KATIE MUHTARIS • KRISTIN ZIEMKE

AMPLIFY

Digital Teaching and Learning in the K–6 Classroom

Foreword by **STEPHANIE HARVEY**

HEINEMANN
Portsmouth, NH

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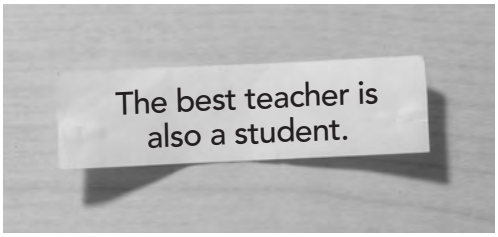
To the students of the world;
young or otherwise.
We believe in you.



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Contents

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Foreword

Welcome to *Amplify*! As you will discover, this book totally rocks! Full of passionate and practical ideas for enhancing your teaching with technology, it stakes a rock-solid claim, grounded in research, for amplifying proven, constructivist teaching and learning strategies with technology. As Katie and Kristin make clear, it's not the technology but what we do with it that augments teaching and learning. "As digital tools became more and more present in our classrooms, we wanted to shy away from many of the practices that didn't make sense. Just because we *can* do something innovative, doesn't always mean we should." We get it. We've all seen the far-too-prevalent smartboards loaded with lame software that convert screens into fill-in-the-blank worksheets, or iPads stuffed with mind-numbing apps that differ little from the ditto packets reproduced in the copy rooms of yesteryear. You won't find them in this book. *Amplify* shares the collaborative journey of these two energetic risk takers as they open up their teaching and their kids' learning through the thoughtful use of technology. This book can help anyone who picks it up do the same. It certainly has me.

A number of years ago, I had the good fortune of working in Katie's and Kristin's classrooms at Burley School, in the Chicago Public Schools. Together with Smokey Daniels, principal Barbara Kent, and the amazing Burley staff, we worked to implement and sustain a school-wide, thoughtful, collaborative inquiry approach. Subsequent instructional videos featured Katie, Kristin, and their colleagues demonstrating extraordinary inquiry-based teaching. But technology was sparse. Katie, a born techie, had laptops in her room but little else. Kristin would peek in, curious about how tech platforms might enhance the learning in her first-grade classroom, but not entirely convinced. Together with their future-thinking tech whiz, Carolyn Skibba, they wrote and won an iPad grant and expanded on that over the next few years until their classrooms were "one-to-one," an iPad for every child.

But Katie and Kristin understood tech specialist Alan November's caution that one-to-one is a misnomer, that when we add devices it's one-to-world! Their kids

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were soon backchanneling with scientists in Antarctica, soliciting ideas from kids in Bremen, Germany on the best classroom pets, and getting global perspectives on climate change. Their contagious energy and passion lit up their one-to-world classrooms and ignited their kids' engagement and learning.

Just as Katie and Kristin fanned the flame of their kids' learning, they lit mine up too. And this book will light up yours. It's a perfect mix of theory and practice. Katie and Kristin know their stuff, and they fill us in on the research-based rationale for merging solid pedagogy with technology. But they also know that teachers need practical ideas for doing this work. At the end of chapters, they offer three things you can try tomorrow. How great is that! They share popular hashtags, apps, and websites for educators. They open up their mini-lesson structure and let you in on what a typical week can look like. In the independence chapter, they discuss the increasingly important idea of digital citizenship, the power of audience, and how to manage devices responsibly.

Most important, throughout the book they honor Don Graves' notion that teachers are the chief learners in the classroom. They recognize that the best teachers learn along with and also from their kids in all things but especially relative to technology. This kind of learning reveals a powerful way for kids to see that adults never stop trying new things, perhaps messing up, and ultimately learning from their attempts and from one another. Katie and Kristin also stress the power of collaboration among colleagues as they march forth on their pedagogical/technological expedition.

A lasting feature of this book is the ongoing discussion of what technology should and should not be. Katie and Kristin remind us that tech is not a silver bullet and does not supplant our traditional tools. They continue to put sticky notes and clipboards on their supply list. They don't abandon books or paper and pencils. They encourage a balance of digital text and print text, reminding us not to ignore print simply because tech is ubiquitous. Their kids read, write, and interact around conventional print, as well as digitally. *Amplify* builds a much needed bridge between powerful, research-based pedagogy and thoughtful technology use. Ultimately, this book urges us to open up a world of possibilities by giving our kids the widest possible range of tools, texts, and opportunities for learning and wondering. Enjoy the ride. It's thrilling!

—Steph Harvey

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@Burley3rdFloor You make me a better teacher and person. Thank you for your support, lunch every day, and spirited debates. #lovethetribe #sisters #staystrong

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@Minime Watching you learn about life every day reminds me why I do this work and keeps me grounded. Please stop taking selfies with my phone. #evilgeniustoddler

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@SaraKAhmed You know. No words needed. See you on the #commoncourse #lifeinsidethecircle #HTR

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#BurNTA, #nerdybookclub, #5thchat, #1stchat community You've shaped ideas, given feedback that matters, and provided loads of laughter. Go forth and set the world on fire! #BurNTA4eva #ourkidsteach

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Introduction

We invite you.

We invite you to join us on a journey to explore technology as a creative tool in your classroom. A tool that can amplify the learning and the work your students do. A tool that can be exciting and meaningful, connect us across the globe, and engage learners in innovative opportunities to learn, explore, and grow.

Technology-rich classrooms should bustle with the same amount of noise and collaborative energy we see when we look at elementary and middle school learners hard at work. Students move seamlessly between digital and nondigital formats as they read, write, talk, explore, and more. The scope of how and why students use technology is determined by teachers and students, working together to construct a learning environment that works best for everyone in the classroom. The goals: innovation, creativity, connection.

We invite you to join our tribe. A growing tribe of teachers who want more for their students than apps (applications) and programs and who dream bigger about what's possible with technology in the classroom. A group of educators who will work to ultimately define the role that technology plays in our students' lives, both in and out of the classroom. A group of teachers who believe that good teaching and technology are not mutually exclusive. If you believe that, then you're already a part of our tribe.

We grew up when "gaming" consisted of traveling the Oregon Trail and dying of dysentery shortly after trading your oxen for new wagon wheels. How times have changed, and drastically so. While we hear talk of "digital natives" and "digital immigrants," we recognize that tech tools have evolved throughout history, and today we find ourselves in another cycle of change. As was the case when society first was introduced to the ice box or the toaster, labels

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that define people as those who get it and those who don't fail to be helpful. Instead, we work to shift our mindset to reimagine what's possible. And that's exactly what makes this such an exciting time in education. We find ourselves between two worlds, one steeped in pedagogy and the other in technology, often wondering why the two so frequently pass each other by. We seek a bridge between these two worlds and are committed to bringing them together.

Digital learning is at a crossroads, and it's time for teachers and students to share our voices in how, why, and when our kids should use technology as a learning tool. We invite you to join us on a journey of discovery, exploration, and empowerment.

WHY WE DO THIS WORK

In a recent article in the *Washington Post* Kentaro Toyama writes about technology's Law of Amplification. He proposes that technology simply amplifies human forces and "in education, technologies amplify whatever pedagogical capacity is already there" (2015). This Law of Amplification is something that we have seen time and time again in our work and solidifies our belief that in order to use digital tools in a meaningful and innovative way we must first take into account strong pedagogy.

As digital tools became more and more present in our classrooms, we wanted to shy away from many of the practices that didn't make sense. Just because we *can* do something innovative or new doesn't always mean we should. We advocate for marrying new tools with what we already know is effective with students. We choose to ground our work with students in pedagogical research—taking what works in reading, writing, and math classrooms and enhancing that with tools at our disposal—instead of relying on specific software or programs, sales pitches or corporate-funded initiatives. It can be overwhelming to sift through educational technology tools and research. Whether navigating the eighty thousand apps curated for education or the start-up companies trying to win contracts for the "let us teach your kids" instructional program du jour, we feel there are far too many corporate voices and there is not enough educator and student input.

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What we know about pedagogy guides us in teaching students to be self-directed learners. Show what you know. Represent your understanding. Create something. Teach others. We look beyond standards to gain a global perspective of how and why technology can and should shape the learning landscape that our students experience now and in the future. We challenge the notion that technology should be used for "sit and get" learning—a model still pervasive globally—instead of positioning students as critical thinkers and creators (Shear, Gallagher, and Patel 2011).

In a review of current research, Edutopia's Vanessa Vega (2013) identified three factors that signaled effective use of technology in the classroom. First, students were active learners and had access to feedback about their performance. Second, students actively analyzed and created media. Third, teachers leveraged tools to connect learning experiences in the classroom with the outside world. Teachers who utilized "innovative" teaching strategies better prepared students to develop skills needed for future work. These innovative teachers effectively blended face-to-face instruction with technology tools in a way that honors instructional practices proven to be effective. Essentially, layering technology with existing classroom instruction enhances what we do.

Over the years we've found the work of Dr. Ruben Puentedura to be instrumental in pushing our thinking on how technology can enhance learning in the elementary classroom. Most initial explorations into classroom technology use fall into the first level of his SAMR (substitution, augmentation, modification, redefinition) model. We first begin by replacing paper-and-pencil tasks with a technology tool (substitution). For example, students might type a list of books they have read instead of handwriting it, with the word processor replacing paper and pencil. As their knowledge of technology grows, teachers are able to augment instruction, which means that in addition to the technology serving as a substitution there is also some level of improvement in function. Connecting students' devices to the Internet gives them the ability to easily share their lists of books with teachers, parents, and each other via email, augmenting the original purpose of record keeping. Or perhaps students could use a more collaborative platform such as Google Drive so that teachers could monitor and support their work more closely. The next level in the model is modification.

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At this level, technology becomes transformative and allows us to redesign the task. Now instead of typing the list of books they have read, students might use a digital Web tool—Goodreads, Shelfari, or Padlet, for example—to make their lists public and interactive. Lists are created for students by students, which can build community and excitement around reading lives. Lastly comes redefinition, where teachers can create entirely new tasks we never thought possible. Taking those digital tools a step further, students might not only keep a list of books they've read in a visual format but also collect links, personally recorded audio responses, and self-created digital media such as book trailers to share with their community.

For a more detailed explanation of the SAMR model, we encourage you to view Puentedura's podcasts (http://bit.ly/1JMHgeH) or visit his website at http://bit.ly/1MLKLll.

Puentedura and Vega's review of research remind us that when we bring technology into our classrooms, we must place emphasis on what our students will do with it. How will they create? How will they construct meaning? How will they connect the learning they do in the classroom with that of the real world? While many educators have focused on what people are calling personalized learning systems, we believe that true personalization comes when students have choice and input into how, why, and when they use technology.

GUIDING PRINCIPLES IN THIS BOOK

Based on current research and our years of experience with using technology in our own classrooms as well as working with teachers around the globe, we've established some guiding principles that drive this book.

An Emphasis on Student Ownership and Creativity

We want students to be the ones doing the work: creating, communicating, and learning. We place the highest value on technology use that encourages this practice. Although there are times when teachers are creating for students, these should not overshadow opportunities for students to create. Technology cannot stay locked away in a teacher's desk or computer lab; it must be accessible and used by every child in the room.

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Technology Use That Is Heavily Tied to Literacy

Because technology tools can be powerful literacy tools that students use to write, talk, draw, capture, record, and interact, you will notice many instances of technology and literacy tightly woven together in this book. Technology tools have become part of our daily routines in reading and writing workshop and content literacy lessons. These areas prove to be some of the most innovative and exciting ones to enhance your instruction with tech tools.

Teacher Empowerment

We believe teachers can make the best decisions for their students. We want you to feel excited and passionate about using technology in your class, and if you're not quite there yet, we want you to gain a vision for where you'd like to go. We've tried to make our thinking visible and easy to follow so that what we're proposing feels not only manageable but inspiring.

Use of Gradual Release and Play Models

Do we carefully guide students step-by-step, modeling each skill as we slowly coach them toward independence, or do we let them play, explore, and discover? The answer is both. In this text we demonstrate that there are proper times to model essential skills for students in order to get them started, to show them how and why we do things, and to elevate the level of their work. However, we also believe that students can take the reins and discover so many things when it comes to technology in the classroom—why to use it, when to use it, how to use it in new and different ways. Then we turn the modeling and coaching over to them as they teach each other—and us!

WHAT YOU WILL FIND IN THIS BOOK

Getting started with meaningful technology involves a lot of working parts, so we organized this book into chapters that will support different areas of development. We wanted to offer both a big picture of teaching and learning with technology as well as some concrete lessons and examples that you can use tomorrow.

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Chapter 1: Getting Started: Developing a Mindset for Using Technology

The first chapter of this book is designed to help the reader understand the mindset with which we need to approach technology use in the classroom. By keeping technology grounded in best practice and strong pedagogy, we can ensure that students' experiences will be meaningful and impact their learning outcomes.

Chapter 2: Journey of Discovery

In Chapter 2 we detail the many ways that you can reach out and connect with other educators to find effective tools, inspiring models, and new strategies. We also discuss the importance of embracing play and discovery in your own life as a means for professional growth and modeling for your students.

Chapter 3: Connecting Technology to Existing Classroom Practice

Chapter 3 gets into the details of how, why, and when we can and should use technology to enhance our classroom practices. Technology use doesn't mean that we throw out those strategies that we've found to be successful with students; it offers a way to enhance and add layers to our instruction.

Chapter 4: Foundational Lessons for Independence

One of the key elements of successful technology use is setting students up to be independent technology users. In this chapter you will find eleven lessons that we teach students each year to help them become responsible and independent technology users and digital citizens.

Chapter 5: Reflection and Assessment

Chapter 5 embraces the need for teachers and students to set aside time for reflection on and assessment of how technology is impacting the learning landscape of the classroom. This reflection is an essential component of understanding how we might better use the tools at our disposal to maximize our students' learning.

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Chapter 6: Power Up for Connected Learning

In the last chapter of this book we share a wealth of ideas for using technology with your students. Organized into three sections—"Build Reading Communities," "Engage in Digital Discussions," and "Foster Inquiry Across the Curriculum"—this chapter is full of ways to get started right now!

Three Things to Try Tomorrow

We believe that it's important for you to have small steps that you can take, ideas that seem manageable. At the end of most chapters you will find a section that includes three things to try tomorrow. These are intended to be simple, straightforward, and easy to use with students right away. Just try!

Technology can be innovative and effective. It can and should be influenced by best practice, and your professional judgment is stronger than any sales pitch. We must also have the courage to try something new, to experiment, to move out of our comfort zone, to listen to our students, and to embrace a mindset that honors teachers' need to be creative, inspired, and joyful. Engage yourself in learning something new, find inspiration all around you, and empower your students to own the learning!

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1
CHAPTER

Getting Started

Developing a Mindset for Technology

In a semiquiet corner of Kristin's first-grade classroom, Wyatt sits down to reflect on his learning in the classroom recording booth. This homemade recording studio consisting of a laptop computer with a built-in webcam, a shower curtain from Target, an old desk, and some discarded pieces of packing foam serves as a place for students to record what they know, their reflections on their learning, and their passions and interests (see Figure 1.1).

Wyatt makes a silly face, takes a deep breath, and begins to record. "Hi! My name is Wyatt and I'm going to talk about Native Americans. I'll tell you about

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Figure 1.1 Classroom Recording Booth

two tribes, the Pueblo and the Sioux. The Pueblo lived in adobes. I didn't know all that stuff when I was little, like when I was five or four. Now I know there's even more tribes than that!" He continues to talk about what he's learned during the unit and then shares a few new questions he has. "Well, that's all I have to say about this. Bye, 106!"

In another classroom, Katie sits, her fifth-grade students gathered close on the carpet, with her latest independent reading book in one hand and her iPad in the other. Today she is modeling how to do a vlog, or video blog, about a book.

"OK, everyone, I want you to watch carefully and listen as I record my vlog. I've practiced a few times to think through what I want to say, but I haven't written anything down. That's because I want this vlog to sound natural, like I'm talking right to my viewers. Jot some notes about what you see me doing in your notebook." She begins to record. "This is a sound test for my vlog." She stops the recording and plays it back. The students begin to take notes. "Right there, what did you notice me doing before I even got started? Turn and talk." Students turn to their partners and chat about what they noticed.

"I see her holding her iPad out in front of her so you can see her face," Alex says to Eli. "And she listened back to her recording."

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"Yeah, I think that's a good idea," Eli replies, "because sometimes you do all your recording and then at the end you can't even hear it. That happened to me in math class last week and I had to do my recording again."

"OK, I hear some great things. Keep watching and jotting down your thoughts." Katie continues recording her vlog, which includes a quick review of her book and some of her thoughts about it. Students write down their thinking as she continues to model the process for them. She rerecords the review based on their comments.

"OK, readers, I think you're ready to go off and give it a try. Your book vlogs need to be posted on your blogs by the end of class today. Zack and Justin made a great video tutorial on the steps to take and posted it to their blog for you to use as a reference. Remember, you can always refer back to our anchor chart on making a book vlog [see Figure 1.2] if you have any questions. Have fun!"

These snapshots illustrate just some of the ways we enhance our classrooms with technology. They also reflect some of our core beliefs—our mindset—about teaching and learning: incorporate technology where it makes sense.

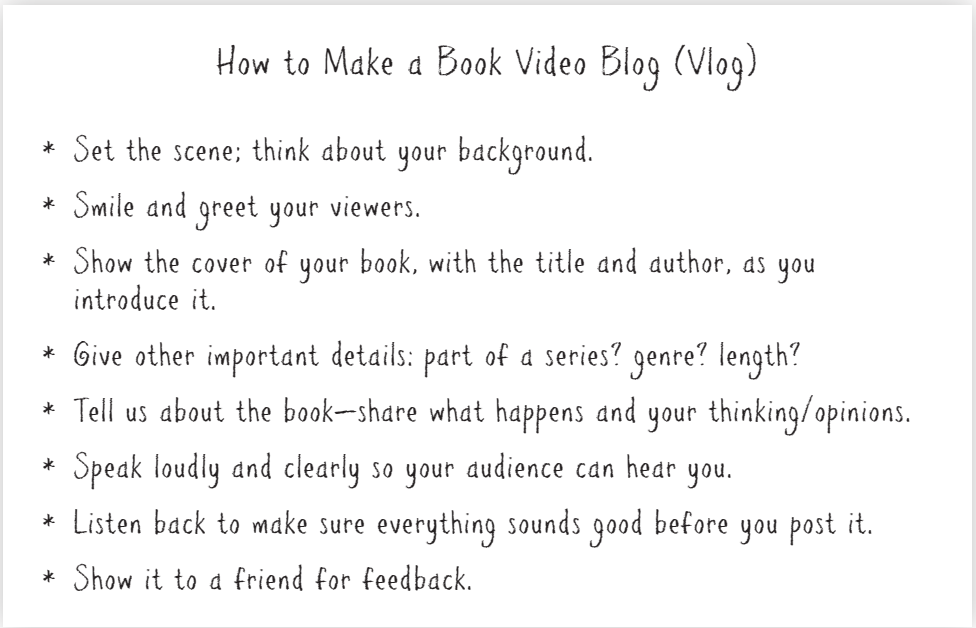

Figure 1.2 Book Vlog Anchor Chart

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These video recordings transform how we assess our developing readers and writers. When our students record a video reflection, we get a clear picture of what they've learned, questions they have, and how they're building knowledge around a topic. Far exceeding the information a standardized test score might convey, a video of a student talking about his or her learning is the feedback we need to plan tomorrow's instruction. Kids like to talk; when we open the door for them to do so, we get a great deal of insight into them as learners, thinkers, communicators, and people. Technological tools provide additional information when we are attempting to discern what students know and are able to do. Audio and video recordings help us analyze where understanding breaks down. By using this information to drive our instruction, we can meet our students' needs more than ever before.

CORE PRINCIPLES THAT DRIVE INSTRUCTION

No matter what devices or resources we have, we let our core beliefs and mindset guide how we use tools in the classroom. We focus on the overall goal of teaching kids how to think and then layer in purposeful tools along the way.

The term tools does not always refer to technology tools. Tools are anything that we use in our instruction to support students, ranging from pencils, sticky notes, colored markers, and clipboards to projectors, tablets, and computers.

We—and our students—need to understand how the tools work and why we're using them. In order to do that, we need to remind ourselves what effective teaching looks like and fall back on the work of teacher-researchers and authors who have guided our teaching. In the early days, it was rare to see either one of us without a copy of Fountas and Pinnell's *Guiding Readers and Writers* (2000). Over the years, we've expanded our list of professional texts and now we stand on the shoulders of those who've come before us. The work of Stephanie Harvey, Anne Goudvis, Harvey "Smokey" Daniels, Ellin Keene, Nancy Atwell, Lucy Calkins, Ralph Fletcher, Matt Glover, Penny Kittle, Teri Lesesne, Debbie Miller, and Pat Cunningham has shaped how we teach reading and writing workshop. More recently we've been inspired and influenced by Donalyn Miller, Chris Lehman and Kate Roberts, Kristi Mraz, Stephanie Parsons, Meenoo Rami, Franki Sibberson,

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and Sara Ahmed. This next generation of authors and thinkers continues to innovate as the conditions for learning evolve.

We keep these leaders and established best practices, which are research based, teacher tested, and kid approved, at the core of all we do. When introducing technological tools, we apply the same practices and strategies we use in reading and writing workshop. We model what we want students to do with the technology and guide them to try it out with us. We then provide ample time for students to practice on their own, experiment, and share as a class, thus building new knowledge collaboratively.

Use a Workshop Model for Instruction

The workshop is a predictable instructional model that provides students time in which to interact. It supports an "interdependent, interpersonal community in which children with particular knowledge and skills teach others" (Calkins, Tolan, and Ehrenworth 2010, viii). Technology in the classroom fits easily into this hands-on approach to learning: our students should be the ones using it. Because the format of minilessons, guided practice, independent practice, and debriefing is familiar to students, it is easy for them to jump in and focus on the task at hand. Oftentimes we combine this structure with unstructured experimentation by allowing students some time to play with a new tool before the lesson begins. Figure 1.3 outlines a possible lesson introducing a new piece of technology to the class.

Hold Small-Group and Individual Conferences

Students acquiring technological skills excel or struggle in various way, much as they do with any subject. Conferring with them not only about content but also about digital tools supports their budding skills. We start with compliment conferences to establish an atmosphere where we value student strengths, encourage risk taking, and help students understand their own areas of expertise (Serravallo and Goldberg 2007). We name specific, observable things students are doing well that they can repeat in the future. In later conferences we push students' thinking about their work, ask them to push themselves, and always circle back to the compliments to help them see where they are finding success.

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Play	5 minutes	Give students a few minutes to log in or open the tool and explore. Guide them by asking, "What do you notice? What do you think you can do with it? What other tools does it remind you of?"
Minilesson	10–15 minutes	Explicitly model the skills needed to get started or that are essential. "Today we are going to use this tool to _____. There are many great things to learn about it, but to get you started I want to be sure you understand how to _____."
Guided and Independent Practice	30–45 minutes	Coach students in starting to use the tool, employing support methods such as turn-and-talks and conferences. When students are ready, send them off to work independently. As they work, help them and encourage them to help one another. The goal is always to promote independence, not dependence: • "Let me show you; then you can be our classroom specialist." • "I'm not sure; let's figure it out together." • "Check with [classmate's name]; she knows how to do that well."
Debriefing	5–10 minutes	Gather students so they can share what they have learned. Capture their new knowledge on a chart they can refer to during future work sessions. • "What tips or tricks did you learn today?" • "What were you successful at and what was challenging?" • "What innovations did you come up with today?"

Figure 1.3 Applying the Workshop Model to Learning a New Tool

We confer with students one-on-one or in small groups (Lucy Calkins calls the latter "table conferences"). Oftentimes a personalized teaching point for one will benefit the group, and we naturally invite students seated nearby into the conference. We typically try to ask questions of students while conferring: we believe an effective conference guides kids to do most of the talking and thinking. These questions also help us decide which points to focus on during coaching. Figure 1.4 lists some examples of teacher language during conferences.

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Complimenting	Questioning	Coaching
• I noticed you are organizing some information in your notebook before you begin exploring your tech tool; that's a very thoughtful strategy. • The titles and subtitles you are using in your digital project help me understand what you are doing. • The images you are creating are so realistic. You include all the little details about the animals mentioned in the story. When you share this, I think everyone will know exactly what you have drawn.	• Can you tell me more about why you chose to do this? • What have you discovered so far? • Is there anything that you are finding challenging right now? • How are you using the tool to expand on what you normally would have done? • What are you trying to accomplish with this project? • What are you planning to do next?	• I see what you are trying to do here; let me show you a quicker way. • Have you thought about trying _____? • Maybe we could go back to our mentor example and look for ideas. • I'd like you to walk around the room and get a feel for how other people are approaching their projects. • What if we tried it like this? • Let's go back and look at our anchor chart for the lesson. Maybe that will help. • Say more about that. • Talk that through.

Figure 1.4 Examples of Language We Use When Conferring with Students About Technology

Engage Kids in Cross-Curricular Content

Visitors to Kristin's first-grade classroom often ask, "What subject is this?" Her favorite answer is "Thinking"; she's pleased that it's not obvious whether it's reading, writing, or science. When you see her students spread out on the floor, creating large murals, books scattered about them, paint everywhere, sentence strips cut into label-sized pieces, working together, it's clear that they are doing all three of these subjects and more. We advocate for a curriculum that teaches kids how to think and problem solve effectively. If we can teach students to do that, they can tackle any subject or curriculum we put in front of them.

Connecting various content areas is a powerful way to learn. Students deeply engage as they read, write, talk, view, watch, explore, create, and interact around a topic they have ideally had a voice in choosing (Zemelman, Daniels, and Hyde 2012). Cross-curricular learning goes beyond a simple theme; students meaningfully explore a topic from various angles, then synthesize

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that information into a deeper understanding. Whether these experiences are connected to a mandated unit or a more authentic inquiry, technology provides valuable enhancements to the work we ask students to do (see Figure 1.5). We encourage you to work with colleagues to make thoughtful choices about when to use strategies that include technology and when to use strategies that don't.

Scaffold Learning

The gradual release of responsibility is present often in our classrooms; it becomes a predictable scaffold for how the learning sequence will unfold. Students adopt it as a habit for learning and as a result don't feel anxious about when they will get a turn: they focus on the instructional portion of the lesson, knowing that in a few minutes they'll have the chance to talk about it and try it out.

Use Anchor Charts to Support Learners

As we introduce technology tools, we do what we can to make students' interactions with them positive. We want kids to gain skills with an application or a device, enjoy the experience, and be eager to try again and learn more in the future. One way we support our students is by creating anchor charts that use pictures, diagrams, and symbols to guide them through a process. As Marjorie

Without technology, students . . .	With technology, students can . . .
• listen to read-alouds about the topic. • gather a bin of books for independent study. • read articles about the topic. • view and analyze images. • discuss the topic with their classmates face-to-face. • discuss materials in written conversation. • take a field trip, if feasible. • explore models or artifacts.	• listen to audiobooks about the topic. • gather online resources to add to their study. • read material on websites, including primary source documents. • view and analyze high-quality color images and media clips. • discuss the topic with their classmates and students in other classes and schools via a digital platform. • Skype, email, or tweet with an expert. • take a virtual field trip.

Figure 1.5 Strategies That Don't Use Technology Versus Those That Do

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Martinelli and Kristine Mraz note in *Smarter Charts* (2012), a picture really *is* worth a thousand words and is faster to read! These multilayered charts guide students through successful interactions with technology, providing the support that helps them do just a little bit more than they would be able to do on their own and that ultimately leads to independence. The charts we and our students create together might list kid-safe search engines, describe what a good blog comment looks and sounds like, display common icons used on digital platforms, or explain online collaboration tools. They hang in our classrooms and are uploaded to our websites, accessible to students whenever and wherever they need them.

Experiment with Digital Instruction and Visual Aids

Technology enables us to capture and archive our teaching in ways never before possible. We use tech tools to archive charts, organizers, and other handouts in a way that students and parents can access with ease. We use videos and screen captures to take snapshots of our teaching for students who may need a review at their fingertips. These reviews can be process oriented, such as a tutorial on how to share a project, or content based, as in a personalized minilesson or modeling video.

Students can take charge and create their own digital supports. For example, we encourage students to curate their own learning by archiving digital images with annotations of the concepts they want to remember. (See Chapter 5 for more information.) These personalized digital study guides encourage them to take charge of their own learning.

Adapt the Content

Technology offers many options for assisting students. Websites have texts that can be manipulated to varied levels of difficulty. Students can access audiobooks or teacher-created recordings of texts. Teachers have the ability to create resources that are specific to their students and classrooms (see Figure 1.6). Technology tools have such a wide range of uses when it comes to meeting the needs of every learner in the classroom. Through repetition, adaptation, curation, and connections, every student can get just the right amount of support he or she needs to find success.

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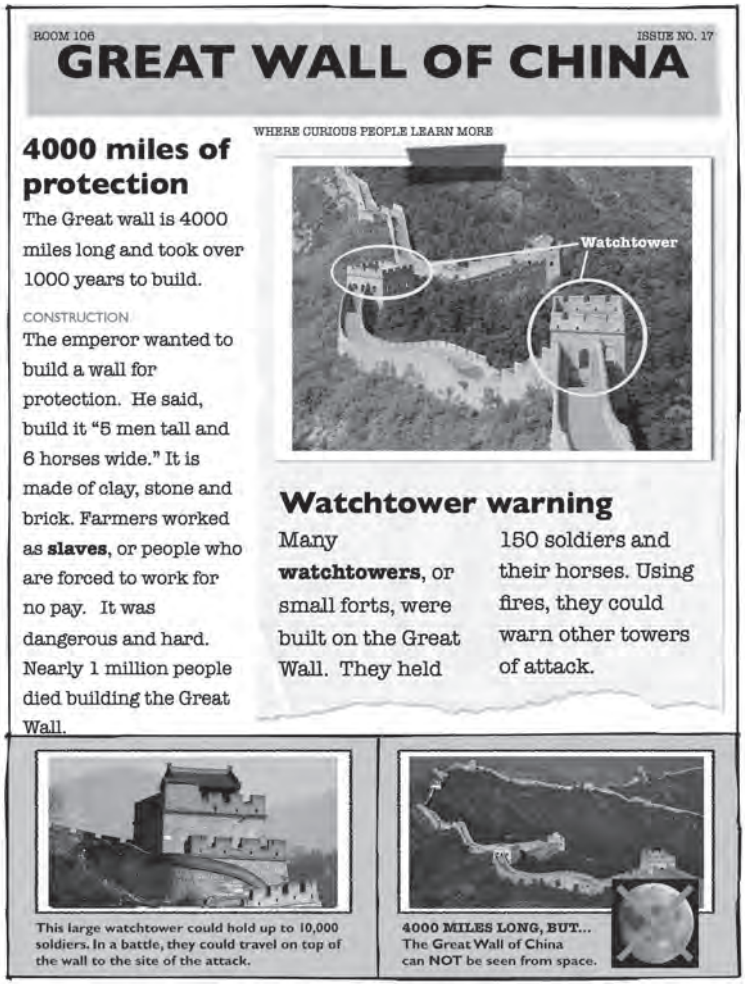

Figure 1.6 Teacher-Created Article

Kristin summarizes information from a more advanced text and puts it into student-friendly language. A layout program enables her to use nonfiction features to make it both informative and engaging.

Encourage Collaboration and Conversation

To prepare our students for today and tomorrow's world, we must engage them in collaborative learning. In the modern workplace, teams of people come together to solve problems. Tapping into the collective knowledge and intelligence of the group energizes involvement and expands ideas (Nichols 2006). We value this collaboration and acknowledge the powerful support students provide one another in group settings, whether in a face-to-face turn-and-talk or via mobile devices. Chatting digitally makes students' thinking visual, helps them form

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responses, and lets them build on one another's ideas. It also lets us be present in many discussions at once (Harvey et al. 2013).

Drive Instruction with Assessment

Good teachers make instructional decisions based on what we know about the students sitting in front of us. Each child enters our classroom with different passions, personality, and abilities. We get to know students as individuals so we can nudge them along the continuum of learning. We use feedback from our students to plan future instruction. From day one we immerse ourselves in the recursive loop of assessment and instruction.

Once we assess students we use this information to plan tomorrow's instruction. We match our instruction to student needs by planning minilessons, conferring with small groups and individuals, and providing rich resources. Then we assess again and gather more data to make sure our lessons and feedback are promoting learning. Because this assessment cycle is ubiquitous, it's hard to determine whether we are assessing to evaluate our instruction or instructing based on our assessments, and that's exactly what we want. Every response we get from students—their sticky notes, thinksheets (2-column charts or graphic organizers, for example), video snapshots, conversations, blog posts—contains data we value and use to plan future learning.

START WITH WHAT MAKES SENSE

Several years ago, Katie and her husband traveled to Italy. They spent a weekend eating their way through Rome, and on the last evening set off to find the best pizza place in the city. Guidebook in hand, they ventured behind Vatican City into a nontouristy neighborhood. Arriving at a hole-in-the-wall restaurant, their eyes bulged. Giant square pans lined the counter, holding pizza after pizza, golden crusts bubbling. Using what little Italian they knew, they tried to identify the toppings on each pie, with little success. Finally, Katie pointed at random—and they gorged themselves on piping hot, deliciously fresh slices of heaven. As they were finishing the last scrumptious bites, the cook brought out five new pans with entirely different pizzas! They debated whether to sample another round, but decided not to as they had to head back to the piazza—and anyway, they were too full for even one more bite.

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We could gorge ourselves on technology tools as well if we chose to. So many choices—platforms, devices, apps—leave us wondering where to begin and feeling that as soon as we master one thing, there will be another new thing to learn. The important thing is to get started. Once you build momentum, see your students' excited reactions, and begin to find success, you'll be encouraged to try more and more tools in your classroom!

When we consider where to start, these questions guide our decisions:

- What tools do we have access to and how do they fit into our existing learning environment?
- Who are our students and what do they need? How can technology help them address those needs?
- How do we get started?

What Tools Do We Have Access To and How Do They Fit into Our Existing Learning Environment?

Equipment constraints are often our first concern: how can we use technology when we don't have any? The good news is that we can accomplish a lot with only a few devices—or sometimes just one. Once we have a vision for how technology might fit into our classroom, it becomes much easier to articulate what we need and why to stakeholders.

Think about the typical elementary learning environment. Students are seated in small groups so they can better collaborate on tasks and interact with one another. There is a large classroom library with comfortable places for students to snuggle up and read. There is a whole-class meeting area with a large carpet, a comfortable couch or chair, and an easel or a board. Technology should fit into this environment seamlessly, not detract from our comfortable and collaborative spaces. Here are some options:

- Rather than have a computer table, position computers around the room. Place one on a low table or bookshelf with a pillow nearby to sit on.
- Purchase lap desks students can use to support tablets while lying on the floor or sitting in small groups. Establish clear expectations for device safety.

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- Place your projection screen so students can view it from their tables and the whole-class meeting area.
- If you have the option, choose devices that encourage student use and collaboration and that provide access to as many students as possible. (For example, choose several tablets instead of one interactive whiteboard.)

We're often asked, "What is the most transformative piece of technology in your classroom?" The items that initially transformed our classrooms were a laptop computer and a projector. A computer initiates the idea of mobile learning and opens the classroom to the world. Once we are able to project images from a computer, sharing websites and videos with the entire class becomes a regular part of the day. A document camera and a set of speakers complete the must-have ensemble. With a document camera we can project student work, zoom in on sections of text from books we want to share, and display high-quality color images of just about anything we need the class to see. After that, you can add more computers, tablets, iPads, and other devices a few at a time. The technology is as transformational as we make it. It's not the tool that counts; it's what we do with it.

Who Are Our Students and What Do They Need?

Each day we observe our students sitting on the rug and think about each one. Who sticks out? *If only Max would read. If only Brandy would participate more. If only I could get Tina excited.* If only . . . Technology by itself won't fix these issues, but it can open doors for students and give them an entry point into learning. The opening vignettes of this chapter demonstrate how we used video to meet a need in our classrooms. We wanted to know what students could do when they weren't limited by their ability to express themselves in writing. For Kristin's first graders, who were all developing writers, this opportunity was transformative. Kristin was able to determine what her students knew and were able to do without having to confer with each one individually. Katie wanted to help students capture their blogging voice and understand the personal and personable way blogs connect writers to their audience. Many students were writing very formal book reviews, and the vlog helped them find a more natural voice and eventually apply it to their written posts.

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How Do We Get Started?

The key to getting started is to jump in with something small that you can use right away. You want to be able to take deliberate, manageable steps, like a runner training for a marathon (or, for some of us, a 5K!). A tool you can use tomorrow involves no student logins or accounts, requires minimal equipment, and connects to the day's learning goals. It should also make sense within the scope of best-practice teaching and extend or enhance students' learning. Figure 1.7 summarizes what technology should (and shouldn't) do for your classroom.

Technology should . . .	Technology shouldn't . . .
• provide opportunities for differentiated assessment. • give students access to authentic audiences. • increase the collaborative nature of lessons and group work. • diversify the resources to which students have access. • enable long-term archiving for reflection and assessment.	• be a silver bullet. • replace the teacher. • supplant traditional tools like clipboards and markers; it's just another option. • be used only for formal assessments. • be used by students in isolation.

Figure 1.7 What Technology Should and Shouldn't Do

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Three Things to Try Tomorrow

Online Reading

Every morning, Katie's fifth graders pour into her classroom excitedly, talking about their previous evening as they unpack bags and get ready for their day. As they settle in, they carefully retrieve their iPads from the storage cart and find reading nooks around the room. On some mornings there's a URL written on the board for a special website or article that Katie wants them to read; on other mornings students choose from sources like *National Geographic Kids* (kids.nationalgeographic.com), *Sports Illustrated Kids* (sikids.com), or *Smithsonian TweenTribune* (tweentribune.com). Katie also provides a wide variety of nonfiction print: a large informational text section in the classroom library, bins of books relating to science or social studies units, a class subscription to a current events magazine, and various single copies of student-friendly magazines. Reading nonfiction first thing in the morning is a way for students to settle into their day and increases both the daily minutes they spend reading and the amount of informational reading they do. Before moving into the day's minilesson, students respond to their nonfiction reading in a variety of ways. Sometimes it's a quick check-in on a digital form or a brief online conversation on the classroom social network. Other times they chat in person with a partner or in a small group.

Note that online reading does not replace the time that students read self-selected titles. We make time in our schedules by removing nonessential busywork in order to offer additional reading minutes to add these digital experiences.

Daily reading is an essential component of the elementary classroom. A healthy balance of student- and teacher-selected texts, comprehension instruction, and many opportunities to practice reading creates strong readers. Research is clear that minutes spent reading equal student achievement (Nagy, Herman, and Anderson 1985). By intentionally providing time for digital reading, we invite students to learn about current events and topics of interest. A balanced approach works best, based on interest, curricular inquiry, and classroom learning experiences.

Students benefit from explicit instruction in applying navigation and comprehension strategies when reading in a digital format. Although it's tempting

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to label students as digital natives and assume they understand these concepts, it's clear that kids need support, and it's up to us to explicitly teach and model elements of digital reading. We teach skills like scrolling and navigating, the functions of different Web elements, minimizing distractions, and finding just-right websites (Harvey et al. 2013).

Starting Points

- Dedicate time to Web reading. Whether a few times a week or every day, give students time to practice their online reading skills. Alternate between having students choose sites or articles to read and assigning shared texts.
- Examine your current units of study. Where might you incorporate some Internet resources or reading opportunities? Find at least one article or website that will enrich students' understanding and diversify their resources.
- Build on students' passions and curiosity. Use online reading to follow up on students' questions and wonderings—those connected to a unit of study or a book they've read or simply a question a student has a burning desire to answer.

Recording Booth

A class recording booth is one of the easiest ways to capture student thinking. You can create a recording booth with practically any device—laptops, smartphones, tablets, and Chromebooks all have built-in cameras that will allow you to capture video. Once you have a device, find a quiet corner in your classroom and start recording! It's that simple. (See Harvey et al. [2013].)

We find that most devices with built-in cameras have some form of recording program available by default. A few possibilities include Camera, Apple's iMovie, or WeVideo. Choose something simple to use and focus on how the tool can capture a different type of evidence. Often what kids say gives us completely different information than a written response. We depend on the recording booth so much that we've added a microphone to eliminate

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interference from background noise: we need to capture their thinking in a high-quality format.

There are many options for using a recording booth. We have students summarize and synthesize their learning at the end of a curricular inquiry. Asking kids to talk about what they know provides the opportunity for a strengths model assessment. We also use the recording booth for video book reviews, which we make accessible to students as a means for sharing reading recommendations.

Video book reviews create a book buzz (Miller 2009) as students excitedly talk about their favorite books and make plans for future reading. By allowing kids to record video book reviews and making them accessible on a website or blog ("Why don't you go watch the latest book videos and get some ideas about what to read next?"), we build a community in which kids know they have an audience for their work.

We use video recording across all subjects! Kristin's students take their math manipulatives into the recording booth and explain and demonstrate how to solve a complex math problem. Watching a student's math process, from setup to solution, gives her different information than she gets from reviewing a student's written computations. With thirty-two students, it's difficult for Katie to meet with book clubs as frequently as she would like. When she isn't able to be present for the meeting, she sets up a camera to record the students' interactions. This window into the thinking and learning taking place helps her get up to speed and participate in the next group meeting. It also helps her assess the group members' collaboration skills—how they interact and build their thinking together.

Starting Points

- Start by modeling for students what the video should look like. This will help you maximize time spent recording and avoid many videos that make you motion sick from the camera lurching violently to and fro.
- Set up your device in a corner of the classroom so students have a quiet place to record their thinking. Add supports like a chart depicting how to start, record, and stop the camera. To ensure you capture ideas from

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all students, post a class roster in the booth; when one student finishes her recording, she crosses her name off the list and lets the next child on the list know it's his turn. To decorate your recording studio, add a colorful shower curtain, piece of fabric, or even a green screen. A solid background hides activity in the classroom so the student making the video is less distracted and viewers can focus on the speaker. If background noise is an issue, add an external microphone like a Snowball USB mic or use headphones with a built-in microphone.

Digital Bulletin Boards

We use a variety of simple-to-access, digital collaborative spaces to gather feedback from students, respond to student work, or provide information and site links. Like corkboards, chart paper, and sticky notes that make thinking visible, these digital collaborative spaces invite all students to view, respond, and interact. There are other good tools available, but we like Padlet because it has a number of options, is accessible from numerous devices, provides a personalized URL, is easy to share, and saves all bulletin boards in a single account. It's a wonderful tool for gathering feedback from students; we often use it to pull together final thoughts about a lesson or to share lingering questions. It's quick to set up and easy for students to access and thus the perfect tool for impromptu lessons and data collection.

When Kristin's class finished a read-aloud of *The Little Red Hen*, she created a Padlet wall that said, "Did the Little Red Hen do the right thing? Share your thinking." (See http://bit.ly/1TdZ46J.) The notes kids added led to a wonderful debate on what is fair. Katie has used it in a similar way to archive students' thinking, as a place for student book clubs to share their learning, to collect exit tickets after a lesson, and as a format for students to create their own websites.

Starting Points

- If you have only a few devices, set up your digital board and leave it displayed and ready. Have students visit during the workshop to share their thinking about a current read-aloud or how they applied the day's minilesson. This is a great way to engage them in reflection and works as a formative assessment piece for you.

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- Set up a number of walls by genre or category. Students can leave book reviews on the appropriate wall, as well as get suggestions for books to read. Padlet walls support images, videos, and links. You can also generate QR (Quick Response) codes (scannable barcodes that can direct a user to a specific website) that can be scanned by devices and which will take students directly to the site.

TAP INTO YOUR PASSION

No matter what, find your passion and bring it into the classroom. Kristin was passionate about connecting her young readers with authors. They loved their daily independent reading and yearned to talk with the authors of their favorite books, so she made that happen using Skype (a video chat application). She knew writing letters to the authors would be challenging for her first graders, so Skype was the perfect medium for them to see the face of a real live author, who later became a classroom celebrity. (See Chapter 6 for more information on connecting with authors digitally.)

Katie's passion is blogging. She began her teaching blog many years ago as a way to reflect on her practice and connect with other educators. She discovered that writing the blog entries made her more thoughtful about the steps she took in the classroom as she pushed herself to articulate the importance of choices she made. When other teachers started reading and commenting, she found the interaction with her peers exciting and invigorating. Might her students gain the same energy and inspiration by being part of a blogging community? Katie decided to give them the same opportunity to connect digitally on a simple blog about books. Students took turns posting book reviews each week. As she became a more experienced blogger and was able to bring more devices into her classroom, she helped her students create their own blogs on which they shared their reading, curricular inquiries, mathematical thinking, and writing. Today they participate in worldwide blogging communities and connect with student bloggers from Kuala Lumpur, Malaysia, to Reykjavik, Iceland.

Our technology skills evolve over time, but we have to begin with one small step. It doesn't matter where we are on that continuum, only that we've placed

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ourselves in the exciting world of digital learning. Once you've begun, commit to taking one step forward each quarter of the school year—by doing so you'll know how to use four tools by the end of the year. A year later, you'll have eight options for engaging students and capturing thinking. Chances are, you'll learn more than one new thing each quarter and quickly will have a wide-ranging set of resources and tools at your fingertips.

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CHAPTER 4

Foundational Lessons for Independence

Independence is a key skill that we encourage in all students. We want to foster an atmosphere where students use learning tools, including technology, autonomously. We set up systems and procedures for managing and using the tools, help students understand our expectations, and encourage them to be independent in their work. While these consistent structures take time, they are essential lessons in developing that independence that we seek for our students. In this chapter we describe eleven foundational lessons (see Figure 4.1) that set the

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Developing Digital Citizens

Where Do We See Technology in Our Life?	Teach students to reflect on how and why we use technology in school and life.
Rights and Responsibilities	Students brainstorm a list of their rights and responsibilities as technology users.
Troubleshooting 101	Equip students with skills to solve problems independently.
Students as Specialists	Encourage students to step into specialist and teacher roles in the classroom.
Safeguarding Our Intellectual Property	Introduce kids to the idea of intellectual property.
The Priority Hierarchy	Teach students to organize and prioritize their time.

Managing Devices in the Classroom

The Care and Feeding of Technology Tools	Establish expectations for how to handle and care for devices when in use.
Classroom Signals	Establish a set of common signals to manage technology use in the classroom.
Surfing the Net	Establish guidelines for using the Internet in the classroom.
Naming and Sharing Work	Establish an organizational system for students' technology work.
What Looks the Same?	Help students apply what they already know about tools to new tools.

Figure 4.1 Foundational Lessons for Independence

stage for rich teaching and learning over the course of the year. They apply to all grade levels and devices and are separated into two categories: developing a mindset for becoming a digital citizen and establishing basic care and management procedures. You can teach these lessons as a unit at the beginning of the year or as the need arises. Adapt and adopt these lessons; make them your own. Teach and reteach them until they are second nature.

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However and whenever you present these lessons, remember:

- *Link the tools to your classroom community values.* By doing so, you encourage students to use them confidently and reinforce the idea that community can be experienced digitally.
- *Emphasize tools that can be used for many purposes.* Kristin's first graders use drawing tools to track their thinking, respond to text, share mathematical processes, and more. Introducing these tools early on builds on a skill students are already familiar with, and Kristin can use them throughout the curriculum.
- *Create new anchor charts with students each year.* You may occasionally prepare sections ahead of time to prompt student thinking, but include students in the creation (and ultimately the ownership) of what goes up on the wall and why. For guidance on how to make anchor charts work for you, see *Smarter Charts*, by Marjorie Martinelli and Kristine Mraz (2012).

Where Do We See Technology in Our Life?

Technology impacts so much of our life today, both positively and negatively. Ask students to identify all the ways they see technology being used in the world and in their lives. Then show them the benefits of using technological tools in their schoolwork and point out potential distractions.

Why Teach This Lesson?

This early lesson opens a dialogue in which you and your students develop an understanding of how you want to use technology in your classroom. Establishing these expectations and norms together builds a healthy and respectful classroom community. It also acquaints you with students' technological background knowledge, experience, and access.

Lead-In

List all the ways you used technology to prepare for the school year and display it on chart paper, a document projector, or a digital device. Have students

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brainstorm ways they use or are impacted by technology and chart them together, as a starting point for discussing where they see technology having a role in the classroom.

Teach

"You came up with so many great ideas about where you see technology. What are you excited to do with technology this year? What have you been wanting to try out? Turn and talk with a partner for a minute and then we'll share our thinking as a class."

* * *

"I especially like Sadie's point that her mom uses her phone to buy coffee and that sometimes it doesn't work. That happens to me, too! Technology can be really helpful, but it can also slow things down if I don't know how to use something or if it's not working properly. What do you think about that as students? Are there times when we should maybe hold off on using technology in the classroom? How can we know if we should use technology or not?"

This lesson forces you to examine your own biases about technology. We've all had negative experiences, such as when our significant other or our children pulled out devices during dinner when we wanted to talk face-to-face. Students with a device in their hand will want to fidget with it as they might with a pencil, bit of paper, or notebook. Before assuming students aren't listening or are doing something they shouldn't, observe whether they really are listening and just keeping their hands busy. Set clear guidelines and teach students how to switch between listening and creating.

Remember and Reteach

Hang the chart that you created together somewhere you can refer to it in the coming days. It's the foundation for the remaining lessons and will help students envision a classroom in which technology is a tool for learning and creativity. You may need to reteach this lesson periodically. Students may choose to play on a device if given (or by making!) an opportunity. Keeping technology in its place is a lesson you'll need to revisit again and again.

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