

WHAT YOUR COLLEAGUES ARE SAYING . . .

This comprehensive resource provides the what, why, and how for effectively implementing small group instruction to support every student! Part A provides excellent suggestions, clearly based in experience, and Part B pairs important content with small group lesson ideas. Such a great resource for ensuring students develop confidence and competence in mathematics!

Jennifer Bay-Williams

Professor and Author, University of Louisville
Louisville, KY

In *Meaningful Small Groups in Math: Meeting All Learners' Needs in Any Setting*, Kimberly Rimbey offers us detailed suggestions on how to get the most out of students working in small groups. These details cover everything from tasks to group size, from how to form the groups to where these groups, once formed, could work. We learn how to answer questions and prompt thinking, and we are provided with detailed lesson plans, planning templates, and resources across a wide range of K–5 mathematics topics. Kimberly Rimbey leaves no stone unturned. I highly recommend this book to any K–5 teacher who is starting to think about using group work as well as any teacher who wants to reexamine and revitalize their use of group work in the classroom.

Peter Liljedahl

Author of *Building Thinking Classrooms in Mathematics Grades K–12*
Professor, Simon Fraser University
Vancouver, BC, Canada

Mathematics is a beautiful, human enterprise and all humans should be given the opportunity to properly experience its wonder and awe, even our society's youngest of humans. We want our students to know, and always believe, that they are genuinely invited to mathematics. Dr. Rimbey's resource shows how.

James Tanton

Global Math Project
Paradise Valley, AZ

We all know that active engagement—*thinking, talking, collaborating, and figuring out*—is the key to learning. We also know that small group, teacher-facilitated work is one way to generate this active engagement. But it's not easy. That's where Dr. Rimbey's wonderfully practical and informative book *Meaningful Small Groups in Math* becomes a powerful resource. With a clear and punchy style—and a slew of examples and models—it's like Kim was your friend and coach talking with you over coffee about what to do, why to do it, and how to do it when it comes to shifting math instruction for the better for all of our students.

Steve Leinwand

Principal Researcher
American Institutes for Research
Washington, DC

As teachers move away from whole class instruction, they are often challenged by exactly what a small group lesson should look like and how to go about planning one. The sample lessons in this book follow math content trajectories across grade levels, with formative assessment ideas to help teachers form their groups. The Explore Before Explain (Eb4E) approach used in the lessons allows students to actively participate in concept development, with the teacher serving as a facilitator. This is a book that should be on your bookshelf!

Donna Boucher

Author and Consultant, Math Coach's Corner
Houston, TX

Small group instruction is such an important part of the learning cycle. Dr. Rimbey breaks down why and then shows teachers, in plain language, how to set up and successfully run teacher-facilitated small groups. She pays extra attention to how different types of groups are used for different instructional purposes and supports teachers in judiciously matching a type of group with a learning need. As if that weren't enough, Dr. Rimbey then breaks down the essential pieces of different elementary mathematics topics and then uses those pieces to show how a particular small grouping strategy elevates that content and makes it more accessible to all students. This book is a must-read for any elementary mathematics teacher or leader.

Paul Gray

President, NCSM: Leadership in Mathematics Education (2021–2023)
Provincetown, MA

Rimbey raises the use of small groups to an art form. Small groups are the mainstay of much of mathematics instruction in the form of collaborative and cooperative groups, yet understanding how to organize and facilitate small groups is not always a part of teacher preparation programs or professional learning experiences. How can we better make these opportunities an ideal way to foster student thinking and reasoning, the sharing of ideas in safe spaces, and the inquiry-oriented approach we prize? *Meaningful Small Groups in Math* guides you through this common configuration. With the wisdom and insight Rimbey gleaned from years of experience, you will find what you need to effectively use small groups. Dig in to find practical approaches, routines, content examples, and ways to make each and every child's voice prominent as they engage in productive ways to showcase their strengths.

Karen Karp

Professor and Author, Johns Hopkins University
Baltimore, MD

With *Meaningful Small Groups in Math*, Dr. Rimbey offers K–5 teachers a versatile approach to teaching small group lessons in a variety of instructional structures. Her approach is practical, clearly described, and focused on effectively building upon students' mathematical strengths with well-planned lessons. As a valuable

resource for teachers who want to “let math take the lead,” Rimbey includes a *Math Small Group Standards Trajectory Document* that clearly maps out the interrelatedness of the standards in each domain—something I wish had been available when I was teaching. While the first part of the book provides guidance on how to get started with math small group lessons, the second part of the book delves into how to create and teach rigorous, engaging lessons with sample plans. Both beginning and experienced teachers will find this book to be an invaluable guide for teaching math using small group lessons, which to me is an essential instructional strategy for supporting the needs of all students.

Laney Sammons

Author of *Guided Math: A Framework for Mathematics Instruction*
Thetford Center, VT

This book offers a wealth of tips, strategies, and resources for designing effective and engaging small group instruction. You will find the answer to any question you can imagine including how small group instruction benefits students, ways to design small group lessons, thoughts on session duration, discussions of group membership, and even ideas for setting up the classroom to maximize small group instruction. The planning ideas related to some critical K–5 math topics (like counting and cardinality, base-ten addition/subtraction and multiplication/division, and varied fraction and decimal skills) are an added benefit. This is a valuable resource for any teacher interested in beginning, or enhancing, small group instruction in their K–5 classrooms!

Sue O’Connell

Author and Consultant
Millersville, MD

Facilitating small group instruction in our math classrooms can be one of the most challenging goals we set out to accomplish each year, but where do we begin? From the size and type of group to what is happening in small groups, and when it’s happening, it can all be overwhelming. *Meaningful Small Groups in Math* thoughtfully unpacks the smaller nuances and questions surrounding small groups and offers the tools teachers need to meet the needs of the students they support.

Graham Fletcher

Math Specialist
Atlanta, GA

Meaningful Small Groups in Math provides teachers with two critical elements for success—practical strategies for managing small groups and thoughtful content trajectories for identifying the right learning for students in small groups. Building on the author’s rich classroom and coaching experience, the book provides support for creating and managing small groups in a variety of classroom contexts and structures. And building on the author’s deep content knowledge, the book

organizes potential activities along content trajectories, helping teachers keep students moving forward in their learning. Dr. Kimberly Rimbey has written an excellent addition to our professional libraries.

Sara Delano Moore

Mathematics Educator & Author
Kent, OH

Kimberly Rimbey's book *Meaningful Small Groups in Math* is a teacher's delight. Rimbey's years of teaching, coaching, and designing come through clearly in every word. Organized around questions teachers would have when considering and implementing math groups—as well as questions teachers may not think to ask but are important—Rimbey writes the book in findable and understandable terms including chapter overviews, learning targets, success criteria—everything we know we should do in a lesson for our own students! Rimbey is an expert at taking the goal of small group learning and showing it in multiple structures that can be integrated with any math program. The practicality of this book is sure to win teachers' hearts.

This book is a must for every elementary math teacher. I applaud Dr. Rimbey's flexibility and multiple examples of using various structures and designs for planning so that there is sure to be a comfortable approach to beginning, extending, or revamping math groups for every teacher!

Nanci Smith

Author & Professor
Glendale, AZ

An essential resource for K–5 mathematics teaching! What a brilliant, practical guide for teachers in using small groups effectively to engage each and every student in powerful mathematics learning! Whether you are just beginning to use small group strategies or you are experienced, there is something for everyone. Rimbey's *Meaningful Small Groups in Math* is a resource for teachers, mathematics coaches, and instructional specialists.

Trena L. Wilkerson

President, National Council of Teachers of Mathematics (NCTM) 2020–2022
Professor of Mathematics Education, Baylor University
Waco, TX

Meaningful Small Groups in Math answers all your burning questions and provides templates and example vignettes that make visualizing this work in your own classroom achievable. Whether you have used small-group instruction extensively, or you are looking to begin, Kimberly Rimbey's *Meaningful Small Groups in Math* gives you exactly what you need . . . and then some! Rimbey masterfully weaves

the what, why, when, and—most importantly—the *how* into an easy-to-read book chock full of resources and evidence-based routines.

Hilary Kreisberg

Director, Lesley University's Center for Mathematics Achievement
Author of *Partnering With Parents: A Guide for Teachers and Leaders* (Corwin)
Cambridge, MA

Meaningful Small Groups in Math lays the groundwork for how to create effective mathematics small group instruction. Through vignettes and resources, this book supports your journey to empower student voice and ensure that every child has access to relevant, rich, and meaningful mathematics. This book emphasizes students' assets and shares how to build upon student strengths. You will walk away with practical ideas for how to plan and create teacher-facilitated math small groups to grow students' mathematical understandings.

Mona Toncheff

NCSM Past President (2021–2022)
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Meaningful Small Groups

IN MATH

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Meaningful Small Groups

IN **MATH**

Meeting **All**
Learners' Needs
in Any Setting

GRADES K-5

Target the Math...
Support the Students...
Provide Access for All

Kimberly Rimbey

CORWIN Mathematics

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Visit the companion website at
resources.corwin.com/mathsmallgroups
for downloadable resources.

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Books are never written in isolation. I am grateful to the team at Corwin for their excellent guidance and expertise. There's a magic in moving from manuscript to book that reminds us of their talents and never ceases to amaze. I also appreciate the input of reviewers and friends who have answered my questions and provided suggestions along the way.

To my friends, colleagues, and mentors who have impacted my heart's work—thank you. Your gracious support, patience, and passion for all things teaching and learning continue to shape me into the educator I am today. To Steve—thank you for believing in me after all these years.

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ABOUT THE AUTHOR



Kimberly Rimbey serves as the Chief Learning Officer at KP[®] Mathematics. A lifelong teacher and learner, her heart's work centers on equipping teachers and helping them fall in love with teaching and learning over and over again. Kim's interests include high-quality professional learning models, building conceptual understanding through multiple representations and meaningful discourse, and building pedagogical content knowledge that goes beyond the theoretical and into the classroom. Always a teacher at heart,

Kim has served in many teaching and leadership capacities within school districts, organizations, and the private sector.

Everything Kim has done in her career is based on what she learned during her 18 years as a mathematics coach and elementary classroom teacher. Having started her teaching career as a kindergarten teacher, she frequently says that everything she needed to know about teaching, she learned in kindergarten. Kim is National Board Certified in Early Adolescent Mathematics, and she is a recipient of the Presidential Award for Excellence in Mathematics Teaching. She is the co-inventor of KP[®] Ten-Frame Tiles and has authored and co-authored several publications, including *Mastering Math Manipulatives* for Corwin, *The Amazing Ten Frame Series* for KP Mathematics, and *Math Power: Simple Solutions for Mastering Math* for the Rodell Foundation of Arizona. Kim earned her BA in Elementary Education and Mathematics from Grand Canyon University, her MEd degrees in Early Childhood Education and Educational Leadership from Arizona State University and Northern Arizona University, and her PhD in Curriculum and Instruction from Arizona State University. She lives in Phoenix, Arizona.

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PREFACE

Greetings, my new friend.

If you're reading this book, it means you are looking for ways to meet your students' needs using a small group model. You know your students come to you with strengths, and you're wondering how to organize your time, work, and energy to identify those strengths, build on them, and address opportunities for growth. Your sense of urgency is likely high since you want to do right by these humans sitting in your class. And you might relate to Todd Whitaker when he says that "the best thing about being a teacher is that it matters. The hardest thing about being a teacher is that it matters [every minute] of every day." Meeting the needs of every student every day with the limited time we have is hard work, for sure!

Well, my friend, you're not alone. We're all on this journey to do right by every child every minute of every day. And no matter what your role—classroom teacher, teacher leader, coach, site leader, district leader—we all feel that sense of urgency. My goal in bringing this book to you centers on shedding light on a space that has potential to yield large dividends for the effort—math small group instruction.

Big topics: I'm going to bring forth some hot topics, such as why do reading small groups get so much more attention? What's so destructive about tracking and ability grouping? Why is all this talk about achievement gaps and learning loss both mythical and prevalent? I'm going to challenge your beliefs about your young math learners, because what you believe matters. As you're going through this book, I encourage you to try on some of these ideas for size. Because practice precedes beliefs, and beliefs push practice. What do you believe about your students? What do you believe about their strengths and weaknesses, their math abilities and motivation?

About me: Here's what you need to know about me. I love all things teaching and learning. No matter what role I play professionally, from kindergarten teacher to Chief Learning Officer, I *know* that the linchpin to our entire education system is the classroom teacher. The teacher is the one who has the power to make or break the mathematics experiences our young citizens carry with them for the rest of their lives.

What this book is about: This book is about a powerful approach to small group instruction that targets the math by using math content trajectories. Throughout the book, we'll refer to the small group instruction as teacher-facilitated math small groups, math small groups, or simply small groups. This

model helps us support all children in gaining access and connection to grade-level math goals as part of their core instruction in the classroom. It's filled with tools to support you as you support your students. It's intended to work alongside and as part of a variety of math small group structures, Guided Math Workshops, and heterogeneous small groups. My goal in this book is to share how to do teacher-facilitated math small groups in any context, setting up you and your students for ultimate success.

How to interact with this book: Use this as a resource book. You'll likely want to read Part A straight through, though it's well labeled to facilitate skimming. Part B will definitely serve as a day-to-day resource for you. You can jump around through the math content and sample lessons, depending on the math content you're examining, and each chapter in Part B provides a self-standing overview of that topic.

Together, we can do this! Welcome to the journey!

For the kids,



Kimberly Rimbey, PhD
National Board-Certified Teacher
Innovator and Encourager

PART A

MATH SMALL GROUP BASICS

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HOW TO USE PART A

The first four chapters of this book lay the groundwork for getting started with teacher-facilitated math small groups. Using a question-and-answer format, it provides a user-friendly way for you to find just what you need to get started. You may want to read through all four chapters to familiarize yourself with the approach, or you may simply wish to skim and pull out the most relevant information.

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CHAPTER 1

MAKING THE CASE FOR MATH SMALL GROUPS

Learning Intention

After reading this chapter, you will better understand the purpose and benefits for teacher-facilitated math small groups, including how math small groups are similar to and different from reading small groups.

Success Criteria

You will be able to describe the benefits of math small groups, compare and contrast small groups for reading and math, and synthesize your new understandings for how math small groups fit into the broader structure of a mathematics lesson.

CHAPTER INTRODUCTION

Throughout this book, we are going to look at practical ways you can incorporate math small groups into your daily work with students. You may already use a math small group structure that lends itself to small group work in math such as Guided Math, Multi-Tiered Systems of Support, or the math version of “Walk to Read” (sometimes referred to as “What I Need” or WIN Time). Or you may be starting at the very beginning, looking for ways to incorporate small group math instruction into your math program. Either way, the ideas, strategies, frameworks, and helpful tools shared in these pages are intended to enhance the work you’re already doing. The overarching, practical questions we will attempt to unravel in this chapter and the next include the following:

- 1) How do I set up math small groups?
- 2) What do I do with the students once they’re in the small group?
- 3) What do I do with the rest of the students while I’m working with small groups?

In this first chapter, we take a look at why small group instruction is important in math and begin to lay the foundation for getting started. Then, in Chapter 2, we’ll dive into the nuts and bolts for *how* to get started.

WHAT IS THE PURPOSE OF MATH SMALL GROUPS?

If you're like me, I'm sure you are continuously looking for new and better ways to ensure your students maximize their learning during the precious moments you have together. Let's be clear that for the purposes of this book, when we talk about "math small groups," we are talking about teacher-facilitated math small groups. That said, note that "teacher-facilitated" should not be translated as "teacher-facilitated instruction." The purpose of these math small groups is to facilitate student thinking, student discourse, and student discovery. Mathematics cannot be directly transferred from one person to another—it must be investigated and internalized by the students. Therefore, the purpose of math small groups centers on students engaging in rigorous mathematical thinking, facilitated by a teacher who asks purposeful questions to support the students. The student voice should be prominent as they solve problems, engage in tasks, and participate in routines carefully selected to move their thinking forward.

The purpose of math small groups centers on students engaging in rigorous mathematical thinking, facilitated by a teacher who asks purposeful questions to support the students.

WHY ARE MATH SMALL GROUPS IMPORTANT?

I don't know where I first heard it, but there's a saying that was common among the kindergarten teachers in my district: "We all learn different things on different days in different ways." And to honor such variance, as teachers, we select learning methods and strategies that make learning accessible to each and every child each and every day. Math small groups rise up as one such method. Small groups provide us with a way of ensuring all students have the access and support they individually need to excel in grade-level content and the mathematical practices. They afford teachers the structure needed to support unfinished student learning while connecting to grade-level math goals. They provide students with multiple entry points and multiple ways to express their thinking. Math small groups bring the student to the learning and the learning to the student, accelerating progress in ways unique to each child.

Math small groups bring the student to the learning and the learning to the student, accelerating progress in ways unique to each child.

Let's take a look at some additional benefits that math small group work provides.

Purposeful Mathematics

During small group instruction, you have the opportunity to ensure that every child has access to relevant, rich, meaningful mathematics. The world around

us needs problem solvers, not calculators. We need to humanize mathematics because we now have machines to do what we used to teach kids to do in math—they need to have flexible thinking, reasoning, argumentation, and justification to solve the future problems in the world and be productive citizens. Small group instruction offers you the venue to create a more tailored and personalized way to give students practice in those skills. In the small group setting, all voices can be heard because students can't hide. All students can reveal what they know and ask questions about what they're wondering. You have the opportunity to draw upon students' strengths to help them get where they need to be. And you have the opportunity to help students connect with the purpose of mathematics—to describe and solve problems in the world around them—in personal and relevant ways.

Multiple Modes of Engagement, Representation, and Expression

When using math small groups, you provide a great venue for your students to engage in mathematical thinking in a variety of ways. Universal Design for Learning (CAST, 2018; National Council of Teachers of Mathematics, 2020) suggests that students be provided with multiple modes of engagement, mathematical representation, and action and expression. When we purposefully attend to these modalities while planning for math small groups (and for instruction in general), students gain access to mathematics at entirely new levels. The important work of math is in the thinking, and all learners are capable of engaging in deep and rich thinking given the just-right opportunities. Offering multiple ways of engaging with the math is a matter of access and equity.

Offering multiple ways of engaging with the math is a matter of access and equity.

Reading Groups Versus Math Groups

Math small groups function differently from reading small groups. In part, this is because “levels” in reading and writing don't work the same way they do in math. Reading is a single process that includes several human-created skills (letter recognition, phonics, decoding, etc.) that must be directly taught for success. In contrast, math uses a variety of concepts that must be explored, discovered, and internalized for success. Granted, skills such as numeral writing, symbols, and vocabulary must be directly taught, but the mathematical sciences must be investigated, discovered, and applied by the individual rather than directly taught from one person to another.

Furthermore, mathematical thinking develops differently from reading foundations skills. Direct instruction—or “I do, we do, you do” teaching—is critical with reading foundations. But with math, we need to offer students multiple ways to engage with math, knowing that they might (and should)

represent mathematical concepts or express math ideas in different ways, all of which may be correct. Math small groups provide the just-right avenue for students to pursue multiple pathways that are seen, heard, and validated in ways that facilitate this kind of growth.

Strengths-Based Learning

Talk of learning loss and achievement gaps permeates our world, from the media to the teacher’s lounge. Far too frequently, we use these terms broadly to describe the phenomenon of academic disparities within and across student populations. And without realizing it, we buy into a belief that our children are somehow lacking. Rather than focusing on a wide array of strengths that students bring with them, we get caught up in what students “don’t have.” Math small groups offer us the opportunity to put student strengths at the forefront, building on what they bring to the table. The small group setting provides students with access to meaningful mathematics that impacts them in both school and life. “Sometimes, beliefs about our students’ deficits interfere with their access to mathematical ideas. While often well intentioned, when we decide ahead of time that students will likely struggle, we often prevent them from engaging in high-quality instruction” (Kobett & Karp, 2020, p. 101).

Strengths-based learning: a learner-centered approach to teaching and learning where students’ strengths are used as a starting point to identify, articulate, and apply individual skills related to what is yet to be learned

Meaningful Supports

Math small groups provide an avenue for us to offer temporary supports that move students’ mathematical understandings forward. These supports (tools, structures, processes, etc.) help students think about and make connections to the math goals at hand. Different students require different supports at different times (Hattie et al., 2017, p. 90), and math small groups provide a place where we can work with our students to determine the just-right tools for their toolboxes. In the small group setting, these supports may take the form of facilitated conversations, purposeful questioning, multiple representational opportunities, and the like. Keep in mind that these supports may be used to help students connect current grade-level math goals to unfinished learning from prior grades, incomplete understanding within the current grade, or curiosities about content yet to come in future grades. In other words, *all* children benefit from these supports to connect their mathematical thinking to other math ideas and broader concepts.

WHICH MATH SMALL GROUP STRUCTURE WORKS BEST?

You’ve probably already figured out that this is a trick question. Teacher-facilitated math small groups come in many different shapes and sizes, and no

single structure fits every situation. Depending on the curriculum, resources, and frameworks you use, whether provided by your school system or selected by you, there are many general principles these structures have in common, and you may find yourself wondering about a variety of issues, including group membership selection, time frame and duration, content selection, and how to remain flexible.

Let's take a look at some of these small group structures.

Heterogeneous Math Small Groups

Students are placed into heterogeneously grouped clusters based on conceptual understanding, fluency, rigor level, learning preference, and so on. They may or may not be randomly selected for group membership. The groups usually all work on the same task when they participate in a teacher-facilitated small group.

Homogeneous Math Small Groups

Students are placed into homogeneously grouped clusters based on a specified math skill or concept. This is a very common method of grouping students together because it allows the teacher to focus on the specific skills or concepts that those students need for success. That said, they may also be placed into homogeneous groups based on learning style preference, interest affinities, or the like. The groups usually work on differentiated tasks when they participate in a teacher-facilitated small group.

Guided Math Small Groups

The Guided Math Framework includes a variety of math small group formats, one of which is the teacher-facilitated small group. Students participate in a large group mini lesson and then rotate through math stations or centers with a specified heterogeneous group. The teacher-facilitated small group station is just one of many. The Guided Math Framework typically specifies that students are homogeneously grouped when they go to the teacher-facilitated small group station. Therefore, students are pulled into a homogeneous group to work with the teacher, and then they return to their heterogeneous groups when finished.

Content-Specific Math Small Groups

This is probably the most common type of math small group currently used. Content-specific math small groups typically focus on a single math topic or skill for a specified amount of time (e.g., 1–10 days). Students are assessed and regrouped regularly using any of a variety of formats, such as exit tickets and common formative assessments.

WHEN PENNY PLANS for her math small groups, she typically focuses on the math content currently addressed in the core math program. She wants to be sure all

of her students are making progress each and every day. Therefore, she uses the previous day's exit tickets (a single cool-down problem the students solve to show their progress) to determine her math small group assignments for the day. To determine the groups, she sorts the exit tickets into four to five groups based on the temporary supports she wants to offer the students. This content-specific strategy helps her target the math the students need, and it helps her avoid the temptation to put the same students in the same groups day after day, week after week. ●

Math Fluency Small Groups

Many teachers find the need to focus on math fluency in teacher-facilitated small groups. This may include basic math fact fluency, but you may want to move beyond the basics to include opportunities for students to work on the fluency standards as identified by your school system or State Standards Framework. This may include place value, multidigit operations, fractions concepts, fractions operations, and the like. Again, if you are working with out-of-grade-level standards, you will want to strategically connect the small group instruction to current grade-level content.

Number Talks Small Groups

Number Talks typically incorporate the use of mental math strategies as students engage in a small or whole group discussion. The teacher poses a numerical problem and gives the students quiet think time to find a solution. Then students take turns verbally explaining their strategies, often comparing and contrasting their solution paths with those of other students. Number Talks work very well in the small group setting primarily because no one can hide from the conversation and all student voices can be heard. Furthermore, Number Talks can be differentiated for each group. Some teachers even preteach Number Talks with students so they are prepared for whole group Number Talks that take place the next day.

Inquiry-Based Math Small Groups

Inquiry-based math small groups typically focus on solving a given task or problem without up-front instruction. The teacher launches the small group by posing a question and making sure everyone understands it. Then the students set to work using their own solution pathways to find the answer. Many of the previously mentioned small group structures may use an inquiry-based approach while focusing on the selected content.

WHY SHOULD I FOCUS ON STRENGTHS?

For many years, we have focused our efforts on differentiation and intervention (Kobett & Karp, 2020). These structures have contributed a lot to helping us understand how to move students forward in their mathematical understanding.

When done well, these foundational elements of instruction support learners as they fill identified learning gaps. And they also give us the chance to build, massage, and evolve our theories.

More recently, we have come to understand that, when translated into practice, these structures often fall short as they tend to focus more on what the child is missing rather than on the assets that abound inside each child. For example, differentiation tends to be responsive, focused on individual disability, and based on cause and effect. In contrast, Universal Design for Learning tends to be proactive, focused on variability among students, and intentional (CAST, 2018).

By focusing on students' strengths and being intentional in your planning, you can tap into ways you can best support your students. You honor the learning that has already taken place and can build upon and connect to what has come before. By focusing on strengths, you humanize mathematics as you connect children and mathematics. You help them see themselves as people using mathematics to describe and solve problems in the world around them, not simply as calculators looking for correct answers.

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Unfortunately, this is often not the case in a system that urges us to focus on student deficits, learning gaps, and “bubble students.” Learning loss and achievement gaps are phenomena used by a large-scale-test-crazy world. These notions describe large-data testing. They do not describe children.

HOW DO MATH SMALL GROUPS FIT INTO A MATH BLOCK SCHEDULE?

Math block schedules differ from school system to school system, so, of course, there is variation for where math small groups will fit into your daily work. The following 90-minute math block will serve as a sample for the sake of this discussion.

- 10–15 minutes: Systematic Review and Preview
- 30–45 minutes: Whole Group Instruction
 - Warm-Up (usually a routine)
 - Launch Task (usually a brief introduction of the task without teacher “show and tell”)
 - Explore Task (usually done with partners)
 - Discuss Task (whole-class, student-centered debrief—may include explicit instruction when warranted)
 - Wrap-Up (includes brief formative assessment)

- 30–45 minutes: Math Workshop—may include any mix of the following:
 - Centers or workstations
 - Hands-on activities
 - Teacher-facilitated small groups
 - Student collaboration in pairs or triads
 - Independent practice
 - Application and connections activities
 - Math Circle (10 minutes)—share reflections and make connections

Math Workshop: a framework that allows students to learn new math content, practice math strategies in a variety of ways, and reflect on learning

As you can see in this sample math block, the best time for teacher-facilitated math small groups would be during the Math Workshop time. It's important for you to spend time at the beginning of the year helping your students understand the academic and behavioral expectations when you are occupied with a small group.

WHEN KYANN FIRST started using a teacher-facilitated math small groups model, her goal was to make sure she worked with every student at least once each week. This meant that she needed to keep her math block times tight so that she had enough time to meet with groups every day. Although she longed for a 90-minute math block, she only had 60 minutes to fit in everything.

She got creative with her schedule, and she used 10 minutes at the beginning of the day for students to engage in their systematic math review while she took attendance and attended to other logistics. She had the math problems already posted as the students walked in the door, so they could get right to work, either independently or in pairs. When she finished her morning housekeeping items, she rotated through the room, asking prompting and probing questions to keep students focused, and then led a whole-class conversation that went far beyond the answers—they talked about *how* they solved the problems, *why* they did it that way, and *when* they might use these strategies again.

The beauty of doing this at the beginning of the day was that she could use the data from the review sheets and from her observational notes to help determine group membership for her teacher-facilitated math small groups. In addition, she was also able to see every student in a small group setting at least once per week because of her strategic use of time. ●

WHAT MIGHT A MATH SMALL GROUP SESSION LOOK LIKE?

When you're planning for a math small group session, keep in mind that the focus should be on what the students are going to do, say, and learn. A very good pattern to follow is L-E-D-C: Launch, Explore, Discuss, and Cognitive Closure. At the Center for Recruitment and Retention at the University of Arizona, they frequently frame this process as "Eb4E," or "Explore Before Explain." During a math small group session, this may play out as follows:

- **Launch:** The teacher poses a question such as a math story or a task.
- **Explore:** The students work in pairs or individually to find a solution. They represent their thinking using a variety of math tools, engaging in discourse during the exploration. The teacher facilitates the experience with purposeful questions, but does not jump in to show them how to do it. The emphasis is on student thinking.
- **Discuss:** The teacher facilitates a discussion about what the students just did, making sure that learning was pushed forward. This is the time to engage in a content conversation, if needed.
- **Cognitive Closure:** The teacher poses a question or problem for the students to answer as they bring the session to a close.

What About Teaching Virtual Math Small Groups?

When teaching students in a virtual environment, not much changes in terms of the Math Small Groups Framework. You still identify strengths and target the math on behalf of all students. And when you create learning pathways, you can still use an Eb4E approach, such as launch-explore-discuss, for planning the session.

What will likely change the most is the use of different representation and presentation apps. If possible, you could provide your students with a manipulatives and math work mats kit to be used during the virtual learning sessions. Although virtual manipulatives serve an excellent purpose and can do some things that physical objects cannot, keep in mind that the virtual objects are really two-dimensional. They are manipulatable, but they cannot replace learning in the 3D world.

When working with physical objects, students can adjust their cameras to show you their work as it happens. This is also true when they are using work mats or writing or sketching on blank paper. When they do so, you can record video or take screenshots to save for portfolios or use for assessment purposes later. You may also want to teach your students how to take and save screenshots of their work to share with others and to submit to you.

YOUR TURN

Throughout this chapter, you had the chance to contemplate how math small groups might look in your context. By considering the structures and schedule, your goals, and how you will identify students' strengths, you lay a foundation for success. Now it's your turn. Take a moment to reflect on the following questions, focusing on how math small groups will benefit the teaching and learning in your classroom.

Learning Intention

After reading this chapter, you will better understand the purpose and benefits for teacher-initiated math small groups, including how math small groups are similar to and different from reading small groups.

Success Criteria

You will be able to describe the benefits of math small groups, compare and contrast small groups for reading and math, and synthesize your new understandings for how math small groups fit into the broader structure of a mathematics lesson.

- How would you describe the benefits for using a math small groups framework in your context?
- Based on what you just read, how might you situate math small groups into your current math instruction?