



Science 2.0

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The ABCs of E-books

Electronic books, also known as e-books and digital books, are gaining a foothold in schools, not just for reading words but for writing them as well. Today's teachers and students have a selection of tools to use for both activities.

Reading e-books

E-book formats include PDF, EPUB, MOBI, KF8, iBook, and others. Some formats, though device specific, can be converted to other formats. iPad and Android tablets have apps to read formats used by Kindle, Nook, and Google Play Books. E-books can also be read on laptop and desktop computers. Adobe Digital Editions is a free program that reads EPUB formats (see "On the web"). Calibre, also free (see "On the web"), converts various e-book formats, although some features may be lost during conversion.

iBooks is Apple's proprietary program. iBooks can display movies, interactive widgets, and movable 3-D objects. When the reading device is held vertically, iBooks has a traditional book appearance. Multimedia extras appear in the horizontal orientation.

Writing e-books

E-books offer a tremendous opportunity for teachers to create their own textbooks or chapters or to compile the work of a student, class, lab, dissection, field trip, or research project. An e-book can be a one-page document or a complete textbook augmented with multimedia visuals and interactive links. E-books can be written by an individual or a team or can even be crowd-sourced. Imagine 50 teachers each writing two or three pages on a specific topic; a few days later a 150-page textbook is minted and shared with the world! Or imagine a group of science students each addressing a particular aspect in a study. Then their work is compiled, massaged into an e-book, and shared back with the students, used by other students, and stored in the school's digital library.

The most basic form of an e-book is the portable document format (PDF). These print-oriented documents resemble traditional word-processed documents but with a fixed layout that appears the same no matter what device displays it. Many word processors let you convert a document to PDF using the "save as," "print," or "export" commands.

The EPUB format, considered "vendor-independent," is popular because of its compatibility across devices. EPUB text

is reflowable so it displays onscreen better than a fixed PDF, especially when font size or page size is changed. Saving a document to the EPUB format from Microsoft Word may require an add-on program. Other programs, including Adobe's InDesign, Apple's Pages, and OpenOffice, have EPUB as a "save-as" or "export" option.

To write a book in Apple's iBook format, you must use a free but Macintosh-only program called iBooks Author (see "On the web"). Although much like a conventional word processor, iBooks Author provides a quick method to add videos and other multimedia to the text (first-time users are often shocked at how effortless it is). 3-D objects can be inserted just as easily as video. One type of such objects—SketchUp 3-D models—is available online at Trimble's 3D Warehouse (see "On the web"). To work in iBooks, the model file must be downloaded in the Collada format (".dae" file extension).

Once the e-book is created, you can share it in numerous ways. Attaching the e-book file to an e-mail is a good choice if the file is small enough. Tablets will recognize it within the e-mail and ask if you want to open it in iBooks or a different app. Most e-readers have fairly straightforward ways of loading content.

The well-known Japanese author and translator Haruki Murakami once said, "If you only read the books that everyone else is reading, you can only think what everyone else is thinking." Making an e-book—an adventure for teacher and student alike—may be the best way to spread new thoughts far and wide.

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