Chapter 17
From the Tablet to the Big Picture

17.1 Introduction

Even in highly individualized classrooms, it can be advantageous at times to have all eyes up front—for direct instructions, demonstrations, whole-class activities, student presentations, and other purposes. Supplemental technology can allow teachers and, in some cases, students to put whatever is on their tablet computer onto a larger, classroom screen. This is one form of "big picture," the literal big image on a large screen or whiteboard. Such technology extends the tablet's uses for teaching and learning.

While many schools are issuing tablet computers to their students (iPads dominate the field to date), others are adopting BYOD—for "bring your own device"—strategies, in which tablets feature as one of several potential devices. BYOD means that students are using everything from laptops and tablets to even smaller handheld devices, such as iPods and smartphones. Some key aspects of tablet classrooms versus BYOD classrooms merit discussion.

"Big picture" in the chapter title, however, refers not only to front-of-the-classroom instruction. It also means looking at how learning designers and technology specialists can work toward maximal facilitation of tablet use across multiple classrooms, whether they are next door to each other or on opposite sides of the globe.

The goal for this big-picture chapter, and indeed a current catchphrase, is to work toward "seamless integration." That's really short for "getting everything to work together." This applies to all devices and functions in all sorts of learning situations. It's a big challenge.

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17.2 Up-Front Instruction

Many classrooms already feature interactive whiteboards (IWBs) that allow computer images to be presented in whole-class scale. IWBs are the computerized cousins of standard whiteboards, which have largely replaced the blackboards and chalk of yesteryear. The interactive element comes in when a finger, a pen, a stylus, or some other object is used to interact with the projected image by means of an electronic interface. For example, an infrared-scan, or IR touch, whiteboard uses scanning software to locate where the instrument is "marking" the whiteboard. These types of IWB can be produced using a variety of surfaces because dry-erase markers and the standard whiteboard are not needed. However, in many cases, this technology is simply used with existing noninteractive whiteboards. Another way to think of IWB technology is that the IR touch feature is essentially external, whereas the touchscreen function of a tablet is internal to the device. But they work in similar ways.

In tablet classrooms, putting the focus up front can be relatively easy. An example of IWB-tablet interface can be illustrated with Apple's ShowMe app (http://www.showme.com). This iPad app allows teachers and students to collaborate and create learning videos, similar in some respects to those available from Khan Academy (see Chap. 13 and http://www.khanacademy.org). Those visuals, which may include sound, can be shared across tablets or downloaded using a Prezi or a Keynote app to project the program on a large scale, such as against a blank wall, a screen, or a whiteboard.

Prezi (http://prezi.com) is a presentation app, which can take on a predesigned ShowMe or can be used to create from scratch a class presentation using images, animation, and sound. The tablet app version of Prezi, however, has some design limitations, which can be overcome by using the version made for laptop or desktop computers. The tablet app is still highly usable.

Keynote (http://www.apple.com/iwork/keynote/) is Apple's tablet version of a PowerPoint. Like Prezi, it will accept a predesigned ShowMe that can be projected for whole-class viewing, or the app can be used to create PowerPoint-style presentations that incorporate images, animations, videos, sound, and so forth.

For learning designers focused on individualizing instruction or developing project-based learning designs, the flexibility exists to use tablets for personalized, hands-on, active learning; for student-student collaborative engagement; and for whole-class as well as one-to-one teacher-student interaction. All of this capacity can be truly liberating for the innovative learning designer. Readers who want to know more about ShowMe might start with the introductory video at http://vimeo.com/38003641. There also is a useful ShowMe blog at http://www.showme.com/blog/.

Another valuable feature of ShowMe is the ability to retain projects for later viewing. This feature allows students to review lessons on their own, during group study time, or at home, where they also can share them with their parents.

17.3 Bring Your Own Device Strategies

Tablet classrooms are proliferating, but some schools are opting to go in a different direction by working to incorporate technology-mediated teaching and learning using the devices students already own. The acronym for this strategy is BYOD, or bring your own device. In many cases, the result is a technologically blended classroom, which can be challenging not only from a technology standpoint but from the perspective of learning design. How does one design learning that "works" with everything from iOS to Android, from laptops to smartphones, and with an assortment of tablets thrown into the mix?

First, educators must acknowledge that the potential for viable BYOD-focused learning design is robust. In June 2013, Project Tomorrow (http://www.tomorrow.org) released its 2012 K-12 student survey findings. The report of the Speak Up National Research Project is titled *From Chalkboards to Tablets: The Emergence of the K-12 Digital Learner* (Project Tomorrow, 2013). Some of the data are telling. For example, 59 % of sixth graders have a personal smartphone; by grade 12, that percentage jumps to 82. Sixty-eight percent of sixth graders have a personal laptop, twelfth graders 73 %. But the figures for personal tablets are perhaps the most revealing of a trend: 53 % of sixth graders have a personal tablet, 48 % of ninth graders, and 40 % of twelfth graders. It would seem that tablet use is growing from the early grades upward. It would not be surprising in a few years to find tablets overtaking laptops among all students, regardless of grade.

Meanwhile, however, these findings illustrate the diverse mix of devices that students might bring to school in a BYOD environment. Add to this complexity the fact that smartphones, laptops, and tablets all come in many varieties from a range of manufacturers, all of whom want to distinguish their devices from their competitors' devices. That's challenging. Fortunately, BYOD is a *potential* technological direction, not an inevitable one. And there are ample reasons why schools might want to shy away from it. A few of these reasons are discussed in the next section.

Second, designing learning for BYOD environments is considerably more complex than designing learning for classrooms with common technology, whether that means 1:1 laptops or tablets. Some challenges include:

- Customizing or individualizing instruction within the limits of a student's available device
- Locating and managing software or apps available (perhaps cloud based) for multiple platforms
- Locating comparable device- or platform-specific apps when multi-platform apps cannot be found
- Using more whole-class instruction or other grouping strategies in order to avoid technology problems, such as lack of compatible apps for different types of devices
- Grouping students according to their available devices, rather than their learning preferences or other characteristics

None of these challenges is insurmountable, but each requires the learning designer to think differently about how best to structure technology-mediated learning activities.

An added consideration, which should not be overlooked, is helping students use their devices effectively. We err in assuming that students are automatically technologically savvy. Granted, many are. However, in tablet classrooms at least some instructional time must be devoted to helping students learn how best to use the designated tablet. In BYOD environments, this device-focused time is multiplied by the number of different devices that students bring with them. That puts pressure on teachers to be familiar with many devices.

17.4 Tablet Classroom Versus BYOD Classroom

This book is about learning design for tablet classrooms and so readers will likely have guessed where my vote will go. In big-picture considerations, cumbersome technological issues may push learning designers to default to less effective and less technology-rich learning designs. While tablets may feature in BYOD environments, the integration of multiple and diverse devices seldom achieves sufficient "seamlessness" to ensure that teaching and learning can be maintained as the real focus of the learning design. With BYOD, the focus can too easily shift to the devices themselves and what they can and cannot do.

American architect Louis Sullivan is credited with coining the mantra of modern, functionalist architecture: "form follows function" (Sullivan, 1896). That is to say, architecture in Sullivan's view—and that of subsequent modernists, such as Frank Lloyd Wright, Walter Gropius, Ludwig Mies van der Rohe, and others—should create structures and spaces based on their intended use or function. In the architecture of learning in technology-mediated environments, it would be wise for educators and education policy makers at all levels to adopt a similar mantra: "device follows design." By this, I mean that learning designs—based on the principles articulated in Chapters 5 through 9—should use tablet (or other) technology to support and enhance teaching and learning, rather than device considerations or limitations, shaping the learning design.

At the same time, the notion of seamless integration should not be confused with standardization. Relatively seamless integration of traditional learning strategies with technologically mediated strategies, even when all students have the same type of device, is a learning design challenge in itself. Most thoughtful educators understand that the idea of all students doing all the same learning activities is counterintuitive as well as counterproductive. That's ultimate standardization and quite opposite from the goals of constructivist teaching and learning, which views students as individuals with distinct needs, interests, abilities, and aspirations.

In an Australian BYOD report, Joseph Sweeney comments piquantly, "Standarisation should not be viewed as a goal in itself. In the age of consumerisation, standardisation is increasingly around software and cloud services, with the choice of

device being of little relevance" (Sweeney, 2012, p. 20). But Sweeney acknowledges, "As the number of different devices and software environments increases, so too does complexity….[T]he more control teachers need over the learning environment, the more standardisation benefits the learning environment" (p. 20).

Another perspective is offered by *Bring Your Own Device to School* (Dixon and Tierney, no date, 2012?), underwritten by Microsoft. This white paper discusses various BYOD deployment models and includes a pros-and-cons section.

It's a tricky balancing act. Optimal learning is likely to result when standardization, seamless integration, and individualization are in balance. At this time, such balance seems more likely to be achieved in tablet classrooms than in BYOD classrooms.

17.5 A Global Big Picture

Another aspect of the big picture in learning design is collaborative learning, not merely among students in the same classroom but between classrooms. The collaborating classrooms might be within the same school building, across town, or in different parts of the world. Learning designers can capitalize on tablet technology to structure learning projects that involve students in both synchronous and asynchronous collaborative activities.

For example, Google Drive (http://www.google.com/drive/about.html?authuser=0) is a free tablet app that is available for iOS and Android devices. The app allows students to share information, such as documents and spreadsheets, and to chat in real time (synchronous). They can collaboratively write and edit and then share what they have done with their teachers and other students. The documents also can be stored and shared asynchronously, and in some cases, projects can be worked on without a network connection and shared later when Internet connectivity is available.

Another example is Groupboard (http://www.groupboard.com/products/), a free online whiteboard and chat app. This app also is available for iPad and Android tablets. The free version allows a limited number of users; however, paid versions allow many more. Related apps include a more advanced Groupboard Designer, similar to Groupboard but with more features, and Groupworld, which provides customizable web-conferencing. Groupboard Designer and Groupworld also are available as iPad and Android tablet apps.

Web-conferencing software allows learning designers to structure collaborative learning projects and activities that connect students who may by physically widely separated. File sharing is merely a starting point. Video and audio components truly personalize interactions, and it's important for students to see and hear one another.

A number of real-time communication apps can provide for face-to-face interaction, sometimes with or without other web-conferencing components, such as desktop sharing and whiteboards. Skype (http://www.skype.com) is among the most well known, and the app works on a variety of tablet devices: Windows 8, iPad, Kindle Fire, and Android tablets. The app supports audio calling, messaging, video communication, and file sharing.

All of these technological tools can help learning designers create opportunities for global connectedness. Kristen Wideen, a primary school teacher in Windsor, Ontario, Canada, writes a blog about teaching and learning in her grade 1/2 classroom and describes her work in Mrs. Wideen's Blog (http://www.mrswideen.com). On April 14, 2013, she uploaded a post titled "How My Learning Environment Has Evolved," in which she described her approach as a "classroom with no walls." She wrote, "Video conferencing, blogging, creating videos and books, teaching and learning from other peers in the classroom, in the school and in the world about what they are interested in is embedded into the daily instruction of my classroom" (Wideen, 2013). Wideen's students in Canada regularly communicate with their counterparts in a couple of schools in Singapore by tweeting, using Skype, or other means.

Learning designers and other educators also need to connect with colleagues both near and far. Connected Educators (http://connectededucators.org) is one organization specifically dedicated to that purpose. The organization was envisioned in the US 2010 National Educational Technology Plan. (For an explanation of this plan, readers may wish to consult a chapter I cowrote with Phillip Harris about policies governing education technology practice and research; see Harris & Walling, 2014.) Connected Educators is a project of the Office of Educational Technology at the US Department of Education and provides a wealth of information for educators. This effort also includes ConnectED, which the White House describes as an initiative that will "within 5 years, connect 99 % of America's students to the digital age through next-generation broadband and high-speed wireless in their schools and libraries" (see http://www.whitehouse.gov/blog/2013/06/06/what-connected).

Global connectedness for collaborative learning and collegial sharing represent another perspective on the big picture of how tablet computers can change—indeed, are already transforming—teaching and learning at all levels.

17.6 Summary

The idea of a "big picture" can be taken in many directions. Literally, making whatever is on the tablet computer big by putting it up front on a screen or an IWB is one direction. Tablet technology can facilitate learning designs that need the focus up front in the classroom, whether it is for sharing student projects or providing direct instruction.

When tablets are among the many devices in BYOD classrooms, they do not lose their unique attributes. But learning designers in BYOD environments face many challenges—both technological and logistical—to coordinate technology-mediated learning. Those challenges can be daunting. At best, BYOD runs the risk of learning designers needing to focus more on devices than designs, just the opposite of the focus needed for optimal teaching and learning. At worst, the challenges presented by multiple types of devices can discourage learning designers from using some forms of technology that might otherwise ramp up students' learning opportunities and options.

Finally, using tablet technology to foster broader learning connections among students not only within the same classroom or school but also in widely separated—sometimes globally separated—classrooms is another interpretation of "big picture." Many students learn most effectively in community, and creating communities of learners can be a globally expanded concept when learning designers tap the collaborative technological power of tablet computers. Such collaboration and communication also benefits educators when they can connect with widely separated colleagues.

References

Dixon, B., & Tierney S. (2012). *Bring your own device to school.* Microsoft (Windows in the Classroom), no date? http://www.microsoft.com/education

Harris, P., & Walling, D. R. (2014). Policies governing educational technology practice and research (Chapter 50). In J. M. Spector et al. (Eds.), *Handbook of research on educational communication and technology* (4th ed., pp. 627–640). New York: Springer.

Project Tomorrow. (2013). *From chalkboards to tablets: The emergence of the K-12 digital learner.* Speak Up National Research Project annual poll for 2012). Irvine, CA: Author. http://www.tomorrow.org

Sullivan, L. H. (1896, April). The tall office building artistically considered. *Lippincott's Magazine*. http://archive.org

Sweeney, J. (2012). *BYOD in education: A report for Australia and New Zealand.* Intelligent Business Research Services Ltd. (Australia). http://i.dell.com

Wideen, K. (2013, April 14). How my learning environment has evolved. *Mrs. Wideen's Blog*. Retrieved September 20, 2013, from http://www.mrswideen.com/2013/04/how-my-learning-environment-has-evolved.html