Mastery learning is an instructional approach that empowers students to achieve high levels of understanding and competency. Using flexible pacing and targeted supports, the mastery learning cycle consists of a cyclic process of preparation, demonstration, and formative assessment. A key component of this approach is the agreement between teacher and student that the student has demonstrated mastery of the material.

In this book, educator Jonathan Bergmann, a pioneer of the flipped classroom model, walks you step by step through the mastery learning cycle, explaining what it entails and providing the templates, models, and rubrics you need to implement mastery learning in your classroom. You’ll learn how to:

- Set meaningful, measurable, and transferable learning objectives that lead to deep understanding of knowledge, skills, and dispositions.
- Develop a mastery rubric to check for student levels of proficiency.
- Create an assessment plan that ensures positive learning experiences for all students.
- Plan and deliver units that incorporate both time-shifted direct instruction and collaborative application activities within the classroom space.
- Provide timely differentiated support, based on student needs.

Informed by trial and error in his own classroom space and with feedback from practicing educators,《The Mastery Learning Handbook》is both an introduction to this approach and a practical resource that K–12 teachers can turn to again and again. See for yourself just how effective, enjoyable, and transformative mastery learning can be.

Why Teachers Are Embracing Mastery Learning
- They want every student to engage and succeed.
- They want to be better prepared to teach in a post-Covid world.
- They see how much their students love it.

Why Students Love Mastery Learning
- They have more autonomy and more choice.
- They feel less pressure to perform and report less test anxiety.
- They feel more connected to their teachers.
- They feel they do a better job of learning the content.

The Mastery Learning Handbook is a must-read for teachers and school leaders who want to reach every student in their classroom. Sometimes all you need are the right tools to do the work. You’ll find them here.

—Ann S. Michaelsen, School Leader and Author of 《The Digital Classroom》
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Introduction

Imagine that new students come into your classroom almost every week. Many of them haven’t been in school for months. They come to you with different skills, different backgrounds, and different levels of parental support. Some come knowing your content. Some come with huge gaps in their knowledge. And some come burdened with pressure from their parents, pressure from themselves, and untold pain.

But wait, you say. I don’t have to imagine. This is my reality. This was likely the reality for any teacher resuming in-person instruction during the COVID-19 pandemic. Having so many students in so many different places in their learning made for an almost untenable teaching environment.

Corey Sullivan and Tim Kelly certainly don’t have to imagine this scenario, either. They teach at a U.S. Department of Defense school in Germany, which regularly takes in new students—many of whom have been out of school for the four to six weeks that the military transfer process often takes. Corey and Tim teach math, a subject that builds on previous knowledge, so this situation makes teaching quite challenging for them.

But Corey’s and Tim’s students don’t miss a beat. Although they arrive in the classroom at different points in their content comprehension, they slide right into where they need to be. The reason is simple: Corey and Tim teach using mastery learning. This means they realize that their role is to take students from where they are to the next level. They don’t panic when a new student arrives, because their instruction is designed to enable students to move forward at their own pace as they master knowledge, skills, and dispositions. And the results speak for themselves, with Corey’s and Tim’s students scoring well above their peers on the district’s standardized tests.

My Journey to Mastery Learning

My own experience with mastery learning started after my initial foray into the world of flipped learning. I was a career chemistry teacher who, along with Aaron
Sams, was at the forefront of the flipped learning movement. Aaron and I have told our story in our book, *Flip Your Classroom* (Bergmann & Sams, 2012). In a nutshell, we were trying to solve the problem of students who missed class and had a hard time making up the work. This led us to recording our in-class presentations. We soon realized that the best use of our face-to-face class time was not standing in front of students lecturing them; it was getting students actively engaged in learning. When we “flipped” our classes—that is, had students watch recorded lectures at home and work on live problem solving during class—we saw one standard deviation improvement in student achievement across the board.

During my second year of flipping, a transfer student joined my chemistry class at the semester break. She had no previous experience studying chemistry. When the counselor asked me whether Gisella could join the class, my initial reaction was to say no because she would be too far behind. She lacked all the critical knowledge and learning in chemistry that had taken place during the first semester—learning that had prepared the other students in the class to master the second semester’s content.

But I had recorded all the lessons, and I had all the required activities. Why couldn’t Gisella join the class and just start from the beginning? And so she did. I put her on an individual learning plan. While other students were working on second-semester material, Gisella was working on material from the first semester. I watched her learning progress and was amazed at how much and how quickly she learned. In fact, during that second semester, she completed about 80 percent of an entire year’s worth of chemistry. I then realized that all students should have the freedom and opportunity that Gisella had enjoyed.

This led to a transformation in my entire notion of teaching and learning. Whereas I used to follow a rigid schedule and keep all my students on the same page at the same time, now I’m fine with students working on whatever it is that they need to learn, because I know they don’t all learn at the same pace. I started reading the research on mastery learning and digging deep into what we know about learning in general. Instead of saying, “I taught it, and they didn’t learn it,” I now say, “If they didn’t learn it, that’s on me.”

After using mastery learning for two years, my journey took a detour. The early work I did with the flipped learning movement, coupled with the success of *Flip Your Classroom*, steered me into district technology facilitation and, eventually, to work as an educational consultant. I had the privilege of sharing the power of flipped learning in schools all over the world. I visited schools in the United Arab Emirates, Spain, China, South Korea, Australia, Taiwan, New
Zealand, Iceland, Norway, Sweden, Brazil, Turkey, Jordan, Argentina, Mexico, the United Kingdom, and all over the United States.

But something nagged me. Even as I heard countless stories from educators about the positive effects of flipped learning, I found myself more and more disconnected from actual students. I came to realize that my life vision was to reach every student—not just as a speaker, an author, and a workshop leader, but as a teacher. To that end, I accepted a position at Houston Christian High School in Houston, Texas. This is now my third year back teaching science using mastery learning.

In preparation for writing this book, I talked with dozens of teachers and researchers who are implementing and studying mastery learning in a wide variety of classrooms and subjects. They are the true experts. Over the years, they have learned and improved on the flipped-mastery model. This book offers a valuable synthesis of their ideas, but also and most important, it shows you how to implement the approach with efficacy.

An Overview of the Book

Around the world, there are already thousands of teachers successfully implementing mastery learning. I have used the approach since 2009 in my classroom—and I’ve written this book to help you successfully implement mastery learning in yours. I want to challenge your thinking about what your students can and can’t do, and at the same time, provide a practical, step-by-step guide that shows you how to teach using mastery learning.

The Mastery Learning Handbook consists of 16 short chapters divided into three parts:

• **Part 1** shows you how to prepare yourself and your classroom for a switch to mastery learning.

• **Part 2** leads you step by step through the mastery learning cycle. To get the most out of this book, you should create a mastery unit as you work through Part 2. I encourage you to adapt one unit of study in one class or subject that you teach. The unit should take between one and four weeks.

• **Part 3** guides you in implementing mastery learning. It covers the practical realities of a mastery learning classroom—what it looks like on the ground, how to manage assessments and grading, and how to deal with common issues that arise.

Let’s get started.
The Promise of Mastery Learning

What is mastery learning? Here’s the definition I’ve settled on:

**mastery learning** (n.)—an approach to classroom instruction that empowers every student at every level to progress with confidence. The teacher uses flexible pacing to guide students through a cyclic process of preparation, demonstration of knowledge, and feedback until there is a mutual agreement between the teacher and individual student that the student is ready for the next cycle to begin.

Bob Furlong, a biology teacher at Otsego High School in Bowling Green, Ohio, has noted that he’s sometimes uncomfortable using the term *mastery*. He says that what he’s really doing is getting students to a certain level of proficiency. They aren’t masters, technically, but they are able to demonstrate deep understanding of a topic. Likewise, when I teach high school science courses, I’m not creating “masters of science.” But I do know how to get students to a good understanding of science. I know how to lead them to become informed and curious young people who can analyze and evaluate their learning. So, like Bob, although I’m not entirely comfortable with the term *mastery*, I’ll nevertheless use it in this book.

Maybe you are thinking that what I’m describing sounds a lot like another approach you’ve heard of, something called *competency-based learning*. Researchers (Sturgis et al., 2011) at the Aurora Institute, formerly iNACOL, identified five key tenets of the approach:

- Students advance upon mastery.
- Competencies include explicit, measurable, and transferable learning objectives that empower students.
- Assessment is meaningful and a positive learning experience for students.
• Students receive timely, differentiated support based on their individual learning needs.
• Learning outcomes emphasize competencies that include the application and creation of knowledge, along with the development of important skills and dispositions. (p. 6)

This concise list is also a helpful description of mastery learning. Note that the word *mastery* even appears in the first bullet. So this book could actually have *competency* in its main title instead of *mastery*. If you are looking for a practical way to implement competency-based learning, this book will serve you as well.

**A Brief History of Mastery Learning**

At the turn of the last century, Carleton Washburne was growing up in a privileged neighborhood in Chicago, Illinois. He received a stellar education but didn’t apply himself in the classroom. After college, faced with few job opportunities, he reluctantly became a teacher. His first post was in La Puente, California, in a community that was economically challenged. Instead of finding energized and inquisitive students, he found disengaged students for whom school was a perpetual struggle.

Washburne then began a quest to figure out how to reach his students. How could he help them get the amazing education he had received? In his search for answers, he went back to the work of Aristotle. In an Aristotelian education, learning is personalized for each learner. It focuses on the specific needs of each student and meets them just where they are.

Washburne spent the bulk of his life trying to implement this approach. As superintendent of Illinois’s Winnetka Schools from 1919 to 1943, he began to implement mastery learning at scale, in what became known as the Winnetka Plan. In this plan, the curriculum was divided into two main sectors: “common essentials” and “creative group activities.” The first sector consisted of spelling, reading, counting, and writing. Student learning paths were individualized, and students progressed at their own pace. They had to fully master each skill to move on to the next level, and they couldn’t fail a grade. The creative group activities included art, literature, music, crafts, physical activities, and drama. These were ungraded, and students were encouraged to explore what interested them. There were no defined mastery objectives.
One of the key premises of the Winnetka Plan was that all students could learn, given enough time and support. In the late 1950s, the American educational psychologist Benjamin Bloom also promoted this approach. Sadly, mastery never really took hold in most schools. The logistics of running a mastery class proved too burdensome for the average teacher. And the current focus on testing makes things doubly difficult. In fact, according to Mark McCourt (2019), a leading authority on teaching for mastery, unless school leadership is willing to stop focusing on high-stakes tests, mastery learning is doomed to failure.

Nevertheless, I have met many flipped-mastery teachers—teachers who have flipped their classroom and are incorporating mastery learning—who are doing this on their own. These teachers are my heroes. They realize that reaching their students is their number-one priority and that mastery works. The reality is that all students can learn. And they can learn complex material. We just need to create the environment that will enable every student to reach mastery.

**Does Mastery Learning Work?**

To answer this question, we need to look at some research. In 1988, the research team of James Kulik and Chen-Lin Kulik did a meta-analysis of 108 studies on mastery learning. They found that mastery learning programs have “positive effects on examination performance of students in colleges, high schools, and the upper grades in elementary school.” They also found that the “effects appear to be stronger on the weaker students in class.” Finally, they determined that “mastery learning programs have positive effects on student attitudes toward course content” (p. 79). Their one caution is that mastery learning may reduce course completion rates in college classes.

More recently, in 2019, Dedi Kuswandi from the State University of Malang in Indonesia studied the effect of a flipped-mastery class assisted by social media on 61 engineering students. The experimental group scored 20 percent higher than the control group in a conventional learning setting. Kuswandi found that students were more motivated, came better prepared to class, felt less anxious, and had more fun learning.

Bob Furlong, the high school biology teacher I mentioned earlier, uses mastery learning in his classroom. He works in a Title I school, where many students come from disadvantaged backgrounds. Before I show you Bob’s results,
let me address something. You might be wondering how students with limited access to technology fare in a mastery model. Although there are indeed barriers to overcome in economically challenged communities with limited access to technology and high-speed internet access, many teachers have found creative workarounds. Some ask students to do much of the prework on mobile devices. Others provide extra time in their classrooms for the prework. I have also seen entire schools carve out time during resource periods for students to access the prelearning material via the school’s infrastructure and devices.

Back to Bob. His state, Ohio, administers end-of-course exams in a variety of subjects and uses a complex algorithm that predicts student performance on those exams. Figure 1.1 shows that Bob’s biology students outperformed expectations, demonstrating the efficacy of mastery learning.

**Figure 1.1 End-of-Course (EOC) Results for Bob Furlong’s Mastery Students**

<table>
<thead>
<tr>
<th>Predicted Score</th>
<th>Actual Score</th>
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<tbody>
<tr>
<td>720</td>
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**Bloom and the 2 Sigma Problem**

In 1984, Bloom published an article in *Educational Researcher* titled “The 2 Sigma Problem: The Search for Methods of Group Instruction as Effective as One-to-One Tutoring.” He cited studies that compared student achievement under conventional teaching, mastery learning, and one-to-one tutoring. Figure 1.2 shows that distribution. The research indicates that one-to-one tutoring produces a two standard deviation (2 sigma) improvement over the average of the control class (conventional teaching), whereas mastery learning results in students performing 1 sigma above the average of the control class.
The question Bloom posed in his article was this: “Can researchers and teachers devise teaching-learning conditions that will enable the majority of students under group instruction to attain levels of achievement that can at present be reached only under good tutoring conditions?” (pp. 4–5).

I believe that the flipped-mastery model can create just those conditions. If you walk into a flipped-mastery class, you’ll find an environment that allows for a lot of individual and small-group tutoring, with mastery learning at its core. These classrooms are not only helping students achieve academically but also enabling teachers to meet more of their students’ social and emotional needs.

If mastery learning is such a powerful learning strategy, why hasn’t it been more widely adopted? After all, none other than Benjamin Bloom showed just how effective it could be. In many ways, Bloom’s ideas needed some logistical support. He never quite solved two big problems:

- When does a teacher do direct instruction if students are all working on different levels of content?
• How can teachers manage multiple assessments? That is, how many versions of an exam would they need to have on file, and how would they find the time to grade them?

Fortunately, technology has overcome these hurdles. Teachers can now time-shift direct instruction through the use of assigned videos and readings. And online assessments now allow for thousands of versions of exams that assess the same learning objectives. With some of these hurdles behind us, let’s look at what characterizes mastery learning.

What Mastery Learning Looks Like

Frankly, the best way to understand this model would be to visit a flipped-mastery classroom. However, in lieu of that, let’s take a 30,000-foot view of what you might see there. You would notice the following:

• **An absence of whole-class direct instruction.** Direct instruction still occurs, but it occurs in a flipped manner, with students watching videos or reading as prework.

• **A flexible pace.** Not every student is on the same page; students move through the curriculum at the level appropriate for them.

• **Extreme differentiation.** I talk with every student in every class every day, and by doing so, I’m able to customize the learning path of each student. This is especially crucial in a post-pandemic world where students are returning to school with such a wide discrepancy of experiences.

• **Multiple teacher-student interactions.** I continually walk around the classroom interacting with students—always in formative assessment mode—checking for understanding, asking questions, and having students ask questions of me.

• **Student collaboration.** Although each student is on their own individual learning path, they work collaboratively with their peers to learn.

• **Multiple versions of assessments.** Each time students take a summative assessment, they get a different test. The D2L Brightspace quizzing feature (see www.d2l.com/brightspace) enables me to have thousands of versions of the same test; the different questions assess the same objectives.

• **Immediate teacher feedback.** When students complete a summative assessment, we score it together. If they are successful, I ring a gong and
we celebrate. If they aren’t, I use the session as remedial time to help them prepare to retake the assessment.

- **A focus on relationships.** With the extra time available to interact, mastery teachers have more time to develop positive relationships with students. We all know that students learn best when their teacher isn’t just interested in their academic achievement but, instead, is their coach and cheerleader. Believing in students is always the best policy.

- **Summative assessments.** In my class, I expect students to score at least 80 percent on all summative assessments. Many students take these multiple times until they achieve mastery.

- **Social justice and equity.** Research has shown that mastery learning has its greatest effect on students at risk of academic failure (Ironsmith & Eppler, 2007). At some point, mastery learning is an equity issue, because it helps the students who need the most support.

Mastery learning shows great promise to fundamentally change the nature of how we educate. This is a necessary shift. And the good news is that any teacher can do it.

### The Changing Role of the Teacher

Embracing a mastery model means rethinking the teacher’s role in the classroom. Alicia Schreiber, a lead teacher in New Zealand, shared five ways that her role has changed since she adopted a mastery-based approach:

- **Time.** You have to invest your time differently with this approach. You have to commit to checking in with every student every day. No longer can you just stand and deliver and hope for the best.

- **Purpose.** Ask yourself the purpose of this lesson. What are the most important things you want students to know and be able to do? Mastery teachers are clear about what demonstrates mastery in each lesson.

- **Contextual learning.** You need to connect your content to the lives of your students. What about your curriculum threads into their lives? Do your students understand how each lesson fits into the whole?

- **Active teaching.** You now will rove around your classroom instead of standing at the front. You will make on-the-spot decisions about who to help and who not to help. You will be the director of a classroom instead
of the main actor. As such, you’ll suddenly experience those magical moments where everything comes together and students learn deeply.

- **Relationships.** Connecting with students is job number one. You need to be willing to enter into the messiness of their lives. Because you have more time to spend with your students, you’ll get to know them better—not just their cognitive needs, but their affective needs as well. Be ready.

We’ve touched on the importance of mastery learning and on the changing role of the teacher. But why is it so important to implement now?

## The Right Strategy for the Right Time

Let’s look at four reasons why you should consider implementing mastery learning at this moment in time.

### You will reach your struggling students

Bob Furlong teaches an on-level biology class that is made up of students who struggle. He has found that mastery learning works best with this group. When he first introduced the approach to his struggling learners, they didn’t believe he was really on their side. These students felt that school was out to get them; they were waiting for the “gotcha” moment when everything would come crashing down on them. But as the weeks went by, they realized they could trust Mr. Furlong; they began to relax and get down to the process of really learning. The students found that mastery provided them with a safety net and helped them become more successful learners, significantly outperforming students in other districts with similar demographics. As Bob said, “I can never go back. This simply works.”

### You will reach your high-achieving students

One question I kept asking mastery teachers as I was compiling information for this book was this: How do you challenge your high-achieving students? I was asking because I saw huge benefits for my struggling students, but not as many for my more able ones.

The good news is that many of the educators I spoke with have used mastery learning to crack the code to reaching high achievers. In Chapter 14, we’ll go deeper into some specific strategies. As a teaser, Hassan Wilson’s students declare majors, Bob Furlong has an “A option,” and Holly Stuart uses a unique grid system that grades students on improvement.
You will be better equipped to teach in a post-COVID world

Natalie Victorov, a 4th grade teacher in Freeport, Illinois, shared just how hard the COVID-19 pandemic has been on her students. The school provided packets for students every two weeks to help keep them on track. But in her high-needs school, some parents didn’t pick up the packets, and some students lost them. Even Natalie, a master teacher, struggled to reach her students. Some students came back to school with little learning loss, but many came back with significant gaps.

The beauty of mastery learning is that students don’t need to be on the same page at the same time. This is crucial, because given our experience with the pandemic, many students are woefully behind, and teachers need a solution that will help them all succeed. You can implement mastery learning in the traditional structure of the everyday classroom. You don’t have to reinvent the structure of school. You don’t have to change the schedule. You don’t have to change the day-to-day operations of the school. You can implement mastery learning one class at a time.

Your students will love you for it.

As part of the research for this book, I asked each mastery learning teacher I interviewed to send me examples of student feedback. Here’s a sample of what their students had to say about the experience of mastery learning:

- “Thanks for helping me grow up a bit and be independent.”
- “I really enjoyed this course this year. The self-pacing was fun, and I loved the system you use.”
- “Before this year, I never really enjoyed science, and it was never one of my favorite classes. But this year, science was probably my favorite class.”
- “I’m really sad to leave this class. I loved our conversations with you. Don’t forget to B. cereus!”
- “Mastery-flipped learning has assisted me with my learning because it’s given me a basis of knowledge and understanding before we review the concept in class. This technique is helpful to consolidate understanding content. It also helps me with responsibility and independence.”

Here are some comments I gathered from my own students:
• “Mastery learning helps me feel way more confident in my ability to learn the material and takes away so much stress and anxiety that I would have on a test without it. I still worry about tests, but with mastery learning, I don’t have the usual test anxiety.”
• “I know that I will fully comprehend the material without being punished for not learning it in a short amount of time. I get to learn at my own pace.”
• “I am able to really enjoy the material and see the benefits of it without the fast-paced anxiousness of a normal classroom.”
• “Mastery learning has been very positive for me. Because we are able to retake tests, the world isn’t over if I don’t do well on one. Because of this environment, I am able to actually focus on learning the content, and we are able to go at the pace we need. In other classes, it’s assumed that everyone learns at the same pace.”

These comments reveal a number of common themes:
• Students like having autonomy and choices.
• Students feel less pressure to perform and report lower levels of anxiety about a mastery course.
• Students believe that mastery learning is a better reflection of their learning.
• Students feel more connected to their teachers.
• Students feel they do a better job of learning the content.

These are pretty convincing arguments for mastery learning.

The Challenge of Changing Your Mindset

Before we end this chapter, I want to acknowledge how hard it can be to shift one’s mindset.

Like me, many of you learned how to teach during the last century. You were taught how to craft the best presentation, the best assessments, and the best classroom management plan. My formation as a teacher relied heavily on Madeline Hunter’s lesson design plan, which involved the anticipatory set, the introduction of new material, guided practice, independent practice, and closure. I had to be in total control of the learning process. All my students worked on the same thing, and we kept together. When students fell behind, I encouraged them to come in for extra help. But invariably, some students were lost in
the shuffle. Sadly, I sometimes even blamed the students, thinking, “I taught it to them, but they didn’t learn it.”

For me, the mindset change happened when I decided to interview my students during a culminating end-of-year project. I asked a few fundamental questions of each student, and I was dismayed at how few of them really understood what I had taught. Even some students with high grades were lost when I asked them to expound on the basic building blocks of my course.

You may wonder, as I did, whether your students, like mine, just memorized items for the test and then promptly forgot everything.

If you decide to go down this rabbit hole of mastery learning, you and your teaching will be forever changed. But this will require a few shifts in your thinking. First, you will have to be fine with giving up some of the control of your class. I know this is no small thing. I used to be the control-freak teacher who made sure that all students were doing exactly what I wanted. I was proud of the fact that I was a bell-to-bell teacher. No wasted time in my class! But when I gave up some—some, not all—of the control, I was blown away by how my students took more ownership of their learning, by how they began to enjoy learning with more autonomy. All my metrics rose dramatically. Student test scores rose, and, better yet, when I interviewed the students at the end of the year, most of them really knew the big ideas.

Second, I had to be OK with not being the center of attention. Before flipped learning, and especially mastery learning, I loved to be the smart guy who gave engaging and scintillating lectures. The fact is, I’m a good speaker. I’ve given a TED Talk, and I’ve spoken to thousands of people at once. But in my classroom, I don’t use my speaking skills anymore because mastery learning just works. I still believe in the power of a clear and engaging lecture, but I don’t deliver these in my class. I save them for my flipped videos. If you love being professorial and the center of attention, this will be hard for you. It was for me.

Last, you will have to rethink what you believe about grading and assessment. I used to believe in points and percentages. If a student got 89.4 percent, that was a B. They had one chance to prove they had mastered something; if they didn’t perform on the day of the test, well, too bad. But now I don’t care when students learn something; I just care that they learn it. We shouldn’t penalize students who process slowly. Slow processing isn’t a mark of low intelligence. In fact, it may be a mark of deeper understanding.

So, are you up for the challenge? Are you ready to rethink what class could be like if you let go of some of the control? Are you going to be OK with not
being the center of attention? Are you willing to let go of your notions of what it means to be intelligent? And are you frustrated that, despite the effort you’re putting in now, all your students aren’t learning as well as they could?

If so, read on!
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About the Author

Jonathan (Jon) Bergmann is one of the pioneers of the Flipped Classroom Movement. He has helped schools, universities, organizations, and governments all over the world introduce active and flipped learning into their contexts. He is a frequent keynote speaker who challenges and inspires audiences with stories and real-life examples from his classroom.

Jon has taught at urban, suburban, rural, and private schools. He spent 24 years as a classroom teacher in Colorado before becoming a technology facilitator in the Chicago suburbs. When *Flip Your Classroom* became an international bestseller, he traveled the world for eight years as a consultant helping schools and universities move from passive to active learning. In 2019, he returned to the classroom, and his advice on mastery learning implementation is informed and enhanced by his own efforts to meet the complexities and challenges of teaching. Both research and personal experience have taught him that students learn best when they are active participants and that they don’t care what you, their teacher, knows until they know that you care. He tries every day to connect with his students.

Jon is the author or coauthor of 10 books that have been translated into 13 languages. In 2002, he received the Presidential Award for Excellence in Mathematics and Science Teaching, and in 2010, he was a semifinalist for Colorado Teacher of the Year. He serves on the advisory board for TED Education and teaches full-time science and assists with staff development at Houston Christian High School in Houston, Texas.

Find out more about Jon at JonBergmann.com and explore the resources related to this book at TheMasteryLearningHandbook.com.
Related ASCD Resources: Personalized, Flipped, and Mastery Learning

At the time of publication, the following resources were available (ASCD stock numbers in parentheses):

*EdTech Essentials: The Top 10 Technology Strategies for All Learning Environments* by Monica Burns (#121021)

*Flipping the Learning* (Quick Reference Guide) by Jonathan Bergmann (#QRG118053)

*Flip Your Classroom: Reach Every Student in Every Classroom Every Day* by Jonathan Bergmann and Aaron Sams (#112060)

*How to Differentiate Instruction in Academically Diverse Classrooms, 3rd Edition* by Carol Ann Tomlinson (#117032)

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