flip your classroom

REACH EVERY STUDENT
IN EVERY CLASS
EVERY DAY

REVISED EDITION

JONATHAN BERGMANN and AARON SAMS

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Jonathan Bergmann and Aaron Sams

International Society for Technology in Education
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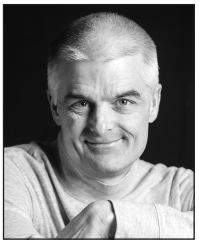

About the Authors

Jonathan Bergmann (@jonbergmann) teaches science and assists with staff development at Houston Christian High School in Houston, Texas. In 2002, Bergmann received the Presidential Award for Excellence for Math and Science Teaching, and he was a semifinalist for Colorado Teacher of the Year in 2010. As one of the pioneers of the flipped classroom, he has helped schools, universities, organizations, and governments worldwide introduce active and flipped learning into their contexts. He's a frequent keynote speaker who challenges and inspires audiences with stories and real-life examples from his classroom. He also serves on the advisory board for TED Education. Bergmann has written or co-authored several books that have been translated into 13 languages, including the landmark ISTE/ASCD book *Flip Your Classroom* and *The Mastery Learning Handbook*, a practical guide to help educators make the shift to mastery learning.

Aaron Sams (@chemicalsams) is an assistant professor of education at Saint Vincent College in Pennsylvania. He's a former high school chemistry teacher, and during that time, he chaired the committee to revise the Colorado science education standards. Sams received the Presidential Award for Excellence in Math and Science Teaching in 2009. He's the co-author of several books, including the landmark ISTE/ASCD book *Flip Your Classroom*, and he regularly publishes his research on STEM education policy and practice. Sams resides in Pittsburgh with his wife and three children, and can often be found biking on local trails, climbing sandstone crags in West Virginia, or cooking in his backyard.

Acknowledgments

We would like to acknowledge all the educators who adopted the flipped model of teaching who supported us on this journey and who helped us continue to refine our ideas. The community of educators that rallied around flipping will always be our tribe, and we are eternally grateful for your friendship and collegiality.

Dedication

For our wives, Kelsey Sams and Kris Bergmann.

Contents

about the revised edition

We purposely kept the original edition of this book short, hoping you would read it in one sitting or over a weekend at most. We have kept the core of the book (our story) in place for this revision, but have made several updates to the resources and coverage of recent developments since the original edition published. Note that there are instances throughout the book where we mention Jonathan's current school or classroom. Those are recent examples that have been added to this edition, as our education journeys have taken us both beyond the Colorado school where we originally taught as a team.

We have also added some brand-new elements and sections to go a bit deeper into how to successfully implement flipped learning.

New Content

Chapter 8, "Flipped Learning in Action," is a new chapter that features two case studies. One illustrates how an individual teacher applied flipped learning, and the other shows how flipped learning was adopted across an entire school district.

In addition, Appendix A, "Best Practices for Making Quality Educational Videos," is brand new. It focuses specifically on tips to help you create videos for your classes.

Connections to the ISTE Standards

The book provides connections to the Educators section of the ISTE Standards by sharing real-world examples and quotes from a variety of ISTE Certified Educators, representing multiple grade levels and specialties.

Educator Standards

The **ISTE Standards for Educators** are designed to help teachers help students become empowered learners. These standards will deepen your practice, promote collaboration with peers, challenge you to rethink traditional approaches, and prepare students to drive their own learning.

Quotes from Educators

As we did throughout the first edition, we have again interspersed anecdotes and thoughts from many educators across the globe who have in some fashion flipped their classrooms. One thing that has been reinforced at every stage of our flipped classroom journey is that we can all learn from each other.

foreword

The book you are now reading incited a revolution in education when the first edition was released over a decade ago. Like many revolutions, it started small.

Jonathan Bergmann and Aaron Sams, two rank-and-file chemistry teachers in a Colorado public high school, were simply trying to cope with a basic issue: student absences. Eventually, they came up with the idea of putting classroom lectures on video, so if a student missed class it would be easy to catch up. Soon, they realized they had devised an entirely new way to conceptualize classroom instruction: Remove lecture from class time and put it on video, where it's more useful, and use the liberated time in class for active learning. Thus, flipped learning was born.

The full origin story is in Chapter 1, and I won't spoil it. But suffice to say that the concept grew legs with astonishing speed. Soon, teachers across Colorado, and then all over the US and beyond, were flocking to this idea.

I was late to the party. In 2009, I was designing a new course at my college that needed more time for active learning than its one-credit-hour status would allow. I complained to a colleague that lecture was the problem—it was eating up all the time! My colleague asked me if I'd ever heard of the flipped classroom. I had not; but I soon did. Flipped learning was a perfect fit for my class (though my first attempt was far from perfect). And so I joined the revolution too.

Many pundits at the time panned flipped learning as a fad or a buzzword. But today, it's clear that it has stood the test of time and is more crucial now than ever. The COVID-19 pandemic exposed all the pain points of traditional instruction. We know today about the superiority of active learning over traditional lecture. We also know that students' patience with lecture has

evaporated. Young people want to do meaningful things, and sitting and listening to someone talk is not a good use of their time.

All the vectors point toward the same conclusion: We need to make as much time and space as possible in class for active learning. Flipped learning provides the means of doing so. And this book is your guide.

In it, you will find clear explanations of flipped learning, practical steps for implementing it in your class (including explicit connections to ISTE standards), and most importantly: stories, not only the authors' own but also those of others through relatable case studies. Evidence from educational research is useful and important, and there is plenty of it that supports flipped learning. But in the end, what we all need to try anything new to us is someone else's story.

Successful revolutions tend to succeed when the tools for change are put into the hands of everyday people. In this fine new edition of their book, Bergmann and Sams have once again done just this.

Robert Talbert, Ph.D.
Professor of Mathematics, Grand Valley State University

Author, *Flipped Learning: A Guide for Higher Education Faculty and Grading for Growth*

http://Rtalbert.org

CHAPTER 1

our story: creating the flipped classroom

Enrique is struggling in school, specifically in his math course. Every day his teacher stands in front of the class and teaches to the state standards. She uses the latest technology. She received a grant for an interactive whiteboard that is supposed to engage all kids and get them excited about learning. Enrique's problem is that the teacher talks too fast for him, and he can't take notes quickly enough. When he does get all the notes from class onto paper, he doesn't understand what they mean. When he goes home to complete his homework, he continues to struggle because what he wrote down in class during the lecture doesn't seem to match with what he is supposed to do on

his assignment. So, Enrique, a hard-working student, has few options: He can go into class early and ask his teacher for help, he can call a friend with the hope that they understood what she said, he can copy the homework from a friend, or he might simply give up.

Janice is active in volleyball, basketball, and track at Eastside High School. She is a conscientious student who always wants to do her best. Unfortunately, she has a difficult science class the last period of every day. She must often leave school early to travel to games and matches, and she misses a lot of classes. She tries to keep up with her science class, but she just can't because she misses so much of it. She sometimes comes in and meets with her teacher before school, but he is often too busy to individually teach her everything she missed.

Ashley has spent the better part of her life learning how to "play school." She is 10 years into mastering the art of meeting her teachers' requirements by making sure that she meets every detail of a grading rubric. She never actually retains the key concepts, despite consistently earning As and Bs in her classes—not because she has demonstrated understanding, but because she has met the requirements in the rubric. Those grades do not accurately reflect what she has actually learned. Ashley is being served very poorly by her school.

Sadly, these scenarios are not uncommon. Many struggling students who genuinely want to learn fall behind instead. Others are so busy that they miss out on key concepts. Still others learn how to "play" school, but never really learn important objectives in their courses. And recently, because of interruptions due to the COVID-19 pandemic, educators around the world have been working frantically to help their students get back on track.

The flipped classroom can address the needs of students such as Enrique, Janice, and Ashley by allowing their teachers to personalize the students' education. You can do the same. This book will show you how!

A Note on Terminology

Before we proceed with our story, we would be remiss if we didn't mention a few important facts:

- We did not lecture exclusively in our classes before flipping; we have always included inquiry-based learning and projects.
- We were not the first educators to use prerecorded videos as an instructional tool, but we were early adopters and outspoken proponents of them. For us, the flipped class would not have been possible without the videos. However, there are teachers who use many of the concepts you will read about in this book and who call their classrooms flipped, but do not use videos as instructional tools.
- We did not come up with the term "flipped classroom." No one owns that term. Soon after the publication of the first edition we had people who advised us to copyright the terms "flipped class" and "flipped learning." To that, we said a resounding "No!" We wanted the concept and term to be in the wild and to grow organically, and that is exactly what happened. We didn't even coin the term. University professor J. W. Baker (2016) claims to have done so in the late 1990s when using VHS tapes from his university library to teach the material in his courses. Daniel Pink (2010) also made an early reference to flipping in a blog post about math education. In addition, Lage, Platt, and Treglia (2000) did early work delivering pre-class content through Microsoft PowerPoint around what they called "inverted classrooms."

As an additional note, in the original version of this book we refer exclusively to the "flipped classroom." Since that time, we also helped popularize the term "flipped learning." In fact, our subsequent book was called *Flipped Learning*. Although an argument could be made that these two terms are distinct, in the ensuing years "flipped classroom" and "flipped learning" have essentially become synonymous. So, regardless of which term you see in this book, you can assume we are referring to the same principle of flipping the time and space in which direct instruction takes place.

Background

In 2006, we both started teaching at Woodland Park High School in Woodland Park, Colorado. Jonathan came from Denver, and Aaron from southern California. We became the chemistry department at our school of 950 students. As our friendship developed, we realized that we had very similar philosophies of education. To make our lives easier, we began planning our chemistry lessons together, and to save time we divided up much of the work. Aaron would set up one lab, and Jonathan the next. Aaron would write the first test, and Jonathan the next.

A problem we noticed right away about teaching in a relatively rural school is that many students missed a great deal of school because of sports and activities. The "nearby" schools are not nearby. Students spent an inordinate amount of time on buses traveling to and from events. Thus, students missed our classes and struggled to stay caught up.

And then one day our world changed. Aaron was thumbing through a technology magazine and showed Jonathan an article about some software that would record a Microsoft PowerPoint slideshow, including voice and any annotations, and then convert the recording into a video file that could be easily distributed online. YouTube was just getting started, and the world of online video was in its infancy. But as we discussed the potential of such software, we realized that this might be a way to keep our students who missed class from missing out on learning. So, in the spring of 2007, we began to record our live lessons using screen capture software. We posted our lectures online so our students could access them.

In all honesty, we recorded our lessons out of selfishness. We were spending inordinate amounts of time reteaching lessons to students who missed class, and the recorded lectures became our first line of defense. The conversation usually went something like this:

Student: "Mr. Sams, I was gone last class. What did I miss?"

Mr. Sams: "I tell you what, go to my website, watch the video I posted, and come see me with any questions you have."

Student: "Okay."

Our absent students loved the recorded lectures. Students who missed class were able to learn what they had missed. Some students who were in class and heard the live lecture began to rewatch the videos. Some would watch them when reviewing for exams. And we loved it because we didn't have to spend hours after school, at lunch, or during our planning time getting kids caught up.

We never could have expected the side effects of posting our lessons online. Because our videos were available online, students and teachers from all over the world began thanking us for them. Students just like ours who had struggled with chemistry found our videos and started using them to learn. We participate in several online science teacher forums, and we began to share the links to the recorded lectures there. Teachers from all over the country began to take notice. Chemistry teachers began to use our video lectures as plans for substitute teachers, and some new teachers used them to learn chemistry content so they could teach it to their students. All in all, it was amazing to see what we were doing in our small town being noticed across the country.

The Flipped Classroom Is Born

In our combined total of more than half a century of teaching, we have been frustrated with students not being able to translate content from our lectures into useful information that would allow them to complete their homework. Then, one day, Aaron had an insight that would change our world. It was one simple observation: "The time when students really need me physically present is when they get stuck and need my individual help. They

don't need me there in the room with them to lecture them and give them content; they can receive content on their own."

He then asked this question: "What if we prerecorded *all* of our lectures, students viewed the video as 'homework,' and then we used the entire class period to help students with the concepts they don't understand?"

With this question, our flipped classroom was born. We made a commitment during the 2007–08 school year to prerecord all of our chemistry and Advanced Placement (AP) Chemistry lectures. To make things easier on us, one of us would do unit one of chemistry and the other unit one of AP Chemistry. Then we switched off for each subsequent unit. This meant many early mornings for Jonathan, the morning person, and many late nights for Aaron, the night person in our duo.

Our students are on a block schedule, so we see them for 95 minutes every other day. Every other night our students watch one of our videos as homework and take notes on what they learned. Teaching science courses, we continued to conduct the same laboratory experiments that we had always done. We found that we had more time for both the labs and the problem work time. In fact, for the first time in either of our careers, we ran out of things for the students to do. They were completing all their work with 20 minutes left in class. Clearly, this model was more efficient than lecturing and assigning homework.

We also decided to give the same end-of-unit tests as we had done the previous year. We discuss the details in the next chapter, but, in short, our students learned more and we had some rough data that seemed to indicate the flipped classroom was a better model than the traditional approach.

We implemented the flipped model for one year, and we were very pleased with how our students were learning. We had evidence our model worked and was better for kids. So you would think we would perfect this model and continue to teach that way—but you'd be partially wrong. More on that in a bit.

How Flipping Aids Personalization

Flipping the classroom establishes a framework that ensures students receive a personalized education tailored to their individual needs. Remember Enrique, Janice, and Ashley from our opening story? They represent the struggling students, the overscheduled students, and the students who get by with superficial learning. Educators are expected to find a way to reach these students with their very different needs. Personalization of education has been proposed as a solution.

ISTE STANDARD IN ACTION

Designer (2.5.a)

Students don't all learn at the same pace or in the same way, and personalizing learning can be difficult—but not impossible. There are ways to reach children through their learning process with just some minor changes. I teach over 100 students on a daily basis. All of my classes are at different learning levels. Something that I've been able to do with the use of technology is provide the content in different ways for my students. My lessons are on slides and I use Nearpod for students to be able to visualize those slides on their 1:1 devices. Through these lessons I provide a variety of lessons to check for student understanding. When it comes time to assess, I've created choice boards using a variety of technology tools that allow the student to select the option or options they feel are most appropriate for their level.

—SAMANTHA MENDENHALL, 7TH AND 8TH GRADE SCIENCE TEACHER, PORT ALLEN MIDDLE SCHOOL, PORT ALLEN, LA

The movement toward personalization has much merit, but for a single teacher to personalize education for 150 students is difficult and does not work in the traditional educational setting. The present model of education reflects the age in which it was designed: the Industrial Revolution. Students are educated in an assembly line to make their standardized education efficient. They are asked to sit in nice neat rows, listen to an "expert"

expound on a subject, and recall the learned information on an exam. Yet somehow, in this climate, all students are expected to receive the same education. The weakness of the traditional approach is this: Not all students come to class prepared to learn. Some lack adequate background for the material, are uninterested in the subject, or have simply been disenchanted with the present educational model.

> *"Since doing a flipped classroom, I went from not having enough time to get through all the learning to having more than enough time, so that I can now do more hands-on learning, enrichment projects, as well as work more with small groups and implement effective feedback. The flipped classroom has changed my classroom environment, with 100% engagement and students wanting to learn!"*
>
> —Jena Sagendorf, 3rd Grade Teacher, Desert Horizon Elementary School, Phoenix, AZ

For the better part of two decades, educators have been told to provide a personalized education for each student, and most educators believe that personalization is a positive goal to reach for each student. However, the logistics of personalizing 150 different educations each day seems insurmountable to most teachers. Exactly how can a teacher personalize the education of so many kids? How can she ensure that every student learns when there are so many standards to cover? Personalization is truly overwhelming for most educators, and they end up taking the shotgun approach to teaching: Present as much content as they can in the time they have, and hope that it hits as many students as possible—and sticks.

When we began flipping our classrooms, we quickly realized that we had stumbled on a framework that enabled teachers to effectively personalize the education of each student—the goal

of educators since the concept of individualized learning first appeared. As we have presented our flipped classroom model to educators around the world, many have said, "This is reproducible, scalable, customizable, and easy for teachers to wrap their minds around."

You may also have noticed some similarities between a flipped classroom and other educational models such as blended learning, reverse instruction, inverted classroom, and 24/7 classroom. All of these models have similar features and could possibly be interchangeable in certain contexts.

ISTE STANDARD IN ACTION

Designer (2.5.a)

The reality that current educators face is that not all students come to us prepared to learn. So, how can we address this when we have 30 students at a time? I love to use flexible groups for this. I try to have different lessons and experiences available for students based on what they need that day. A formative assessment at the beginning or end of class prepares me to place students in differentiated groups based on how well they are doing with the content. Some students might be almost at mastery but need a little more practice. They can watch asynchronous videos to do a lab or activity or take notes based on an article and explain the concepts to a partner. This frees me up to pull small groups for extension or reinforcement, and even meet with individual students for conferencing. The ability to use technology and flipped learning also allows students to have a choice in how they access content. Using the flipped model to enhance a choice board or playlist allows me to offer students podcasts, videos, articles, or hands-on activities in addition to their normal classwork.

—MORIAH WALKER, CYBERSECURITY EDUCATOR, LAKOTA LOCAL SCHOOLS, LIBERTY TOWNSHIP, OH

The Flipped Classroom Grows

As we began this journey, we had no idea that what we were doing was going to spread beyond our four walls. Then, out of the blue, we got an email from a neighboring school district wanting us to come and tell them about the flipped model. They even offered to pay us! So we packed our bags and spent a day in Cañon City, Colorado. You've probably sat in staff development training where the principal or superintendent has brought in some "expert": someone from out of town with a slideshow. Well, we were those experts. When we started, most of the teachers were sitting with glazed expressions, as if they were daring these two yahoos from down the road to capture their attention.

As we shared our story, their slumped bodies began to become straighter. Soon the teachers in the audience were asking questions and showing genuine interest in the flipped model. And then as we broke them into groups to begin practicing how to make their own videos, we realized we had stumbled on something that was much bigger than ourselves. One seasoned teacher told us that in 26 years of teaching, our presentation and workshop was the most valuable professional development day he had ever attended. We suspected his comment had more to do with the simplicity and reproducibility of the flipped model than with our presentation skills.

A few weeks later, our assistant principal came into our rooms and asked us, were we expecting anybody from Channel 11? Much to our surprise, the education reporter from one of the local news stations had heard about us and just showed up on our doorstep. He made a short news clip about what we were doing…and, as they say, the rest is history. We were invited to speak at conferences and asked to train educators at schools, districts, and even colleges. We spoke about the flipped classroom across the United States, Canada, Asia, the Middle East, South America, and Europe.

The Flipped-Mastery Class Begins

Then, one day, our world was rocked by conversations with some of our students. At the end of every year we give students a comprehensive project. In this project, they are asked to analyze a household substance and chemically determine some quantitative property of that substance. The year we implemented the flipped model, students were supposed to analyze Pepsi and determine the percentage of phosphoric acid in the beverage. We have done this project for years, and we were expecting that this group of students, the first who had learned in the flipped model, would set a new standard for good results. When students finish this project, each group has to submit to an oral interview with the teacher. In that interview, we ask some key conceptual questions that get to the heart of what students should have learned in chemistry. We were surprised and disappointed to find that, although this group of students had performed better on tests than students in the past, some of their responses in the interview made it seem that they had learned just for the test, instead of really mastering the essential concepts all chemistry students should learn.

On further reflection, we determined that despite our best efforts to meet the needs of all students, we were still pushing our kids through our curriculum whether they were ready to move on or not. We began to wonder if we could set up a flipped classroom that also had elements of a mastery-learning environment in which students learn a series of objectives at their own pace (Bloom, 1971). Our conversation went something like this: In the traditional flipped model (it feels strange to say that there is a "traditional" flipped model!), all students watch the same video on the same night. Then, in class, all students complete the same activity or lab. But now that we have a library of instructional videos, why does every student need to be on the same topic at the same time?

Another thing that got us thinking about the flipped-mastery model was the entrance of a foreign exchange student into

Jonathan's class. The counselors came to Jonathan and asked him if a student could join his chemistry class at the beginning of second semester. When Jonathan asked about her previous chemistry class, he was told that she had no background. Before we made our videos, there would have been no way to allow such a student into class in the middle of the year. As Jonathan thought it through, he realized that he had a whole library of videos made for chemistry. She could work through them at her own pace. He took the student into his class. She started at unit 1 and worked her way through the chemistry curriculum. In our course we have 10 units that cover the entire year. She got through 8 of the 10 in one semester. As we observed her work, we began to think about a system where all students worked through the material as they mastered the content at their own pace.

ISTE STANDARD IN ACTION

Designer (2.5.a)

To honor that all students learn in different ways, I like to create learning pathways or choice boards that incorporate multiple means of content delivery. For example, one of our learning goals has been for third graders to learn about the continents. The learning choice board provides them with audio, video, and digital book resources to learn about each continent. Students can choose which means works best for them. In addition, the graphic organizer students use to gather their learning provides them with a variety of ways to express their new learning. This could be done by drawing a picture or writing words. Flipping learning like this is very powerful because not only does it give students a personalized learning experience where they are making choices for their learning, but it also gives the teacher time for students who need additional support or extension.

—SARA SCHOEPKE, INSTRUCTIONAL TECHNOLOGY & LIBRARY MEDIA COORDINATOR, WATERFORD GRADED SCHOOL DISTRICT, WATERFORD, WI

Our ultimate goal is for all students to really learn chemistry. We wondered if we could set up a system in which students progress through the course as they master the material. You must understand that we had never been trained in how to implement a mastery system of learning. Subsequently, we discovered that mastery learning has been around for a long time. A great deal of research has been done on how to implement such a system. We didn't consult the literature, we didn't do any research: We simply jumped in.

Our first year of teaching with the flipped-mastery model was a year with a high learning curve. We made a lot of mistakes. When that year was over, we looked at each other and asked, "Should we continue with this?" Yet both of us realized that we could not go back. We had seen our students learning chemistry more deeply than ever before, and we were convinced. Our method was changing students' abilities to become self-directed learners.

The Flipped Classroom Explodes

Since publishing the first edition of this book in 2012, we have been humbled by the growth of the flipped classroom around the world. For a time, we both crisscrossed the globe working with teachers, schools, and ministries of education helping them implement the model. We worked with small groups of teachers and keynoted at conferences with as many as 25,000 people in attendance.

Early criticism of this book was both the lack of research around flipped learning and the fact that the book didn't cite any references. Certainly, some of that was on us as we sought to tell the story of our classes and what had worked for *us*. In this edition, we tried to remedy that shortcoming. It has helped that since 2012 the number of research articles about flipped learning has exponentially increased. Thousands of peer-reviewed papers have been written, and the vast majority

of them have demonstrated the efficacy of flipped learning. Research into flipped learning has proven that it works in virtually any subject, level, or country. In fact, the first edition of this book has been cited more than 8,000 times in research articles around flipped learning.

Here is a very brief selection of some studies showing the contexts in which flipped learning can work:

- Harvard Medical School has flipped (Fu, 2015).
- Flipped learning has helped train dental hygienists (Kim, 2020).
- A study out of Iowa State University concluded that flipping is promising for laboratory courses, because coming "ready to participate in the laboratory activities allows students to spend more time enhancing their skills and techniques" (Anderson, Franke, & Franke, 2017).
- Researchers in South Korea studied if flipped learning increased higher order thinking of preservice teachers. Their study was unique as they tracked student questions and categorized them using Bloom's Taxonomy. They found that the quality of student questions was enhanced by flipped learning. This study is also interesting because they flipped the training of preservice teachers, which can only bode well for future teachers in South Korea (Heo & Chun, 2018).
- Researchers in Thailand are developing a model that connects flipped learning with constructivist philosophy and critical thinking. They propose that connecting these three strategies will enhance student learning (Jantakoon & Piriyasurawong, 2018).
- Martin H. Malin and Deborah I. Ginsberg (Chicago-Kent College of Law) have successfully used a flipped class approach for four years for their law school students (Malin & Ginsberg, 2018).

- Researchers at Brigham Young University studied the effect of flipping a large lecture-hall statistics class and found "significant improvement in the students' performance and course satisfaction with the flipped classroom. Overall, the results showed that the flipped classroom model can be used in large lecture classes with the help of undergraduate teaching assistants and the use of additional labs" (Nielsen, Bean, & Larsen, 2018).
- A thesis from Hong Kong used a systemic meta-analysis of flipped learning research in K–12 and tertiary science. It found that flipped learning shows a significant increase in student achievement (Zhang, 2018).
- A study in the Philippines found that flipped learning reduces math anxiety in junior high students. This study illustrates how the additional time provided by flipped learning to build student–teacher relationships helps students cope with difficult concepts (Segumpan & Tan, 2018).
- A metanalysis examined 73 studies on flipped learning and found that the most cited advantage to flipped learning was increased student performance. It also noted that the most challenging aspect of implementing flipped learning is getting students to do the pre-class work (Akçayır & Akçayır, 2018).

Little did we know that flipped learning would take on such a pivotal role in helping teachers teach through the COVID-19 pandemic. Every teacher we knew who had successfully flipped their classes (and between us we know a lot of teachers) was tapped by their administration to help their peers navigate the quagmire of remote and hybrid learning. Though flipped learning is not remote learning, nor is it online learning, many of the same principles and tools have enough overlap that they helped teachers during the pandemic. One teacher even tweeted that flipped learning teachers had been preparing for the pandemic for ten years.

> *The post-pandemic need and commitment of teachers has been the driving force behind the change in my classrooms to adopt a flipped learning methodology. We teachers have internalized that teaching and learning with flipped learning is no longer a complementary option. It is the option."*
>
> —Carmen Llorente Cejudo, Teacher of Educational Technology Degree in Pedagogy, Faculty of Education, University of Seville, Spain

Are You Ready to Flip?

If you have made it this far, you realize that we have a pretty high tolerance for change. We are willing to try almost anything if we think it will help our students. And fortunately, we have made many good decisions along the journey. We have also made many mistakes. It is our hope that if you decide to implement the flipped or even the flipped-mastery model, you will learn from our mistakes and improve on our model.

We also hope that as you read, you realize that there is no single way to flip your classroom. There is no such thing as *the* flipped classroom. There is no specific methodology to be replicated, no checklist to follow that leads to guaranteed results. Flipping the classroom is more about a mindset: redirecting attention away from the teacher and putting attention on the learner and the learning. Every teacher who has chosen to flip does so differently. In fact, even though we developed our flipped class together and are next door to each other, Jonathan's classroom still looks different from Aaron's classroom, and our personalities and individual teaching styles shine through the commonalities.

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flip your classroom

REACH EVERY STUDENT IN EVERY CLASS EVERY DAY

REVISED EDITION

In this updated edition of their landmark text, Jonathan Bergmann and Aaron Sams revisit experiences that helped launch the flipped learning movement. Based on the observation that students need teachers to provide help if they get stuck on an assignment, but can listen to lectures without teacher support, Bergmann and Sams began flipping their classroom. Students watched recorded lectures for homework and completed their assignments, labs and tests in class with their teacher available. What they found was that students demonstrated a deeper understanding of the material than ever before. This is the authors' story, updated and expanded, to ensure its relevance to your classroom.

The revised edition includes:

- New case studies illustrating flipped learning applied by an individual teacher and across a school district.
- A new appendix focused on best practices for creating videos for your classes.
- Educator examples that demonstrate the ISTE Standards in action.
- Updates to tools, terms and resources to reflect the current learning landscape.

ABOUT THE AUTHORS

Jonathan Bergmann teaches science and assists with staff development at Houston Christian High School in Texas. As a pioneer of the flipped classroom, he has helped schools, organizations and governments worldwide successfully implement flipped learning. He has written or co-authored several books, including *Flip Your Classroom* and *The Mastery Learning Handbook*, a practical guide to help educators make the shift to mastery learning.

Aaron Sams is an assistant professor of education at Saint Vincent College in Pennsylvania. Previously, as a high school chemistry teacher, he chaired a committee to revise the Colorado science education standards. Sams received the Presidential Award for Excellence in Math and Science Teaching in 2009. He has co-authored many books on flipped learning, including *Flip Your Classroom*, and publishes research on STEM education policy and practice.

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