educational reform in American public schools have not been analyzed for short or long-term effectiveness or impact on students and their learning. Not only are conditions for many learners still a concern, new information about conditions for students who are not under-performing informs us that they are falling short of the desired mark. This calls for expert educators, researchers, school leaders, teachers, families, students, and interested others to determine the degree to which policies and practices have a positive impact on student outcomes, and the aims of public education. Using Response to Intervention as an innovative model, An Agenda for Equity contributes to filling the void by analyzing the essence of educational reforms for increasing enduring, equitable effectiveness, and improving conditions and teaching and learning for both teachers and students.

**a pathway to equitable math instruction: From Character to Color** Ernest J. Zarra, 2022-05-06 From Character to Color was written to explore Critical Race Theory from logical, moral, and educational standpoints, as these relate to history, people and racial groups. This book is also written to explain reasons why it is a bad choice to allow the Critical Race Theory to grow unabated and continue to infect the nation.

**a pathway to equitable math instruction: The Mathematical Education of Teachers II** Conference Board of the Mathematical Sciences, 2012 This report is a resource for those who teach mathematics and statistics to PreK-12 mathematics teachers, both future teachers and those who already teach in our nation's schools. The report makes recommendations for the mathematics that teachers should know and how they should come to know that mathematics. It urges greater

involvement of mathematicians and statisticians in teacher education so that the nation's mathematics teachers have the knowledge, skills, and dispositions needed to provide students with a mathematics education that ensures high school graduates are college- and career-ready as envisioned by the Common Core State Standards. This report draws on the experience and knowledge of the past decade to: Update the 2001 Mathematical Education of Teachers report's recommendations for the mathematical preparation of teachers at all grade levels: elementary, middle, and high school. Address the professional development of teachers of mathematics. Discuss the mathematical knowledge needed by teachers at different grade levels and by others who teach mathematics such as elementary mathematics specialists, special education teachers, and early childhood educators. Each of the MET II writers is a mathematician, statistician, or mathematics educator with substantial expertise and experience in mathematics education. Among them are principal investigators for Math Science Partnerships as well as past presidents and chairs of the American Statistical Association, Association of Mathematics Teacher Educators, Association of State Supervisors of Mathematics, Conference Board of the Mathematical Sciences, and National Council of Teachers of Mathematics. The audience for this report includes all who teach mathematics to teachers--mathematicians, statisticians, and mathematics educators--and all who are responsible for the mathematical education of teachers--department chairs, educational administrators, and policy-makers at the national, state, school-district, and collegiate levels.

**a pathway to equitable math instruction: Splintered** Jonathan Butcher, 2022-03-22 The problem with our nation's schools today is not just the low test scores in basic reading and math—which are an obstacle for the economy, not to mention students' futures. The challenge is that K-12 instruction has been hijacked by Critical Theorists who are “skeptical” of representative government and the freedoms we cherish. The debates over the retelling of America's past, on display in local school board meetings as well as conflicts between the New York Times' 1619 Project and President Donald Trump's 1776 Commission, involve not just historical facts, but how Americans define their nation. This battle over our national identity is a cultural battle, involving schools—cultural institutions—and the ideas we all need to share to get along with our neighbors, raise families, and pursue the American Dream. “Jonathan Butcher is one of our sharpest and most insightful analysts writing about education today. The nation owes him a debt of gratitude for work demystifying an obscure academic field, critical race theory, and fearlessly following where it leads when imposed on our public schools: abandoning the cherished belief that education can be a means of uniting our diverse country and replacing it with a pedagogy of grievance and despair.” —Robert Pondiscio, Senior Fellow, American Enterprise Institute and author of *How the Other Half Learns* “Jonathan Butcher's timely book on critical race theory addresses what I have described as the civil rights issue of our times. Too few Americans understand how this dangerous ideology and how it has seeped down into our K-12 educational system. Butcher's book is part of a collective effort to educate the American people about the infiltration and indoctrination of our educational system.” —Dr. Carol M. Swain, a former tenured professor at Vanderbilt and Princeton Universities

**a pathway to equitable math instruction: Four Laws for the Artificially Intelligent** Ian Domowitz, 2021-11-15 Ask not what AI can do for a company, rather what artificial intelligence may do to a company. How does a company successfully integrate artificial intelligence into its operations? What are the problems in doing so? And how does the introduction of AI into society change the answer to the first question? As companies delay or even cancel initiatives in artificial intelligence, *Four Laws for the Artificially Intelligent* redefines possibilities and offers leverage to turn AI visions into reality. It is a story of transformation: of people, of companies, and of artificial intelligence itself. The *Four Laws* is unique in its combination of stories and science illustrating how a technology competing with human consciousness is introduced and assimilated within a company. A work of creative nonfiction stretched on a frame of research, it is an essential trail guide for navigating the Industry Version 4.0 jungle in a search of the fruits of innovation.

**a pathway to equitable math instruction: Helping Children Learn Mathematics** National Research Council, Division of Behavioral and Social Sciences and Education, Center for Education,



Mathematics Learning Study Committee, 2002-07-31 Results from national and international assessments indicate that school children in the United States are not learning mathematics 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 we'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.

**a pathway to equitable math instruction:** Culturally Sustaining Pedagogies Django Paris, H. Samy Alim, 2017 Culturally Sustaining Pedagogies raises fundamental questions about the purpose of schooling in changing societies. Bringing together an intergenerational group of prominent educators and researchers, this volume engages and extends the concept of culturally sustaining pedagogy (CSP)—teaching that perpetuates and fosters linguistic, literate, and cultural pluralism as part of schooling for positive social transformation. The authors propose that schooling should be a site for sustaining the cultural practices of communities of color, rather than eradicating them. Chapters present theoretically grounded examples of how educators and scholars can support Black, Indigenous, Latinx, Asian/Pacific Islander, South African, and immigrant students as part of a collective movement towards educational justice in a changing world. Book Features: A definitive resource on culturally sustaining pedagogies, including what they look like in the classroom and how they differ from deficit-model approaches. Examples of teaching that sustain the languages, literacies, and cultural practices of students and communities of color. Contributions from the founders of such lasting educational frameworks as culturally relevant pedagogy, funds of knowledge, cultural modeling, and third space. Contributors: H. Samy Alim, Mary Bucholtz, Dolores Inés Casillas, Michael Domínguez, Nelson Flores, Norma Gonzalez, Kris D. Gutiérrez, Adam Haupt, Amanda Holmes, Jason G. Irizarry, Patrick Johnson, Valerie Kinloch, Gloria Ladson-Billings, Carol D. Lee, Stacey J. Lee, Tiffany S. Lee, Jin Sook Lee, Teresa L. McCarty, Django Paris, Courtney Peña, Jonathan Rosa, Timothy J. San Pedro, Daniel Walsh, Casey Wong “All teachers committed to justice and equity in our schools and society will cherish this book.” —Sonia Nieto, professor emerita, University of Massachusetts, Amherst “This book is for educators who are unafraid of using education to make a difference in the lives of the most vulnerable.” —Pedro Noguera, University of California, Los Angeles “This book calls for deep, effective practices and understanding that centers on our youths’ assets.” —Prudence L. Carter, dean, Graduate School of Education, UC Berkeley

**a pathway to equitable math instruction:** *Transforming the Workforce for Children Birth Through Age 8* National Research Council, Institute of Medicine, Board on Children, Youth, and Families, Committee on the Science of Children Birth to Age 8: Deepening and Broadening the Foundation for Success, 2015-07-23 Children are already learning at birth, and they develop and learn at a rapid pace in their early years. This provides a critical foundation for lifelong progress, and the adults who provide for the care and the education of young children bear a great responsibility for their health, development, and learning. Despite the fact that they share the same objective - to nurture young children and secure their future success - the various practitioners who contribute to the care and the education of children from birth through age 8 are not acknowledged as a workforce unified by the common knowledge and competencies needed to do their jobs well. *Transforming the Workforce for Children Birth Through Age 8* explores the science of child development, particularly looking at implications for the professionals who work with children. This report examines the current capacities and practices of the workforce, the settings in which they

work, the policies and infrastructure that set qualifications and provide professional learning, and the government agencies and other funders who support and oversee these systems. This book then makes recommendations to improve the quality of professional practice and the practice environment for care and education professionals. These detailed recommendations create a blueprint for action that builds on a unifying foundation of child development and early learning, shared knowledge and competencies for care and education professionals, and principles for effective professional learning. Young children thrive and learn best when they have secure, positive relationships with adults who are knowledgeable about how to support their development and learning and are responsive to their individual progress. *Transforming the Workforce for Children Birth Through Age 8* offers guidance on system changes to improve the quality of professional practice, specific actions to improve professional learning systems and workforce development, and research to continue to build the knowledge base in ways that will directly advance and inform future actions. The recommendations of this book provide an opportunity to improve the quality of the care and the education that children receive, and ultimately improve outcomes for children.

**a pathway to equitable math instruction: *Mathematical Relationships in Education***

Laura Black, Heather Mendick, Yvette Solomon, 2011-01-13 This book brings together scholars working in the field of mathematics education to examine the ways in which learners form particular relationships with mathematics in the context of formal schooling. While demand for the mathematically literate citizen increases, many learners continue to reject mathematics and experience it as excluding and exclusive, even when they succeed at it. In exploring this phenomenon, this volume focuses on learners' developing sense of self and their understanding of the part played by mathematics in it. It recognizes the part played by emotional responses, the functioning of classroom communities of practice, and by discourses of mathematics education in this process. It thus blends perspectives from psychoanalysis, socio-cultural theory and discursive approaches in a focus on the classic issues of selection and assessment, pedagogy, curriculum, choice, and teacher development.

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