



Deploying iPads in the Classroom



Planning, Installing, and Managing
iPads in Schools and Colleges

—
Guy Hart-Davis

Apress®

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Introduction

Apple's iPad is the most successful tablet computer ever. Almost as easy to use as it is to damage (you'll want to protect your iPads with cases), the iPad is great for computing anywhere and everywhere. iPads are also terrific in schools, enabling you to put in each student's hands an easily-manageable but powerful tablet on which the student can do everything from learning Internet use to developing essential office software skills, from recording live audio to creating backing tracks and producing CD-quality music, and from taking photos and shooting video clips to creating high-quality movies.

Who Is This Book For?

This book is for anybody who's looking to deploy iPads in a classroom or lab situation. Most likely you're a teacher or educator in a school or college, and that's the scenario this book and its examples aim at. But even if your situation and aims for deploying multiple iPads are different, you'll find useful information in this book. For example, you might run a community computing club providing Internet access, or you might offer private computing lessons to small groups.

What Does This Book Cover?

This book contains nine chapters that take you from planning a classroom deployment of iPads to managing the classroom and troubleshooting the iPads when things go wrong.

Chapter 1, "Planning Your Classroom Deployment of iPads," discusses how to plan your deployment of iPads in the classroom. The chapter starts with a quick reality check about your school's plans to add computers to the classroom and then move along to practical matters. After that, the chapter makes sure you know the capabilities of iPads and how they compare—both favorably and unfavorably—to laptops and desktops. The chapter also goes through what you'll need to do to plan the deployment, starting with choosing a deployment model; moving along through choosing which iPads to get, deciding whether to supervise them, and choosing how to manage them; and finally making sure that your school's network and Internet connection have enough bandwidth to handle the additional traffic that the iPads will generate.

Chapter 2, "Choosing iPads and Accessories," explains how to choose the right iPads for your school's needs and how to select suitable accessories—chargers, cases, screen protectors, mounts, stands, and so on—to enable yourself, your students, and your colleagues to make the most of the iPads.

Chapter 3, “Essential iPad Skills for Administrators and Teachers,” teaches you essential skills for using an iPad as an administrator or as a teacher. The chapters with the basics: you learn how to set up an iPad, how to perform basic power operations, how to navigate the interface, how to connect to Wi-Fi networks and so on. Once you know those moves, the chapter covers how to configure an iPad’s essential settings manually: Notifications, Do Not Disturb, Restrictions, and Accessibility. Toward the end of the chapter, you learn about connecting keyboards to the iPad; updating the operating system; installing, removing, and organizing apps; and managing both local storage and iCloud storage.

Chapter 4, “Managing iPads with Apple Configurator,” walks you through using the Apple Configurator app to configure iPads automatically. The chapter starts with a quick overview of what you can do with Apple Configurator. You then download the app and install it on your Mac, configure the app itself, and then work through the actions it offers: connecting and updating iPads, organizing and sorting them, and backing them up and restoring them; preparing the iPads for deployment; building configuration profiles and applying them to iPads; and creating templates called blueprints and applying them to iPads.

Chapter 5, “Managing iPads with Apple School Manager,” teaches you about Apple School Manager, Apple’s turnkey service for managing Macs and iOS devices in schools and similar institutions. The chapter explains what you need to know about Apple School Manager to use it effectively, starting with the fact that you may not need to use Apple School Manager directly at all if your school uses an MDM solution that integrates with Apple School Manager.

Chapter 6, “Managing iPads with Mobile Device Management,” tells you how to manage your school’s iPads with Mobile Device Management (MDM) solutions. MDM enables you to automate many aspects of deploying, configuring, and controlling iPads, so if your school has any serious deployment of iPads, you’ll likely use MDM to manage them.

Chapter 7, “Accessing Files and Printing Documents,” explains how to connect your school’s iPads to local storage and online storage for accessing existing files and creating new files. You also learn how to print from iPads to your school’s printers.

Chapter 8, “Controlling a Lesson with Classroom for iPad,” shows you how to use Apple’s Classroom app to manage your students’ iPads directly from your own iPad. Classroom is a great tool for running iPad-based lessons, giving you the power to do everything from launching the app the students will use for the class to monitoring what each student is viewing—or doing—on screen at any moment.

Chapter 9, “Troubleshooting iPads in the Classroom,” takes you through troubleshooting the problems you’re most likely to experience with iPads in the classroom. The chapter starts by looking at how to locate a missing iPad—and how to erase it remotely if necessary. It then moves on to resetting an iPad in different ways, which can clear up everything from minor ailments to lost passwords. After that, you learn to troubleshoot apps, network connections, Bluetooth issues, display issues, audio problems, and problems connecting to AirPort devices and Apple TVs.

CHAPTER 1



Planning Your Classroom Deployment of iPads

This chapter discusses how to plan your deployment of iPads in the classroom. We'll start with a quick reality check about your school's plans to add computers to the classroom and then move along to practical matters. You'll get to know the capabilities of iPads and how they compare—both favorably and unfavorably—to laptops and desktops. We'll then go through what you'll need to do to plan the deployment, starting with choosing a deployment model, moving along through choosing which iPads to get, deciding whether to supervise them, and choosing how to manage them. Finally, we'll discuss making sure that your school's network and Internet connection have enough bandwidth to handle the additional traffic the iPads will generate.

Making the Decision to Computerize Classrooms or Classes

To deploy iPads or other computers successfully in your school, you should have the agreement and cooperation of your colleagues, your students, and perhaps also the students' parents. Although it's certainly possible to make in isolation the decision to computerize and then impose the decision, you'll typically get much better results if you get each group involved in making the decision and supporting its implementation.

Given that you're reading this book, you've perhaps already gotten past this stage in the planning process. If so, skip ahead to the next section, "Understanding iPad Capabilities." If not, you'll probably want to take the following steps, not necessarily in exactly this order:

- Research the costs and benefits of computerizing one or more classrooms or classes
- Convince your colleagues of the merits of adding the computers
- Get input from students
- Build a budget for a pilot scheme and get it approved

- Select a classroom or a class for a pilot scheme
- Run the pilot scheme
- Review the success or challenges of the pilot scheme and the feedback you get from it
- Scale up your pilot scheme for full deployment
- Budget for the full deployment
- Execute the full deployment
- Build in a review cycle to gauge successes, failures, and improvements needed

DEVELOPING FAQs AND ACCEPTABLE USE POLICIES

As you plan and build out your deployment, you should develop a FAQ—a list of *frequently asked questions*—that you can make available on your school's website as an information resource for students, parents, teachers, and support staff.

The FAQ needs to cover everything from the school's purpose in deploying the iPads through straightforward issues such as startup, login, and basic skills like running apps and accessing resources. You should also cover more advanced topics such as understanding the restrictions the school has applied to the iPad and the ways in which the school can monitor iPad usage. Make sure to publicize the FAQ in the school and provide an easy-to-use mechanism for users to submit questions for adding to the FAQ. Add a shortcut to the FAQ on each iPad's Home screen to encourage students and teachers to use the FAQ.

You will also need to create two *acceptable use* policies. The first policy should explain the rules under which students use the iPads—what they're allowed to do, what isn't permitted, and who is responsible for lost or broken iPads. The second policy should do likewise for teachers. Students and teachers should sign the acceptable use policies to confirm that they accept the rules. For younger students and for one-to-one deployments (in which the students typically take the iPads home), the students' parents should also sign the policies.

Understanding iPad Capabilities

As you know, the iPad is a series of tablet computers made by Apple. Since Apple launched the first iPad in 2010, it has released various models with faster processors, more storage, and higher-resolution screens.

Apple has also constantly updated iOS, the operating system used by the iPad, iPhone, and iPod touch, issuing a major update each year. Version 11 of iOS was released in September 2017.

■ **Note** The first three versions of what became iOS were called iPhone OS—iPhone OS 1, iPhone OS 2, and iPhone OS 3. At version 4, in June 2010, Apple changed the name to iOS. At version 4.2.1, in November 2010, Apple added iPad support to iOS.

iPad Models and Screen Sizes

As of this writing (Fall 2017), the iPad comes in three different models, which have four different screen sizes among them:

- *iPad mini*: As its name suggests, this is the smallest iPad. It has a 7.9-inch screen.
- *iPad*: The iPad takes over from the iPad Air as the midpoint in the iPad range. It has a 9.7-inch screen.
- *iPad Pro*: The iPad Pro is a more powerful iPad. It comes in two sizes, one with a 10.5-inch screen and the other with a 12.9-inch screen.

■ **Note** See Chapter 2 for more specifics on the iPad models.

iPad Apps

The iPad runs apps built for Apple's iOS operating system. The primary source of apps is Apple's App Store, which you can access either directly through the App Store app that comes with iOS or indirectly via either the Apple Configurator deployment tool that Apple provides or a third-party mobile device management (MDM) tool. It's also possible to install third-party apps, such as apps that your school has developed.

The iPad as a Consumer Device

At the consumer level, the iPad can work as a standalone device, but you can also sync data either directly from a Mac or PC or through an account on Apple's iCloud service. For example, iCloud enables you to sync contact and calendar data, notes and reminders, e-mail accounts and photos, and other items. You can also back up some of an iPad's contents to your iCloud account.

The iPad as an Education or Enterprise Device

For education, business, and other organizational uses, the iPad works as a managed client. By using the free Apple Configurator app or a third-party tool, you can configure an image file containing the operating system set up the way you want it and then apply the image file to your school's iPads. You can also create policies to automatically configure the iPads. For example, you can create Wi-Fi payloads to enable the iPads to connect to the appropriate Wi-Fi networks at your school, and you can apply restriction payloads to impose restrictions on the iPads (such as preventing installation or deletion of apps, forbidding the use of specific apps, and so on).

Comparing iPads to Laptops or Desktops

This section looks at how iPads compare to laptops and desktops, given that these are typically the most likely alternative technologies for classroom deployment.

COMPARING IPADS TO OTHER TABLETS

You may also need to compare iPads to Windows tablets and Android tablets. Many different models of Windows tablets and Android tablets are available, offering a wide range of sizes and form factors.

Both Windows tablets and Android tablets offer similar benefits of portability and ease of use as iPads—and are equally easy to remove if not secured. Android tablets also provide instant on and quick login, whereas Windows tablets turn on quickly but typically take somewhat longer to log in because Windows is a larger operating system.

Both Windows tablets and Android tablets have apps available for most needs—as of this writing, the Play Store, Google's main source of apps for Android tablets, carries more than 3 million apps. Windows tablets have the advantage here, as they can typically run any of the full-featured Windows apps that laptops and desktops can run, though less powerful tablets may struggle to run complex apps at an acceptable speed.

Both Windows tablets and Android tablets enable you to set up multiple user accounts on a device, just as you can on desktop and laptop computers. Each user has their own storage space and custom settings, and the operating systems allow for quick switching among users.

Some Windows tablets and Android tablets are available in ruggedized designs suitable for use in schools—or outdoors—without a case. For non-ruggedized devices, you will normally want to use cases.

Prices of Windows tablets and Android tablets vary considerably, but in general, you can get similar functionality for a lower cost than with an iPad.

Advantages of iPads Compared to Laptops and Desktops

The iPad has several advantages compared to laptops and desktops for use in schools:

- *Portability:* The iPad is designed for handheld use, so students and teachers can easily use iPads while at desks or tables and while moving around the classroom. The iPad's portability can encourage or facilitate students working in groups.
- *Ease of use:* The iPad's operating system, iOS, is designed for ease of use, and you quickly can bring students (and teachers) up to speed with its essentials. Given the popularity of the iPhone, it's likely that some (perhaps most) of your students will possess or at least have used iPhones; these students will already know how to navigate and use iOS on the iPad.
- *Apps available for most needs:* Apple's App Store offers more than 2.2 million apps, a range that covers most known computing needs and many others besides. Unless your school and your students have extremely specialized needs, your challenge probably won't be finding apps with the capabilities you need; it will be finding the *best* apps with those capabilities.
- *Instant on and quick login:* The iPad wakes up from sleep at the press of a button, and the login process is much quicker than most laptops and desktops, enabling students to get to work in a short time.
- *Ease of configuration and administration:* As you'll see later in this book, Apple and third-party manufacturers provide tools for configuring iPads automatically and for running classes on iPads. For example, you can apply profiles to iPads to configure specific settings and prevent users from customizing certain categories of settings while still allowing users to customize other settings.

■ **Note** Similar configuration and administration tools are available for laptops and desktops, so although this capability makes it easier for you to deploy iPads in the classroom, it doesn't score significantly over the competition.

- *Volume Purchase Program for apps and e-books:* Apple's Volume Purchase Program simplifies the process of distributing apps and e-books to your school's iPads. You can also reclaim the apps and e-books afterward if necessary—for example, when a student leaves the school.

Disadvantages of iPads Compared to Laptops and Desktops

If you're considering iPads as an alternative to laptops or desktops in the classroom, you'll also need to evaluate the disadvantages of iPads compared to laptops or desktops. These are the main disadvantages:

- *Single-user device:* Unlike PCs, Macs, and even Android tablets, the iPad is a single-user device, not a multiuser device. You can't configure an iPad with multiple user accounts and switch among them. This makes it harder to have iPads as shared devices in the same way you can share Macs, PCs, and Android tablets (but see the nearby Note on Shared iPad). If you're planning for each student to have an iPad as a personal device, this isn't a problem.

■ **Note** To help work around the limitation of the iPad being a single-user device, Apple introduced a feature called Shared iPad in January 2016. Shared iPad quickly sets up an iPad for a user by copying that user's environment and data files from the network when the user logs in to the iPad. See Chapter 5 for more information on Shared iPad.

- *Easy to damage:* Apple has designed the iPad as a slim and lightweight device that's dominated by its screen—it's hardly the heavily armored, industrial-style device you might prefer in the classroom or out in the wild. (For example, HP's ProBook x360 Education Edition laptop, which is designed to survive student use, is built ruggedly enough to meet the MIL-STD-810G military standard.) As a result, the iPad is all too easy to damage, accidentally or otherwise, and you will normally need to protect your school's iPads with protective cases. Chapter 2 reviews some of your options for protecting iPads.
- *Easy to remove:* Being portable and small enough to slip into a school bag, iPads are easy to remove from the classroom. You may need to tether your school's iPads using cases that lock onto the iPad or secure the iPads with stands. Laptops are similarly portable and removable, but many models include a built-in Kensington slot that enables you to lock them easily using a standard cable. Desktops tend to be far less portable and are generally easy to secure.

■ **Note** Chapter 2 discusses some of the hardware you can use to secure iPads.

- *Cost:* Even the least expensive iPad model typically costs more than alternative devices, such as Android tablets, Chromebooks, or laptop or desktop PCs. Any case or other accessories you add to the iPad brings the cost up further.
- *No hardware keyboard:* The iPad doesn't include a hardware keyboard, although you can add one easily enough via the Smart Connector built into the iPad Pro models or via Bluetooth. The iPad's on-screen keyboard could hardly be easier to use, but it's adequate only for lightweight text input; few people can touch-type satisfactorily on it. So if your students will need to enter large amounts of text on the iPads—whether for taking notes or for original writing—you'll almost certainly need to add keyboards. This means extra expense and effort.
- *Some key apps and power-user apps are not available:* Even though the App Store offers a vast range of apps, some of the most important apps are not available for the iPad or are available only in more limited versions. For many people, the Microsoft Office apps are the epitome of this limitation: Even though Microsoft has built versions of Word, Excel, PowerPoint, and OneNote for iOS (and for Android), these versions lack the features and power of the Windows and Mac versions. This same limitation applies to various power-user apps such as database apps, apps for manipulating photographs and editing video to a professional standard, and other apps too complex or too specialized to be ported to iOS.

■ **Tip** If you rely on an app that's available for Windows but not for iOS, you may be able to run the app via a remote-desktop app such as Microsoft Remote Desktop (which is free). This can be a good solution for specialized but crucial apps, though it's typically less effective than running a suitable app on the iPad itself. You may also be able to use web versions of some apps, although such versions tend to have fewer features than the desktop versions.

Analyzing Your Needs and Making a Plan

Once you've decided that you'll be deploying iPads rather than another technology, you'll need to work out the best way to deploy iPads. This section covers the main questions you should consider to establish your needs and plan the deployment. Consider the following:

- What deployment method will you use? Will you get iPads to issue to students, iPads to equip a classroom or classbound computer carts, or both? Will you get iPads for teachers?
- How many iPads will your school get?

- If you will equip the teachers with iPads, how will the teachers use the iPads?
- Will you need to train the teachers to use the iPads? If so, what kind of training will you run?
- How will you manage the iPads?
- How will the iPads fit into your school's IT system and connect to its resources?
- Does your school have adequate network and Internet bandwidth to handle the increased traffic the iPads will bring?

What Deployment Model Will You Use?

Usually, your first decision is which deployment model you will use. Typically, this means choosing between a one-to-one deployment model and a model based on classes or classrooms:

- *One-to-one:* In the one-to-one deployment model, you issue an iPad to each student in a class or other group. Each student keeps that iPad and can store their own files on it. Normally the student gets to take the iPad home at the end of the school day so they can use it for homework and other study. However, in some cases, the iPad is restricted to the school's premises, so the student checks it out at the beginning of the school day and checks it back in at the end.
- *Class or classroom:* In the class or classroom deployment model, you outfit a class or a classroom with enough iPads for the largest number of students the class or classroom will contain. (*Class* here refers to the group of students; *classroom* refers to the room.) The teacher issues an iPad to each student at the beginning of a lesson, and the student logs in to the iPad using a Managed Apple ID, causing the iPad to retrieve the student's files from the network. At the end of the lesson, the student saves the files to the network and returns the iPad. In this deployment model, the iPads may live in the classroom or in another secure location, such as a charging and storage cart that you can move from one classroom to another as needed.

Whether you decide to issue iPads to students or to classes, you'll likely want teachers to use iPads as well, especially if they're using Apple's Classroom app to run lessons (see Chapter 8 for more on Classroom). For each teacher who needs an iPad, you can choose between issuing an iPad on a permanent or semi-permanent basis and having the teacher use an iPad that's assigned to the class or classroom in which they'll be teaching. There are good arguments for and against both approaches, but issuing iPads to teachers enables them to do much more with the iPads and generally delivers greater value.

How Many iPads Will Your School Need?

After deciding which deployment model to use, you next need to establish roughly how many iPads your school will need. You should be able to determine the number easily enough based on the deployment model you've chosen:

- *One-to-one deployment:* Plan to get one iPad for each student involved, plus iPads for teachers or assistants, plus a reserve of extra iPads to cover for when students break their iPads, leave them at home, or incapacitate them.
- *Class or classroom deployment:* Plan to get one iPad for each of the maximum number of students who will be in the class or in the classroom, plus an iPad for each teacher or assistant who will lead the class. Again, you'll want a reserve of iPads to handle contingencies such as iPads getting damaged or misconfigured, or visiting students or teachers requiring extra iPads.

GETTING AND MAINTAINING YOUR RESERVE OF IPADS

How many iPads do you need as a reserve? There's no hard-and-fast answer, because it depends on your situation and your students, but between 10% and 20% of the base number generally seems to work well. For example, for a class of 30 students, a reserve of 3 to 6 iPads would normally cover absentee iPads and attrition. But as usual, more would be better.

If money is tight, you may find it hard to get the budget for an adequate reserve of iPads in your initial deployment. And you may find that having the iPads do double duty as *teacher training* iPads or *instructor* iPads gets you further than simply calling them *reserves*.

You should also include at least some new iPads in your IT budget each year. Assuming you can buy some new iPads, you can then downgrade some of the surviving older iPads to reserve status. This way, you can gradually build up enough of a reserve to handle extra demand when it occurs.

Which Models of iPad Will You Get?

Next, you'll need to decide which models of iPad to get for your deployment. Chapter 2 looks at the current iPad models in some detail, but at a basic level, your choice will be based on the physical size (and screen size) of the iPads and by their power:

- *iPad mini:* The smallest iPad tends to be the best choice for younger students with smaller hands and for older students who need portability rather than screen size or power.