

Making the Textbook Transition:

Digital is the New Direction

What are digital textbooks?

Today's K-12 students have grown up with technology. Most wouldn't dream of looking up information in a hardbound dictionary or encyclopedia; they turn to Internet search engines when they have questions, perhaps using a smartphone or tablet. News comes not on newsprint, but from Google News; writing to friends means Facebook, not a letter (what's that?); phone books and watches are artifacts from another age.

Yet such digital natives are often expected to attend schools equipped with aging, heavy, hardbound textbooks — some a decade old and outdated (history texts that remind them that the U.S. has never elected an African-American president, for example). They then are asked to tote five or six or more such books from school to home each day.

Enter the digital textbook, defined as anything stored on a digital medium that can be transmitted through various digital devices over computer networks, including the Internet. Students can access digital books on e-readers, tablets and smartphones; and on netbooks, laptops or desktop computers. Because the books can be read on mobile devices, the material can travel with students just as a physical textbook can, but in a much lighter and more compact way (no more overstuffed backpacks).

Textbooks displayed on digital devices can take advantage of Web 2.0 tools: multi-media features (video and audio clips); interactivity (quizzes, games); the ability to search and annotate text; text-to-speech functionality; and customizable (and current) content. In the classroom, teachers can project digital content from these books onto interactive whiteboards and engage the class in viewing material together. Notes taken on the interactive whiteboard can be stored and saved to each student's laptop, tablet, netbook or smartphone, while students can use their digital devices to submit answers to quizzes or problems. All of these features make digital textbooks more relevant to today's students, who then become more engaged in learning.

Why now?

The increasing popularity of relatively low-cost mobile, digital devices is transforming information acquisition. As school districts reach their scheduled book replacement periods, they must evaluate whether to spend significant amounts of money on traditional texts that may need to last 7 to 10 years.¹ Or, does it make more sense to put dollars into today's digital technology, which also allows for inexpensive updates and upgrades?



Online education is growing, with hybrid options (where students take some online courses and some face-to-face courses) available in 39 states.² The emerging presence of mobile learning is fostering a shift to digital and online texts.

As states start recognizing digital textbooks as an economical choice, they are strongly encouraging, if not mandating, their use. Florida, for example, is proposing that all K-12 classrooms be outfitted with digital textbooks by 2015.

In higher education, e-texts have already surged in popularity. At least 25 percent of higher education textbooks are expected to be digital within the next two to three years.³ It's only logical that K-12 education will eventually follow this lead, though budgetary constraints are severe for many districts.

Open-source textbooks are fast becoming an option for tight education budgets. The nonprofit CK-12 Foundation in Palo Alto, Calif., in conjunction with college professors, has developed free high school math and science digital textbooks to be used in the state's public schools. The effort was sparked by former California Gov. Arnold Schwarzenegger's Free Digital Textbooks Initiative of 2009, which aims to save money by replacing \$100 textbooks with free digital alternatives. In a state with two million high school students, it's easy to see how cost savings can climb to the hundreds of millions if all schools participate.

Another new trend that is saving districts money is Bring Your Own Device (BYOD) initiatives that let students use their

own smartphones, tablets or other devices. Typically, schools offering BYOD will still provide devices for those students who can't afford them.

Why is it important?

Today's students will enter a workforce where technology skills are expected. Schools need to prepare children by using hands-on, 1-to-1 work with computers and other technological devices. Students need to know how to find, retrieve and analyze information online, as well as how to interact in a digital environment. Digital textbooks provide more chances to learn these skills than static, hardbound books.

Students become more engaged in learning and test scores rise when they are given mobile tools. Given that one-third of U.S. high-schoolers never graduate, student retention is an issue that needs addressing. Digital textbooks can be one part of helping turn around this alarming statistic.

What are the benefits?

Cost savings

Studies show that districts can save more than \$3,000 annually in printing and textbook costs by going all-mobile in a single classroom.⁴ Multiply this by hundreds of classrooms and it's easy to see how schools — once initial device and infrastructure costs are taken care of — can benefit financially.

Increased student engagement and test scores

Evidence from pilot programs shows K-12 students who use mobile devices to access digital information are more engaged and perform better on standardized tests.⁵

Special needs students and English Language Learners are better-served

Studies have found that special needs and ELL students using mobile devices were more likely to turn in homework. Digital devices usually have text-to-speech capability, allowing book passages to be “read” to students — useful for those who have eyesight problems or who are auditory learners. Although devices with these capabilities are beneficial for special needs students, they can often be used for all students whether with or without special needs.

Customizable content and differentiated instruction

Digital texts can easily be tailored for each student's needs. Instant assessments provided by the digital device let the teacher know what is or isn't working, so content can quickly be revised.

Easy updates

When school districts hang on to textbooks for seven or more years before replacing them — as many do, due to adoption cycles and tight budgets — it's easy to see how content

can become outdated. Digital textbooks, however, can be updated in the time it takes to download the file. Or, if accessed online, no downloading is needed. Web content can be quickly changed to reflect, say, new events or scientific discoveries.

Who's doing it?

- Riverside Unified School District in Riverside, Calif., became the first district in the state to “go digital” in 2009, following then-Gov. Schwarzenegger's Free Digital Textbook Initiative. The 44,000 students in the Riverside district use digital devices to access free texts. For example, at Riverside's Amelia Earhart Middle School, students use a digital algebra text on tablets. Students can view explanatory, step-by-step videos and record sound files with their questions or comments, as well as receive instant feedback in how they performed solving problems.⁶
- All 285 kindergartners in Auburn, Maine's public schools will receive a tablet this fall, as will kindergarten teachers — at a cost of about \$200,000. The district hopes to receive grants to cut all or part of the cost of the pilot program. School Superintendent Tom Morrill told the *Lewiston Sun Journal*, “What it's all about is young people having in their hands a tool that will customize and accelerate their learning.”⁷

Where can I find out more?

- Q1 2011 Converge Special Report: Digital Content and Learning Management Platforms
<http://www.convergemag.com/reports/q4-2010/>
- 2010 Horizon Report — “Two to Three Years — Electronic Books”
<http://wp.nmc.org/horizon2010/chapters/electronic-books/>
- “Going Mobile in the Pre-K Market” — webinar hosted by Simba Information and MCDData (report also available)
<http://www.simbainformation.com/redirect.asp?progid=81203&url=http://www.mchdata.com/going-mobile>

Endnotes

1. <http://www2.scholastic.com/browse/article.jsp?id=3750551>
2. <http://www.excelined.org/Docs/Digital%20Learning%20Now%20Report%20FINAL.pdf>
3. <http://wp.nmc.org/horizon2010/chapters/electronic-books/>
4. <http://www.simbainformation.com/pub/6055405.html>
5. Ibid.
6. <http://www.edweek.org/dd/articles/2011/02/09/02books.h04.html>
7. http://www.upi.com/Top_News/US/2011/04/14/Maine-district-puts-iPads-in-kindergarten/UPI-53371302833771/

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