

# Preface

*Teaching mathematics at a distance is like raising a child.*

When I had my first child, I read and watched everything I could find about raising a baby. I had a lot to learn considering that I had never yet changed a diaper. I gathered all of the necessary equipment, such as crib, stroller, changing table, and clothes, and I collected the recommended *What to Expect* books and felt empowered with information. Then the unexpected happened. My baby, and every baby for that matter, did not fit the mold of the “average baby.” Sure, the books contained lots of great information, but how could I possibly use it if my baby was different? My baby was hungry all the time, but the books said to feed every three hours. My baby loved to be in noisy rooms, but the books said babies should be in quiet places or listen to calming music. In addition to the inconsistencies in the books, it seemed like everyone I knew had advice. There was advice on the introduction of solid foods, sleep training, potty training, and even early academics. Everyone claimed that their advice was the best, and if I just followed the prescribed steps, it would resolve all my parenting questions. It didn’t. This is how most teachers feel with online learning. Even after getting the equipment and books, their situations don’t fit the mold.

Seventeen months after my first child was born, my second child entered the world. That's right, not only did I not have it figured out with my first, I was ready to have another go with a second. But hey, with two kids under two, I would at least remember what worked and what didn't, so I had an advantage. The only thing was, my kids couldn't be any more different. My son was an early riser, and his little sister was a night owl. My son was full of energy around other kids, my daughter took naps at play dates. My son tipped the scales at every doctor's checkup, and my daughter needed to have extra calories. The only thing that was consistent was that there was still abundant advice from other parents (and nonparents). Again, each piece of advice claimed to be the best, and if I just followed the prescribed steps, it would resolve all my parenting questions. It didn't. This is how many teachers feel about online learning at the start of another school year. What worked last year just doesn't work this year.

But, I got better. I was figuring it all out. And it wasn't because I *followed* anyone's advice, it was because I was *learning about* everyone's advice. I started to collect pieces of advice and keep them tucked away in nice little compartments of my growing parental brain. I stopped thinking of it as advice for my babies, and instead I thought of it as anecdotal stories. These were simply stories about another baby—the things that worked and didn't work for that child. I stopped trying to implement *their* way, because my baby was not *their* baby.

After collecting these stories, I learned the art of picking and choosing. When it was time to begin sleep training, I had heard about 20 different techniques and tricks. I had also learned that there would be no one-size-fits-all model. Instead, I picked a few things that I liked from different techniques and created the “Wills Method 1.0” technique. After implementing that for a bit, I altered my formula to create the “Wills Method 2.0.” After some more practice, I altered it again and found a winner—it was the “Wills Method 3.0,” and it consisted of elements of 12 different techniques, and even an invented technique. It was perfect for my baby . . . at least most nights.

Why is teaching mathematics at a distance like raising a child?

Teaching online is like raising a child because you will find that everyone has advice for you on what works and what doesn't work. But anyone who has worked in education knows that there

is no one-size-fits-all technique. Teaching is a human and social endeavor and it is all about context and meeting all students' needs. What combination of ideas works best for my students will likely look a little different from what works for your students. The trick, however, is to stop considering it advice and begin thinking of it as anecdotal stories. Line the stories up on a bookshelf in your thoughts, and open them to get ideas, not prescribed recipes. There is no magic formula. Often, when people tell a story, they are generalizing their experiences over many instances. People generalize advice on potty training and on virtual manipulatives. When you are ready to implement the use of virtual manipulatives (or potty training), go back to their story, not their advice, and pick and choose what will work for you, your students, and your remote classroom.

Once you think you have the hang of this online teaching, you might have a second class (or second child) and learn that one model doesn't always translate to this new class. However, if you keep these stories at your fingertips, you will be able to pick and choose to create a recipe that works for this new class.

## What Will You Get Out of This Book?

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This book showcases learner-centered guidance for high-quality mathematics learning that doesn't compromise pedagogy because of the change in venue. The goal of this book is to present you with ideas for practice and stories of teachers who have reimaged their online class while using familiar pedagogies from their face-to-face setting. These ideas will inspire you to consider how you will translate your mathematics class, whether you are working with a wide-eyed group of kindergartners or young adults who are ready to begin their careers in this new digital age. It will help you build that mental library and empower you to learn and choose and try, and learn and choose and try some more. This book contains many aspects of teaching mathematics, from how to build community to teaching problem solving, from whole-class lessons to partner activities, from homework to assessment, all while acknowledging real challenges and benefits of using technology to teach in a remote setting. There are many tips and suggestions that have worked for people in the past, including my own experiences teaching online for over 10 years, but this is not advice, it's not a formula.

When you come across something that feels like it fits for you and your situation, ask yourself why it fits. What are the structures, norms, and routines that allow it to fit nicely? When you find something that seems impractical, ask yourself why. What structures, norms, and routines would you need to have in place to make it more practical for you?

## How This Book Is Organized

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Part I of this book covers the most critical points about *preparing* to teach remotely. This includes the purpose of technology and considerations of equity in terms of access to and use of technology, how your students interact with technology, and the role of technology in how you facilitate activities. It defines commonly used terms and applications as you consider your role as an educator in the remote classroom. Some of this may feel very generalized, but is important to consider if you're teaching *any* content online, just as you would if you were teaching face-to-face. This part of the book also shares a variety of online structures for presenting mathematics and how to select the appropriate structures for your mathematics goals. You will reflect on important questions that require you to consider your mathematics pedagogy and how to access these great teaching skills in online learning. You will learn how to set up classroom norms for safety and responsibility, and how to hold students accountable for appropriate behavior in the virtual environment. You will also learn about virtual manipulatives, how to find them, and how to give your students more agency in showing their thinking using these tools.

Part II of this book is all about the *implementation* of remote mathematics instruction. It shares a variety of practical strategies that you can implement in your virtual classroom regardless of whether you are new to online instruction or a seasoned veteran. You will become immersed in the stories of many teachers and how they translated their teaching to an online environment teaching mathematics, using current research and best practices around high-quality mathematics instruction to engage students in mathematical discourse, problem solving, and making mathematical connections. You will find comfort in the familiarity of the pedagogies such as rich tasks, whole-group math discourse, stations, games, and building communities of learners.

Part III tackles challenging aspects of teaching in the virtual classroom, such as homework and assessment and how to feel a sense of control even when students are completing assignments in a remote setting. As you read the stories of teachers who implement homework and assessments differently, you will hopefully feel inspired to consider the affordances of technology and how to harness all the advantages of the remote setting with honesty and integrity.

Just remember, there is no magical formula to remote teaching. You have to pick and choose the strategies and the approach that will work best for you. If you are just beginning your journey teaching remotely—or if you have begun to try and are looking to expand your practice—this book specifically identifies easy-to-implement routines, lesson structures, and group dynamics that you can use right away. If you are a seasoned online teacher, you will enjoy the strategies that build rich collaboration, interaction, and discussion among students as you release ownership and increase student agency. There is something here for everyone. And just like the teachers whose stories you will read in this book, when you are feeling confident about your online teaching pedagogy, remember to share *your* story with your colleagues and peers. We are all better together.