

5 equity based math practices

5 Equity-Based Math Practices: Transforming Math Education and the Industry

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Published by the National Council of Teachers of Mathematics (NCTM)

Edited by Dr. Maria Sanchez, Senior Editor, NCTM, specializing in mathematics education equity and access.

Abstract: This article explores five equity-based math practices crucial for creating a more inclusive and equitable mathematics learning environment. These practices move beyond simply providing access to high-quality instruction and address the systemic biases that perpetuate inequities in mathematics achievement. We will examine the implications of these practices for the broader industry, showcasing how a focus on equity can lead to a more diverse and innovative workforce.

Keywords: 5 equity-based math practices, mathematics education equity, inclusive mathematics, equitable access, STEM diversity, mathematics achievement gap, culturally relevant pedagogy.

Introduction: The Urgent Need for Equity in Mathematics

The persistent achievement gap in mathematics is not a reflection of inherent differences in ability but a consequence of systemic inequities in access, instruction, and opportunity. Simply put, students from marginalized communities – including students of color, students from low-income families, students with disabilities, and English language learners – are consistently underserved in mathematics education. This has significant consequences, limiting access to STEM fields and ultimately hindering economic mobility and social progress. Addressing this necessitates a fundamental shift in how we approach mathematics teaching and learning, moving towards a framework grounded in 5 equity-based math practices.

1. Go Beyond Access: Cultivating Inclusive Classrooms

The first step towards equity isn't just providing access to math classes; it's about fostering truly inclusive classrooms where every student feels seen, valued, and respected. This means creating a learning environment that celebrates diverse perspectives, learning styles, and cultural backgrounds. This involves actively working to dismantle stereotypes

about who is "good at math" and fostering a growth mindset where mistakes are seen as opportunities for learning. This practice requires teachers to understand the unique needs and experiences of their students, adapting their teaching methods accordingly. For example, incorporating culturally relevant pedagogy, using diverse examples and contexts in problem-solving, and providing multiple modalities for learning can significantly improve engagement and outcomes for students from underrepresented groups. The implications for the industry are profound. A workforce built on diverse perspectives fosters innovation and better problem-solving across all sectors.

2. Culturally Relevant Pedagogy: Connecting Math to Students' Lives

Culturally relevant pedagogy is central to the 5 equity-based math practices. This means connecting mathematical concepts to students' lived experiences, cultural backgrounds, and interests. By grounding mathematical learning in familiar contexts, teachers can make the subject more relatable and engaging for all students. This approach challenges the notion that mathematics is a decontextualized body of knowledge, revealing its relevance and power in addressing real-world issues within students' communities. For industry, this translates to a workforce better equipped to understand and address the diverse needs of a globalized market.

3. High Expectations for All: Challenging Limiting Beliefs

One of the most insidious barriers to equity in mathematics is the pervasive existence of low expectations for certain student populations. This is often implicit, manifesting in subtle ways such as providing less challenging tasks or offering less support. The 5 equity-based math practices challenge this by explicitly stating and acting upon the belief that all students are capable of achieving high levels of mathematical proficiency. This involves setting high expectations for all students, providing differentiated instruction to meet individual needs, and persistently supporting students to reach their full potential. This fosters resilience and confidence, crucial for success in any field, leading to a more capable and confident workforce.

4. Building Strong Relationships: Fostering a Sense of Belonging

A strong teacher-student relationship is essential for student success. For students from marginalized groups, this relationship can be especially critical in fostering a sense of belonging and trust. Building strong relationships means actively listening to students, understanding their challenges, and providing individual support and encouragement. This requires teachers to be culturally responsive and aware of the potential impact of their own biases. The industry benefits from a workforce characterized by strong interpersonal skills, collaborative spirit, and an ability to build rapport – all fostered through a supportive classroom environment.

5. Data-Driven Instruction: Identifying and Addressing Inequities

Data analysis is a crucial component of the 5 equity-based math practices. Teachers must collect and analyze data on student performance to identify patterns and disparities in achievement. This data can then inform instructional decisions, allowing teachers to target specific areas of need and provide individualized support. This systematic approach allows for a continuous improvement cycle, ensuring that the curriculum and teaching methods are effectively addressing the needs of all students. For industry, this translates to a focus on evidence-based decision-making, improving efficiency and efficacy across all levels.

Implications for the Industry

The adoption of these 5 equity-based math practices has far-reaching implications for various industries. A diverse and inclusive STEM workforce, equipped with strong problem-solving skills and a deep understanding of diverse perspectives, is crucial for innovation and economic growth. Companies that prioritize equity in their hiring and training practices are more likely to attract and retain top talent, leading to a competitive advantage in a globalized market. Furthermore, organizations that reflect the diversity of their customer base are better positioned to understand and respond to their needs.

Conclusion

Implementing the 5 equity-based math practices is not merely a pedagogical shift; it's a necessary step toward creating a more just and equitable society. By actively addressing systemic biases and fostering inclusive learning environments, we can unlock the mathematical potential of all students and build a more diverse and innovative workforce capable of solving the complex challenges of the 21st century. This requires a collective effort from educators, policymakers, and industry leaders, working together to create a future where everyone has the opportunity to succeed in mathematics and beyond.

FAQs

1. What are the specific challenges faced by students from marginalized groups in mathematics education? Students from marginalized groups often face challenges related to implicit bias, lack of culturally relevant materials, limited access to resources, and lower expectations from educators.
1. How can teachers effectively incorporate culturally relevant pedagogy into their mathematics instruction? Teachers can incorporate culturally relevant pedagogy by connecting mathematical concepts to students' lived experiences, using diverse examples in problem-solving, and incorporating culturally relevant materials.

1. What are some strategies for addressing low expectations for students from marginalized groups? Setting high expectations for all students, providing differentiated instruction, and offering consistent support and encouragement are key strategies.

1. How can teachers build stronger relationships with their students, especially those from marginalized communities? Building strong relationships requires actively listening to students, understanding their challenges, and providing individual support and encouragement, while being mindful of potential biases.

1. What types of data should teachers collect and analyze to identify and address inequities in mathematics achievement? Teachers should collect data on student performance, attendance, engagement, and classroom interactions to identify disparities.

1. How can schools create more inclusive mathematics classrooms? Schools can create inclusive classrooms by implementing culturally responsive teaching, providing diverse learning resources, and fostering a growth mindset.

1. What is the role of policymakers in promoting equity in mathematics education? Policymakers play a vital role in ensuring equitable access to resources, implementing effective teacher training programs, and establishing equitable assessment practices.

1. How can industries contribute to promoting equity in mathematics education? Industries can support equity in mathematics education by investing in STEM education initiatives, providing mentorship opportunities for students from underrepresented groups, and promoting diverse hiring practices.

1. What are the long-term benefits of addressing inequities in mathematics education? Addressing inequities leads to a more diverse and skilled STEM workforce, increased economic opportunity, and a more equitable society.

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5 equity based math practices: 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 Suggestions for partnering with parents and community organisations End-of-chapter discussion questions

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5 equity based math practices: The Five Practices in Practice [Elementary] Margaret (Peg) Smith, Victoria Bill, Miriam Gamoran Sherin, 2019-08-14 Take a deep dive into the five practices for facilitating productive mathematical discussions Enhance your fluency in the five practices—anticipating, monitoring, selecting, sequencing, and connecting—to bring powerful discussions of mathematical concepts to life in your elementary classroom. This book unpacks the five practices for deeper understanding and empowers you to use each practice effectively. • Video excerpts vividly illustrate the five practices in action in real elementary classrooms • Key questions help you set learning goals, identify high-level tasks, and jumpstart discussion • Prompts guide you to be prepared for and overcome common challenges Includes planning templates, sample lesson plans and completed monitoring tools, and mathematical tasks.

5 equity based math practices: 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.

5 equity based math practices: 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.

5 equity based math practices: Critical Issues in Mathematics Education Bharath Sriraman, Paul Ernest, Brian Greer, 2009-06-01 The word critical in the title of this collection has three meanings, all of which are relevant. One meaning, as applied to a situation or problem, is at a point of crisis. A second meaning is expressing adverse or disapproving comments or judgments. A third is related to the verb to critique, meaning to analyze the merits and faults of. The authors contributing to this book pose challenging questions, from multiple perspectives, about the roles of mathematics in society and the implications for education. Traditional reasons for teaching mathematics include: preparing a new generation of mathematics researchers and a cadre of technically competent users of mathematics; training students to think logically; and because mathematics is as much part of cultural heritage as literature or music. These reasons remain valid, though open to critique, but a deeper analysis is required that recognizes the roles of mathematics in framing many aspects of contemporary society, that will connect mathematics education to the lived experiences of students, their communities, and society in general, and that acknowledges the global ethical responsibilities of mathematicians and mathematics educators. The book is organized in four sections (1) Mathematics education: For what and why? (2) Globalization and cultural diversity, (3) Mathematics, education, and society and (4) Social justice in, and through, mathematics education The chapters address fundamental issues such as the relevance of school mathematics in people's lives; creating a sense of agency for the field of mathematics education, and redefining the relationship between mathematics as discipline, mathematics as school subject and mathematics as part of people's lives.

5 equity based math practices: Implementing Effective Mathematics Teaching Practices in Kindergarten-grade 5 DeAnn Huinker, 2017

5 equity based math practices: Engage in the Mathematical Practices Kit Norris, Sarah Schuhl, 2016 Increase student learning with engaging lesson plans and high-level tasks. In this user-friendly guide, mathematics teachers will discover more than 40 strategies for ensuring students learn critical reasoning skills and retain understanding. Each chapter is devoted to a different Standard for Mathematical Practice and offers an in-depth look at why the standard is important for students' understanding of mathematics.

5 equity based math practices: 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.

5 equity based math practices: *Classroom-Ready Rich Math Tasks, Grades 4-5* Beth McCord Kobett, Francis (Skip) Fennell, Karen S. Karp, Delise Andrews, Sorsha-Maria T. Mulroe, 2021-04-14 Detailed plans for helping elementary students experience deep mathematical learning Do you work tirelessly to make your math lessons meaningful, challenging, accessible, and engaging? Do you spend hours you don't have searching for, adapting, and creating tasks to provide rich experiences for your students that supplement your mathematics curriculum? Help has arrived! Classroom Ready-Rich Math Tasks for Grades 4-5 details more than 50 research- and standards-aligned, high-cognitive-demand tasks that will have your students doing deep-problem-based learning. These ready-to-implement, engaging tasks connect skills, concepts and practices, while encouraging students to reason, problem-solve, discuss, explore multiple solution pathways, connect multiple representations, and justify their thinking. They help students monitor their own thinking and connect the mathematics they know to new situations. In other words, these tasks allow students to truly do mathematics! Written with a strengths-based lens and an attentiveness to all students, this guide includes: • Complete task-based lessons, referencing mathematics standards and practices, vocabulary, and materials • Downloadable planning tools, student resource pages, and thoughtful questions, and formative assessment prompts • Guidance on preparing, launching, facilitating, and reflecting on each task • Notes on access and equity, focusing on students' strengths, productive struggle, and distance or alternative learning environments. With concluding guidance on adapting or creating additional rich tasks for your students, this guide will help you give all of your students the deepest, most enriching and engaging mathematics learning experience possible.

5 equity based math practices: *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.

5 equity based math practices: *Transforming Mathematics Teacher Education* Tonya Gau Bartell, Corey Drake, Amy Roth McDuffie, Julia M. Aguirre, Erin E. Turner, Mary Q. Foote, 2019-08-01 This book builds on the Teachers Empowered to Advance Change in Mathematics (TEACH Math) project, which was an initiative that sought to develop a new generation of preK-8 mathematics teachers to connect mathematics, children's mathematical thinking, and community and family knowledge in mathematics instruction - or what we have come to call children's multiple mathematical knowledge bases in mathematics instruction, with an explicit focus on equity. Much of the work involved in the TEACH Math project included the development of three instructional modules for preK-8 mathematics methods courses to support the project's goals. These activities were used and refined over eight semesters, and in Fall 2014 shared at a dissemination conference with other mathematics teacher educators from a variety of universities across the United States. Chapter contributions represent diverse program and geographical contexts and teach prospective and practicing teachers from a variety of socioeconomic and ethnic backgrounds, in particular providing accounts of supports, challenges, and tensions in implementing equity-based mathematics teacher education. The chapters supply rich evidence and illustrative examples of how other mathematics teacher educators and professional developers might make the modules work for their unique practices, courses, workshops, and prospective teachers/teachers. It promises to be an

important resource for offering guidance and examples to those working with prospective teachers of mathematics who want to create positive, culturally responsive, and equity-based mathematics experiences for our nation's youth.

5 equity based math practices: Answers to Your Biggest Questions About Teaching Elementary Math John J. SanGiovanni, Susie Katt, Latrenda D. Knighten, Georgina Rivera, 2021-08-31 Your guide to grow and learn as a math teacher! Let's face it, teaching elementary math can be hard. So much about how we teach math today may look and feel different from how we learned it. Today, we recognize placing the student at the center of their learning increases engagement, motivation, and academic achievement soars. Teaching math in a student-centered way changes the role of the teacher from one who traditionally "delivers knowledge" to one who fosters thinking. Most importantly, we must ensure our practice gives each and every student the opportunity to learn, grow, and achieve at high levels, while providing opportunities to develop their agency and authority in the classroom which results in a positive math identity. Whether you are a brand new teacher or a veteran, if you find teaching math to be quite the challenge, this is the guide you want by your side. Designed for just-in-time learning and support, this practical resource gives you brief, actionable answers to your most pressing questions about teaching elementary math. Written by four experienced math educators representing diverse experiences, these authors offer the practical advice they wish they received years ago, from lessons they've learned over decades of practice, research, coaching, and through collaborating with teams, teachers and colleagues—especially new teachers—every day. Questions and answers are organized into five areas of effort that will help you most thrive in your elementary math classroom: 1. How do I build a positive math community? 2. How do I structure, organize, and manage my math class? 3. How do I engage my students in math? 4. How do I help my students talk about math? 5. How do I know what my students know and move them forward? Woven throughout, you'll find helpful sidebar notes on fostering identity and agency; access and equity; teaching in different settings; and invaluable resources for deeper learning. The final question—Where do I go from here?— offers guidance for growing your practice over time. Strive to become the best math educator you can be; your students are counting on it! What will be your first step on the journey?

5 equity based math practices: Bringing Math Students Into the Formative Assessment Equation Susan Janssen Creighton, Cheryl Rose Tobey, Eric Karnowski, Emily R. Fagan, 2015-01-21 Make formative assessment work for you—and your math students! Finally, formative assessment that adds up! Bringing Math Students Into the Formative Assessment Equation is the ultimate resource for helping teachers implement formative assessment in the middle school mathematics classroom. And it's much more than that. With this research-based, teacher-tested guide, you won't just learn effective teaching strategies—you'll turn your students into self-regulated learners. They'll monitor and assess their own progress—and communicate to you about it! Features include: A clear and manageable six-aspect instructional model Detailed strategies for helping students own their successes Real-life examples from middle school mathematics teachers Useful resources and a companion website to help you implement formative assessment in your classroom Formative assessment isn't just for teachers anymore. With the help of this essential resource, you'll work together with your students toward a common goal of math success. This book is outstanding. I would recommend it to any math educator. The depth of research integrated into practice is extensive and, as a result, it is the most practical book I have come across related to formative assessment and mathematics The self-regulation aspects, as well as the ownership and involvement emphasized in the book, went beyond the traditional cognitive strategies endorsed in most books. Marc Simmons, Principal Ilwaco Middle School, Ocean Beach School District, Long Beach, WA The ideas in this book are brought to life with examples of teachers and students in the classroom. The teacher voices, comments, and quotes lend credibility and are a big component of the book's strengths as well as the visuals and graphics. Rita Tellez, Math Coordinator Ysleta Independent School District, El Paso, TX

5 equity based math practices: Mathematics for Equity Na'ilah Suad Nasir, Carlos Cabana,

Barbara Shreve, Estelle Woodbury, Nicole Louie, 2014-12-04 In this book, nationally renowned scholars join classroom teachers to share equity-oriented approaches that have been successful with urban high school mathematics students. Compiling for the first time major research findings and practitioner experiences from Railside High School, the volume describes the evolution of a fundamentally different conception of learners and teaching. The chapters bring together research and reflection on teacher collaboration and professional community, student outcomes and mathematics classroom culture, reform curricula and pedagogy, and ongoing teacher development. Mathematics for Equity will be invaluable reading for teachers, schools, and districts interested in maintaining a focus on equity and improving student learning while making sense of the new demands of the Common Core State Standards. Book Features: Core principles of an equity-centered mathematics program. Examples of how to focus and organize the collaborative work of a math department to develop a shared pedagogy. Student experiences with an equity pedagogy that focuses on building perseverance, flexibility in thinking, and deep conceptual understanding. Connections between reconceptualizing learners and teaching, and achieving deep mathematics learning and equitable outcomes. Contributors include: Jo Boaler, Ilana Seidel Horn, Judith Warren Little, and Rachel Lotan. "Mathematics for Equity provides a kaleidoscopic view, in the voices of teachers, researchers, and students themselves, of one of the nation's most ambitious and successful attempts at teaching mathematics for equity. It shows what it takes to create a climate that supports students and teachers in engaging in meaningful mathematical activity—and, alas, how vulnerable such environments are to the wrong kinds of 'accountability.' Read it and learn." —Alan H. Schoenfeld, University of California at Berkeley "Want to fix what's wrong with mathematics instruction in your school? Read this book with your colleagues and do what it inspires you to do. Written by the brave teachers and former students who did it, as well as researchers." —Phil Daro, writing team, Common Core Standards, Strategic Education Research Partnership

5 equity based math practices: Teaching Math at a Distance, Grades K-12 Theresa Wills, 2020-10-12 Make Rich Math Instruction Come to Life Online In an age when distance learning has become part of the new normal, educators know that rich remote math teaching involves more than direct instruction, online videos, and endless practice problems on virtual worksheets. Using both personal experience and those of teachers in real K-12 online classrooms, distance learning mathematics veteran Theresa Wills translates all we know about research-based, equitable, rigorous face-to-face mathematics instruction into an online venue. This powerful guide equips math teachers to: Build students' agency, identity, and strong math communities Promote mathematical thinking, collaboration, and discourse Incorporate rich mathematics tasks and assign meaningful homework and practice Facilitate engaging online math instruction using virtual manipulatives and other concrete learning tools Recognize and address equity and inclusion challenges associated with distance learning Assess mathematics learning from a distance With examples across the grades, links to tutorials and templates, and space to reflect and plan, Teaching Math at a Distance offers the support, clarity, and inspiration needed to guide teachers through teaching math remotely without sacrificing deep learning and academic growth.

5 equity based math practices: Visible Learning for Mathematics, Grades K-12 John Hattie, Douglas Fisher, Nancy Frey, Linda M. Gojak, Sara Delano Moore, William Mellman, 2016-09-15 Selected as the Michigan Council of Teachers of Mathematics winter book club book! Rich tasks, collaborative work, number talks, problem-based learning, direct instruction...with so many possible approaches, how do we know which ones work the best? In Visible Learning for Mathematics, six acclaimed educators assert it's not about which one—it's about when—and show you how to design high-impact instruction so all students demonstrate more than a year's worth of mathematics learning for a year spent in school. That's a high bar, but with the amazing K-12 framework here, you choose the right approach at the right time, depending upon where learners are within three phases of learning: surface, deep, and transfer. This results in visible learning because the effect is tangible. The framework is forged out of current research in mathematics combined with John Hattie's synthesis of more than 15 years of education research involving 300 million students.

Chapter by chapter, and equipped with video clips, planning tools, rubrics, and templates, you get the inside track on which instructional strategies to use at each phase of the learning cycle: Surface learning phase: When—through carefully constructed experiences—students explore new concepts and make connections to procedural skills and vocabulary that give shape to developing conceptual understandings. Deep learning phase: When—through the solving of rich high-cognitive tasks and rigorous discussion—students make connections among conceptual ideas, form mathematical generalizations, and apply and practice procedural skills with fluency. Transfer phase: When students can independently think through more complex mathematics, and can plan, investigate, and elaborate as they apply what they know to new mathematical situations. To equip students for higher-level mathematics learning, we have to be clear about where students are, where they need to go, and what it looks like when they get there. Visible Learning for Math brings about powerful, precision teaching for K-12 through intentionally designed guided, collaborative, and independent learning.

5 equity based math practices: Equity-Centered Trauma-Informed Education Alex Shevrin Venet, 2023-09-01 Educators must both respond to the impact of trauma, and prevent trauma at school. Trauma-informed initiatives tend to focus on the challenging behaviors of students and ascribe them to circumstances that students are facing outside of school. This approach ignores the reality that inequity itself causes trauma, and that schools often heighten inequities when implementing trauma-informed practices that are not based in educational equity. In this fresh look at trauma-informed practice, Alex Shevrin Venet urges educators to shift equity to the center as they consider policies and professional development. Using a framework of six principles for equity-centered trauma-informed education, Venet offers practical action steps that teachers and school leaders can take from any starting point, using the resources and influence at their disposal to make shifts in practice, pedagogy, and policy. Overthrowing inequitable systems is a process, not an overnight change. But transformation is possible when educators work together, and teachers can do more than they realize from within their own classrooms.

5 equity based math practices: 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.

5 equity based math practices: Figuring Out Fluency in Mathematics Teaching and Learning, Grades K-8 Jennifer M. Bay-Williams, John J. SanGiovanni, 2021-03-02 Because fluency practice is not a worksheet. Fluency in mathematics is more than adeptly using basic facts or implementing algorithms. Real fluency involves reasoning and creativity, and it varies by the situation at hand. Figuring Out Fluency in Mathematics Teaching and Learning offers educators the inspiration to develop a deeper understanding of procedural fluency, along with a plethora of pragmatic tools for shifting classrooms toward a fluency approach. In a friendly and accessible style, this hands-on guide empowers educators to support students in acquiring the repertoire of reasoning strategies necessary to becoming versatile and nimble mathematical thinkers. It includes: Seven Significant Strategies to teach to students as they work toward procedural fluency. Activities, fluency routines, and games that encourage learning the efficiency, flexibility, and accuracy essential to real fluency. Reflection questions, connections to mathematical standards, and techniques for assessing all components of fluency. Suggestions for engaging families in understanding and supporting fluency. Fluency is more than a toolbox of strategies to choose from; it's also a matter of equity and access for all learners. Give your students the knowledge and power

to become confident mathematical thinkers.

5 equity based math practices: Concept-Based Mathematics Jennifer T.H. Wathall, 2016-01-14 Give math students the connections between what they learn and how they do math—and suddenly math makes sense If your secondary-school students are fearful of or frustrated by math, it's time for a new approach. When you teach concepts rather than rote processes, you show students math's essential elegance, as well as its practicality—and help them discover their own natural mathematical abilities. This book is a road map to retooling how you teach math in a deep, clear, and meaningful way —through a conceptual lens—helping students achieve higher-order thinking skills. Jennifer Wathall shows you how to plan units, engage students, assess understanding, incorporate technology, and even guides you through an ideal concept-based classroom. Practical tools include: Examples from arithmetic to calculus Inquiry tasks, unit planners, templates, and activities Sample assessments with examples of student work Vignettes from international educators A dedicated companion website with additional resources, including a study guide, templates, exemplars, discussion questions, and other professional development activities. Everyone has the power to understand math. By extending Erickson and Lanning's work on Concept-Based Curriculum and Instruction specifically to math, this book helps students achieve the deep understanding and skills called for by global standards and be prepared for the 21st century workplace. Jennifer Wathall's book is one of the most forward thinking mathematics resources on the market. While highlighting the essential tenets of Concept-Based Curriculum design, her accessible explanations and clear examples show how to move students to deeper conceptual understandings. This book ignites the mathematical mind! — Lois A. Lanning, Author of *Designing Concept-based Curriculum for English-Language Arts, K-12* Wathall is a master at covering all the bases here; this book is bursting with engaging assessment examples, discussion questions, research, and resources that apply specifically to mathematical topics. Any math teacher or coach would be hard-pressed to read it and not come away with scores of ideas, assessments, and lessons that she could use instantly in the classroom. As an IB Workshop Leader and instructional coach, I want this book handy on a nearby shelf for regular referral – it's a boon to any educator who wants to bring math to life for students. — Alexis Wiggins, Instructional Coach, IB Workshop Leader and Consultant

5 equity based math practices: Every Math Learner, Grades K-5 Nanci N. Smith, 2017-02-01 Differentiation that shifts your instruction and boosts ALL student learning! Nationally recognized math differentiation expert Nanci Smith debunks the myths surrounding differentiated instruction, revealing a practical approach to real learning differences. Theory-lite and practice-heavy, this book provides a concrete and manageable framework for helping all students know, understand, and even enjoy doing mathematics. Busy K-5 mathematics educators learn to Provide practical structures for assessing how students learn and process mathematical concepts Design, implement, manage, and formatively assess and respond to learning in a standards-aligned differentiated classroom; and Adjust current instructional materials to better meet students' needs Includes classroom videos and a companion website.

5 equity based math practices: 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.--

5 equity based math practices: Five Practices for Equity-Focused School Leadership Sharon I. Radd, Gretchen Givens Generett, Mark Anthony Gooden, George Theoharis, 2021-02-08 This timely and essential book provides a comprehensive guide for school leaders who desire to engage their school communities in transformative systemic change. Sharon I. Radd, Gretchen Givens Generett, Mark Anthony Gooden, and George Theoharis offer five practices to increase educational equity and eliminate marginalization based on race, disability, socioeconomics,

language, gender and sexual identity, and religion. For each dimension of diversity, the authors provide background information for understanding the current realities in schools and beyond, and they suggest disruptive practices to replace the status quo in order to achieve full inclusion and educational excellence for every child. Assuming that leadership to create equity is a unique practice, the book offers * Clear explanations of foundational terms and concepts, such as equity, systemic inequity, paradigms and cognitive dissonance, and privilege; * Specific recommendations for how to build support and sustainability by engaging colleagues and other stakeholders in constructive dialogues with multiple perspectives; * Detailed descriptions of routines and roles for building effective equity-leadership teams; * Guidelines and tools for performing an equity audit, including environmental scans; * A change framework to skillfully transform your system; and * Reflection activities for self-discovery, understanding, and personal and professional growth. A call to action that is both passionate and practical, *Five Practices for Equity-Focused School Leadership* is an indispensable roadmap for educators undertaking the journey toward an education system that acknowledges and advances the worth and potential of all students.

5 equity based math practices: Teaching for Thinking Grace Kelemanik, Amy Lucenta, 2022-01-24 Teaching our children to think and reason mathematically is a challenge, not because students can't learn to think mathematically, but because we must change our own often deeply-rooted teaching habits. This is where instructional routines come in. Their predictable design and repeatable nature support both teachers and students to develop new habits. In *Teaching for Thinking*, Grace Kelemanik and Amy Lucenta pick up where their first book, *Routines for Reasoning*, left off. They draw on their years of experience in the classroom and as instructional coaches to examine how educators can make use of routines to make three fundamental shifts in teaching practice: Focus on thinking: Shift attention away from students' answers and toward their thinking and reasoning Step out of the middle: Shift the balance from teacher-student interactions toward student-student interactions Support productive struggle: Help students do the hard thinking work that leads to real learning With three complete new routines, support for designing your own routine, and ideas for using routines in your professional learning as well as in your classroom teaching, *Teaching for Thinking* will help you build new teaching habits that will support all your students to become and see themselves as capable mathematicians.

5 equity based math practices: Mathematics Learning in Early Childhood National Research Council, Division of Behavioral and Social Sciences and Education, Center for Education, Committee on Early Childhood Mathematics, 2009-11-13 Early childhood mathematics is vitally important for young children's present and future educational success. Research demonstrates that virtually all young children have the capability to learn and become competent in mathematics. Furthermore, young children enjoy their early informal experiences with mathematics. Unfortunately, many children's potential in mathematics is not fully realized, especially those children who are economically disadvantaged. This is due, in part, to a lack of opportunities to learn mathematics in early childhood settings or through everyday experiences in the home and in their communities. Improvements in early childhood mathematics education can provide young children with the foundation for school success. Relying on a comprehensive review of the research, *Mathematics Learning in Early Childhood* lays out the critical areas that should be the focus of young children's early mathematics education, explores the extent to which they are currently being incorporated in early childhood settings, and identifies the changes needed to improve the quality of mathematics experiences for young children. This book serves as a call to action to improve the state of early childhood mathematics. It will be especially useful for policy makers and practitioners-those who work directly with children and their families in shaping the policies that affect the education of young children.

5 equity based math practices: Collective Equity Sonja Hollins-Alexander, Nicole Law, 2021-10-06 This book presents a powerful model for using relational trust, cultural humility, and appreciation of diverse perspectives to build learning communities that collectively uplift all students and all members of the learning community.

5 equity based math practices: Rethinking Mathematics Eric Gutstein, Bob Peterson, 2005

In this unique collection, more than 30 articles show how to weave social justice issues throughout the mathematics curriculum, as well as how to integrate mathematics into other curricular areas. Rethinking Mathematics offers teaching ideas, lesson plans, and reflections by practitioners and mathematics educators. This is real-world math-math that helps students analyze problems as they gain essential academic skills. This book offers hope and guidance for teachers to enliven and strengthen their math teaching. It will deepen students' understanding of society and help prepare them to be critical, active participants in a democracy. Blending theory and practice, this is the only resource of its kind.

5 equity based math practices: The On-Your-Feet Guide to Orchestrating Mathematics

Discussions Margaret (Peg) Smith, Miriam Gamoran Sherin, 2019-04-15 This laminated, tri-fold (6 page) On-Your-Feet Guide is based on the best-selling 5 Practices for Orchestrating Productive Mathematics Discussions and provides: A brief look at each of the five practices for orchestrating productive mathematics discussions Key questions, tools, and challenges for each practice to consider as you plan and carry out your mathematics lesson Special considerations and helpful hints to think about as you troubleshoot your lessons and assess your implementation of the practices A focus on supporting equity and identity Brief videos with commentary from authors and teachers about each of the five practices

5 equity based math practices: Key Concepts in Mathematics Timothy J. McNamara, 2007

Includes a large number of user-friendly examples that integrate mathematics content and process standards. The step-by-step guidance and explanations in each chapter are beneficial.-Melissa Miller, TeacherRandall G. Lynch Middle School, Farmington, AR Great activities that are exploratory in nature. A valuable resource.-Carol Amos, Teacher Leader and Mathematics CoordinatorTwinfield Union School, Plainfield, VT Increase students' mathematics achievement with rich problem-solving lessons and activities that are aligned with NCTM standards! Helping teachers envision how math standards can be integrated into the secondary classroom, Key Concepts in Mathematics, Second Edition presents engaging activities and ready-to-use lessons aligned with NCTM content and process standards. This user-friendly book by mathematics educator Timothy J. McNamara is filled with a generous collection of lessons for each of the ten NCTM standards, with many activities that address multiple standards, and numerous practical suggestions for extending the lessons beyond the curriculum. In addition, this updated resource combines standards-based mathematics and technology by incorporating TI-73 Explorer(tm) and TI-83 Plus graphing calculator applications and programs. Each chapter offers: Ready-to-use lessons, hands-on activities, practical suggestions, and an abundance of good problems Suggestions for integrating multiple topics and concepts in each lesson Strategies to strengthen student engagement, understanding, and retention by building connections among mathematics topics This exciting guide delivers exactly what is needed for today's standards-based math classroom!

5 equity based math practices: Mastering Math Manipulatives, Grades 4-8 Sara Delano

Moore, Kimberly Rimbey, 2021-10-04 Put math manipulatives to work in your classroom and make teaching and learning math both meaningful and productive. Mastering Math Manipulatives includes everything you need to integrate math manipulatives—both concrete and virtual—into math learning. Each chapter of this richly illustrated, easy-to-use guide focuses on a different powerful tool, such as base ten blocks, fraction manipulatives, unit squares and cubes, Cuisenaire Rods, Algebra tiles and two-color counters, geometric strips and solids, geoboards, and others, and includes a set of activities that demonstrate the many ways teachers can leverage manipulatives to model and reinforce math concepts for all learners. It features: · Classroom strategies for introducing math manipulatives, including commercial, virtual, and hand-made manipulatives, into formal math instruction. · Step-by-step instructions for over 70 activities that work with any curriculum, including four-color photos, printable work mats, and demonstration videos. · Handy charts that sort activities by manipulative type, math topic, domains aligned with standards, and grade-level appropriateness.

5 equity based math practices: *Principles and Standards for School Mathematics*, 2000 This easy-to-read summary is an excellent tool for introducing others to the messages contained in Principles and Standards.

5 equity based math practices: Equity in Mathematics Education Constantinos Xenofontos, 2019-10-01 Following in the steps of the socio-political turn of the discipline, Equity in Mathematics Education: Addressing a Changing World emerged as a response of the editor and the chapter authors to the enormous changes that have in the last years occurred at a global level (for example, the ongoing war in Syria, the political [in]actions of powerful nations to fight climate change, the rise of far-right parties in many countries around the world, and so on). In recent years, massive migration waves from the Middle East have caused significant demographic changes to many European countries, Canada and the US, that are reflected in schools and classrooms. These observations have led this book's contributors to reconsider the concept and/or practice of equity, and its related concept, social justice, and the role of mathematics education research in addressing and promoting a fairer world. Contrary to other, perhaps highly specialized books concerned with similar topics, this book aims to provide a smooth, yet deep introduction to those who are new to this research area. Equity in Mathematics Education: Addressing a Changing World contributes to the understanding of equity and its complex relations to mathematics education. It is anticipated that it will support individuals in teaching, educational research, policy making and planning, and teacher education, in becoming more aware of the interplay between school mathematics and socio-political issues that, ultimately, impacts the lives of learners and their communities, teachers as practitioners and as citizens, the wider society, and the world as a whole. Even though each chapter can be read independently of others, an engagement with all chapters in this volume will provide readers with a solid holistic understanding of the research territory of equity and mathematics education.

5 equity based math practices: **Activating Math Talk** Paola Sztajn, Daniel Heck, Kristen Malzahn, 2020-09-24 Achieve High-Quality Mathematics Discourse With Purposeful Talk Techniques Many mathematics teachers agree that engaging students in high quality discourse is important for their conceptual learning, but successfully promoting such discourse in elementary classrooms—with attention to the needs of every learner—can be a challenge. Activating Math Talk tackles this challenge by bringing practical, math-specific, productive discourse techniques that are applicable to any lesson or curriculum. Framed around 11 student-centered discourse techniques, this research-based book connects purposeful instructional techniques to specific lesson goals and includes a focus on supporting emergent multilingual learners. You will be guided through each technique with Classroom examples of tasks and techniques spanning grades K-5 Reflection moments to help you consider how key ideas relate to your own instruction Classroom vignettes that illustrate the techniques in action and provide opportunities to analyze and prepare for your own implementation Group discussion questions for engaging with colleagues in your professional community Achieving high-quality mathematics discourse is within your reach using the clear-cut techniques that activates your math talk efforts to promote every student's conceptual learning.

5 equity based math practices: **Grading for Equity** Joe Feldman, 2018-09-25 Joe Feldman shows us how we can use grading to help students become the leaders of their own learning and lift the veil on how to succeed. . . . This must-have book will help teachers learn to implement improved, equity-focused grading for impact. —Zaretta Hammond, Author of Culturally Responsive Teaching & The Brain Crack open the grading conversation Here at last—and none too soon—is a resource that delivers the research base, tools, and courage to tackle one of the most challenging and emotionally charged conversations in today's schools: our inconsistent grading practices and the ways they can inadvertently perpetuate the achievement and opportunity gaps among our students. With Grading for Equity, Joe Feldman cuts to the core of the conversation, revealing how grading practices that are accurate, bias-resistant, and motivational will improve learning, minimize grade inflation, reduce failure rates, and become a lever for creating stronger teacher-student relationships and more caring classrooms. Essential reading for schoolwide and individual book study or for student advocates, Grading for Equity provides A critical historical backdrop, describing how our inherited

system of grading was originally set up as a sorting mechanism to provide or deny opportunity, control students, and endorse a fixed mindset about students' academic potential—practices that are still in place a century later. A summary of the research on motivation and equitable teaching and learning, establishing a rock-solid foundation and a true north orientation toward equitable grading practices. Specific grading practices that are more equitable, along with teacher examples, strategies to solve common hiccups and concerns, and evidence of effectiveness. Reflection tools for facilitating individual or group engagement and understanding. As Joe writes, Grading practices are a mirror not just for students, but for us as their teachers. Each one of us should start by asking, What do my grading practices say about who I am and what I believe? Then, let's make the choice to do things differently . . . with Grading for Equity as a dog-eared reference.

5 equity based math practices: *Taking Action* Margaret Schwan Smith, Michael D. Steele, Mary Lynn Raith, 2017-05

5 equity based math practices: Choosing to See Pam Seda, Kyndall Brown, 2021-03-15
Choosing to See: A Framework for Equity in the Math Classroom By Pamela Seda and Kyndall Brown
Most of the top jobs for the future require students to have a strong foundational understanding of mathematics. Our failure to mathematically educate most students in general, and students of color in particular, is bad not only for these students individually but also for our society. In *Choosing to See*, Pamela Seda and Kyndall Brown offer a substantive, rigorous, and necessary set of interventions to move mathematics education toward greater equity, particularly in serving the needs of Black and Brown students, who are underrepresented and underserved as math scholars. The authors' thoughtful ICUCARE equity framework serves as a lens to help teachers see where they are achieving this alignment and where they are not. Through this lens, choosing to see means caring enough about what you see to act. It means accepting that every one of your students can be an expert given the opportunity. It means recognizing negative stereotypes about marginalized students and understanding their effects. It means knowing that your students have rich lives outside the classroom that can inform what you do inside the classroom. And it means recognizing and celebrating their human dimensions, so that all students' strengths, capabilities, and talents can grow. A provocative and practical read! Seda and Brown remind us that equity is not a destination but a journey we take together with our students, their families, and our colleagues. DR. TRENA L. WILKERSON, professor, Department of Curriculum and Instruction, Baylor University, president, NCTM It's one thing to embrace Standards for Mathematics Practices (SMP) but quite another to see the human potential of minoritized children and teach them in ways that ensure they actually succeed. The authors of this book share rich personal stories that not only help teachers to see their students but to also perceive who they are and what they can become. JACQUELINE LEONARD, professor of Mathematics Education, University of Wyoming *Choosing to See* is the emotional and spiritual journey that all math educators need to embark on wholeheartedly. The book is a timely primer that takes the deep and complex issue of race and systemic bias in the mathematical experiences of Black students and presents them with unflinching clarity and candor. SUNIL SINGH, author of *Pi of Life* This book helps close the gap between recognizing that we can do more to make math classrooms equitable and actually having a plan for how to do it. Pamela and Kyndall are respected leaders in the mathematics education community and help unpack the problems we may not be aware of as well as solutions for addressing them. ROBERT KAPLINSKY, author of *Open Middle Math*

5 equity based math practices: Mine the Gap for Mathematical Understanding, Grades K-2 John SanGiovanni, 2016-10-31
Being an effective math educator is one part based on the quality of the tasks we give, one part how we diagnose what we see, and one part what we do with what we find. Yet with so many students and big concepts to cover, it can be hard to slow down enough to look for those moments when students' responses tell us what we need to know about next best steps. In this remarkable book, John SanGiovanni helps us value our young learners' misconceptions and incomplete understandings as much as their correct ones—because it's the gap in their understanding today that holds the secrets to planning tomorrow's best teaching. SanGiovanni lays

out 160 high-quality tasks aligned to the standards and big ideas of grades K-2 mathematics, including counting and representing numbers, number relationships and comparison, addition and subtraction within 100 and 1000, money and time, and multiplication and division. The tasks are all downloadable so you can use or modify them for instruction and assessment. Each big idea offers a starting task followed by: what makes it a high-quality task what you might anticipate before students work with the task 4 student examples of the completed task showcasing a distinct gap commentary on what precisely counts for mathematical understanding and the next instructional steps commentary on the misconception or incomplete understanding so you learn why the student veered off course three additional tasks aligned to the mathematics topic and ideas about what students might do with these additional tasks. It's time to break our habit of rushing into re-teaching for correctness and instead get curious about the space between right and wrong answers. Mine the Gap for Mathematical Understanding is a book you will return to again and again to get better at selecting tasks that will uncover students' reasoning—better at discerning the quality and clarity of students' understanding—and better at planning teaching based on the gaps you see.

5 equity based math practices: Improving Access to Mathematics Na'ilah Suad Nasir, Paul Cobb, 2007 Key experts with extensive research and classroom experience examine how the multiple dimensions of race, class, culture, power, and knowledge interact in mathematics classrooms to foster and create inequities. Chapters explore new theoretical perspectives, describe successful classroom practices, and offer insights into how we might develop an effective sociocultural approach to equity in math education. Seeing diversity as an instructional resource rather than as an obstacle to be overcome, this forward-looking volume: Helps us to understand the process by which diverse learners experience mathematics education. Examines the way students' identities can influence their mathematics learning. Describes mathematics education programs that have demonstrated their success with poor, urban, and rural students of color. Explains why certain teaching and learning interventions are successful. Offers culturally based approaches to mathematics education, including activities for the classroom.

5 equity based math practices: Mathematics Teaching and Learning in K-12 M. Foote, 2010-08-18 The continuing gap in achievement between traditionally underserved students (students of color, English learners, and poor children) and their middle-class white peers, however, has provoked questions of the effectiveness of current mathematics teaching practices for meeting the needs of these students.

Additional Resources

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