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Introduction

No matter where you are in your journey to include technology as an instructional tool in your classroom, this book will help you identify next steps along the path to integration. Bear in mind that you are seeking your path.

Your classroom reflects the individual you are—the skills, experiences, beliefs, and knowledge that make you distinctive. Your teaching style, your approaches to curriculum, and your relationships with students reflect your individuality. All of these factors influence the technology you decide to use in instruction.

Only you know the right path for you and your students. You will select the most effective technologies to advance your students' academic growth. The path you choose will enhance your distinctiveness as an educator. What this book provides is access to ideas for digital tools and projects, so that you can choose the ones that fit your students' needs and your teaching style.

To illustrate how approaches to technology integration differ, this book includes the voices of teachers who share how they have used technology successfully. Many of these same teachers provide links to their websites or email addresses to encourage others to interact with them. We have experienced how exciting and powerful these tools can be for advancing student learning. I've written this how-to book so you can select the digital tools that best fit your and your students' needs.

As you read, keep track of ideas that capture your imagination. Choose the path that fits your own style and comfort level. You might decide to ask a fellow teacher to brainstorm ways both of you could incorporate appealing ideas into your classes. If you are cautious about using new forms of technology, you could first share an idea with a small group of students. Many students are proud of their tech skills and some would willingly experiment with a new tool or idea during lunch or after school. Then they can help you manage the technology when you introduce it to the class. You might also consider recruiting tech-savvy parent helpers or high school students to mentor you and your students in the use of technology tools. No matter what path you follow for increasing technology integration into your classroom, creating the map, selecting the tools, and setting the pace must all be distinctly your own.

Organization for This Book

If, as a reader, you prefer to start with the first chapter and move progressively through the book, you can think of this book in three parts:

Chapters 1–4: Basic Teaching Knowledge. These chapters provide background information on pedagogy, technology standards, digital literacy, and school contexts.

Chapters 5–8: Learning Preferences. The heart of the book, these chapters divide digital tools into categories that emphasize students' use of technology through leveraging learning preferences.

Chapters 9–11: Instructional Supports. These chapters address instructional needs teachers have. Classroom teachers are likely to have multilingual and special needs students in their classes, so two chapters give insights about how technology can enhance differentiation for those students. The final chapter highlights tools to increase teachers' efficiency and, most importantly, effectiveness.

For non-linear learners, any chapter may be an entry point into using additional technology with students. Search for a chapter that presents a technology tool familiar to you. As you see how to expand the uses of a familiar tool, you will become comfortable with other technologies that will save you time and spark your students' interests.

Within each chapter, I present ideas along a continuum of increasing difficulty. The information under each subheading starts with simple explanations and proceeds to those that are more complex (i.e., ideas are arranged by increasing levels of difficulty). Even when ideas are geared to lower grades, they can often be adjusted for higher grade levels. After all, almost all technology tools can be used at any grade level through secondary school and college.

Does that surprise you?

Consider the digital camera. Would you limit its use to a particular grade level?

Of course not. As a technology tool for demonstrating learning, the digital camera spans all ages and content areas.

Perhaps in the past you've been asked to implement technology without sufficient training or experience to feel confident. Lay that fear aside. This book is organized to empower you to choose technology tools that feel comfortable and manageable to you. After all, you are the content expert for the subjects you teach. The tools are simply efficient and motivating vehicles for engaging your students in learning.

Naturally, from Grades K–12, content levels of projects increase in sophistication and complexity. For instance, the act of drawing on a computer screen works as a novice entry point into using technology for students at any grade level. However, what students draw should increase in complexity. Primary students can draw and label simple pictures, while intermediate students draw systems (such as the water cycle), political cartoons, vocabulary illustrations, or other projects that require higher-level thinking. Secondary students may draw more complex systems or create innovative art projects. The rule of thumb is to think first of the content students need to master and then decide which tools will best help them absorb and demonstrate what they know.

By the time this book is published, some of its examples may be supplanted by newer material. Though the tech world changes rapidly, its essential ideas are relatively timeless. Once you have learned how to use tech tools effectively in your classroom, you will readily adapt to changes and be just as excited as your techie friends when upgrades and new applications (apps) for your favorite programs come along!

Foundational Premises

The following eight premises create the backbone for this book.

Premise 1. Classroom technology use has two modes: Instructional (teacher use) and Demonstration (student use).

Teachers make choices about how they implement the use of technology in their classrooms. Teachers may incorporate technology into the instruction they deliver during whole class or small-group interactions. This instructional use includes showing video clips, using visuals via a document camera, demonstrating a website, modeling use of a digital recorder or e-reader, directing Skype sessions, and playing podcasts.

In the demonstration mode, students demonstrate what they know and can do. Many teachers think conducting instruction themselves is easier than planning for students to take the lead in using technology with the teacher as a guide. Student demonstration uses can include creating projects, conducting research, solving problems in all content areas, accessing interactive websites, interacting with people around the globe, building a web presence, and producing videos. In demonstration uses, students actively control the digital tools while teachers guide them. Typically, when students manage the tools, teachers may feel as if their classrooms are on the verge of being out of control. A slightly hectic, somewhat noisy atmosphere is a natural positive sign that students are no longer passively depending on the teacher. Instead, they are excited about what they are learning and eager to show the teacher and each other their progress.

Premise 2. When students use technology, they talk.

Many excellent teachers feel most comfortable when their classrooms are quiet, when only one person speaks at a time. If you have hesitated to use tech tools because of this, that's perfectly understandable. I used to feel the same way.

However, please do not let this preference prevent you from trying out various technologies that may well pique students' interest in your course's content and motivate even the students who appear least engaged. Students tend to talk when they use technology, but they do not need to scream or use obnoxious language. Most often, they are speaking enthusiastically, sharing good news about locating a key source or a great website.

You will be able to hear the difference between productive talking and off-task behavior. When students use tech tools, they talk—and if their work is engaging, their talk is productive. Students want to talk to you and their peers about the tasks they are doing, the problems they encounter, and the discoveries they make. In fact, one student's discovery of a tool, a solution, or a factoid can become useful knowledge for the whole class in only minutes. Rather than squelching conversations, teachers should design students' tech tasks to encourage discussions about what they are learning. This approach allows students to practice the life skill of teamwork, while making deeper connections with each other than a teacher alone could instigate. I used to prefer a quiet classroom until I heard the productive buzz of students using technology. Now a quiet classroom makes me nervous; if no one is excited enough about an idea to pass it along, how can I be sure anyone is learning?

Premise 3: Students learn when they actively participate.

Who really learns when teachers do all the planning, lecturing, and explaining? The teachers themselves—not necessarily their students. All this hard work cements the content knowledge into the teachers’ brains forever, but unfortunately, not into their students’. Students learn when they participate in learning—by exploring ideas, connecting the ideas to what they already understand, and creating ways to share their knowledge with others. Professional staff developers approach the concept of student participation in different ways, but they advocate for the same outcome: make learning active. Problem-based learning, essential questions, inquiry lessons, discovery, scientific method, and virtual manipulatives ... all of these learning methods give students the responsibility for actively pursuing knowledge. In turn, students internalize the understandings they have acquired (that is, cementing the knowledge and skills into their own brains) because they have experienced various satisfying processes of gaining knowledge. Tech tools are designed to make participative learning easier to initiate and differentiate.

Premise 4: Teachers must teach responsible, ethical, and safe use of technology tools.

This premise is not negotiable. All students need to learn responsible, ethical, and safe management of technology. As a society, we cannot count on parents or social institutions or others to teach students these skills. Nor will a one-time reading of rules suffice. Teaching responsible, ethical, and safe use of technology must happen every year in every classroom.

Responsible. Maintain personal privacy, honor others’ rights and privacy, treat others kindly, avoid traps set by malicious or ambitious third parties on webpages, and handle technology equipment with care.

Ethical. Honor copyrights, respect other students’ files and passwords, and obey school policies and procedures.

Safe. Ask adults for help when confronted with inappropriate content or behavior, participate only on sites that honor child safety laws (when working with children under age 13), and evaluate online sources for authenticity.

Chapter 3 of this book addresses the basic concepts of responsible, ethical, and safe use. In addition, teachers need to seek more fully developed materials to support their instruction on these topics. An excellent resource, *How to Protect Kids’*

Privacy Online: A Guide for Teachers (educationnewyork.com/files/teachersFTC.pdf), can be downloaded. Teachers also need to determine in advance the consequences of irresponsible, unethical, and/or unsafe behavior. They should guide discussions of the possible consequences of such behavior with students before any use of technology. Students will make mistakes, and each incident can be handled individually. However, students need to understand that if a person's intent was malicious, he or she must face serious consequences.

Premise 5. Students have a right to use technology in every classroom every year.

At the elementary level, sending young students to computer labs for instruction while teachers remain in classrooms for instructional planning time (often called “specials”) has falsely negated the sense of urgency for in-class use of technology. Computer labs, particularly when teachers are not involved in the teaching or planning for lab time, must be considered as extra lessons, not instructional extensions of the classroom.

Today, in many schools teachers and students have far more access to digital devices in classrooms. Yet, as I've observed in far too many classrooms, the digital devices are either left to collect dust or are used in mundane, repetitive tasks that fail to engage students' creativity or critical thinking skills.

Teachers are responsible for planning digital experiences within the classroom walls. The technology need not be limited to computers; as the following chapters demonstrate, students can use tools, such as cameras and e-readers, to enhance learning as well. Research has found that students comprehend content at more long-lasting levels when they learn with technology than when they have the same unit of instruction without technology. Students have the right to the best instructional practices.

Premise 6. Not all technology tools are created equally.

Frequently, technologies with high coolness factors, such as interactive whiteboards, student response systems, and video gaming systems, have limited effect on students' academic growth. One-person-at-a-time experiences with technologies simply replicate worksheets and decelerate the pace of learning.

Some digital tools require teachers to spend more time preparing than students spend interacting with the materials. In that case, the tools hinder productivity.