

eLabs Conversion: Convert Your Old Paper Lab Manual into a CD-ROM

Peggy Brickman

400 Biological Sciences Building
University of Georgia
Athens, GA 30602
brickman@uga.edu
Phone: 706-542-1690
FAX: 706-542-1695

Peggy Brickman received her bachelor's degree in biology from Columbia College in 1987, and her Ph.D. in genetics from U.C. Berkeley in 1993. She is an assistant professor of plant biology at the University of Georgia where she teaches non-majors introductory biology to approximately 650 students each semester. She is currently researching the effectiveness of technology in biology education, particularly to aid large-group instruction. She has been actively involved in developing a number of CD-ROM and web-based activities for her course and its lab component.

Reprinted From: Brickman, P. 2004. E-labs conversion: Convert your old paper lab manual into a CD-ROM. Pages 406-407, *in* Tested studies for laboratory teaching, Volume 25 (M. A. O'Donnell, Editor). Proceedings of the 25th Workshop/Conference of the Association for Biology Laboratory Education (ABLE), 414 pages.

- Copyright policy: <http://www.zoo.utoronto.ca/able/volumes/copyright.htm>

Although the laboratory exercises in ABLE proceedings volumes have been tested and due consideration has been given to safety, individuals performing these exercises must assume all responsibility for risk. The Association for Biology Laboratory Education (ABLE) disclaims any liability with regards to safety in connection with the use of the exercises in its proceedings volumes.

© 2004 Peggy Brickman

Abstract

We have undertaken a conversion of our existing paper-based laboratory manuals to electronic delivery via a CD-ROM. The benefits of this technology are numerous: First, it will greatly reduce the cost of delivery per lab manual to \$2 from our existing cost of over \$24 for a custom published manual; Second, it allows for the inclusion of many color images, animations of techniques, and interactivity like Quicktime VR interactive images, that are impossible using the paper format. However, many instructors feel this is beyond their technical expertise. Using readily available and affordable programs like Macromedia MX and Adobe Acrobat, you can convert the entire contents of your lab manual into a form readily deliverable on CD-ROM.

Steps in the Process

The simplest way to get your lab manual to the students on a CD or via the web is to create PDF
Association for Biology Laboratory Education (ABLE) ~ <http://www.zoo.utoronto.ca/able>

versions of your labs, and then just copy them all to a CD and have the students print them out.

Making Images

Our first step involved replacing copyrighted material with our own images and photos into a word processing document, like Microsoft Word. Microsoft Word works fairly well as a publishing program and will allow you to insert images easily, but it doesn't allow much manipulation of the images. We use an image program like Adobe Photoshop (www.adobe.com) to manipulate photographs and Macromedia Freehand (www.macromedia.com) to create line drawings.

- a. Inserting an image into text in Microsoft Word: Place your cursor on above the line of text where you want to insert the image. Under the **Insert** menu, select **Picture**, and **From File**. You can choose any file you've created on your computer.
- b. You can change the size of the image or crop it in Microsoft Word by clicking **Format**, and then **Picture**, then selecting **Size** (changes size, so does clicking the corner of the picture and dragging it), **Layout** (place in line with text), and **Picture** (crop).

Converting text documents to PDFs

You can save most Microsoft Word files as a PDF if you have Adobe Acrobat 5 installed on your computer (this is not the free version of Adobe Reader, Adobe Acrobat costs about \$150-\$250 (US) www.adobe.com, check for educational discounts). If you are using a PC, you will need Adobe Acrobat Distiller.

- a. In Microsoft word, under the **File** menu, select **Print**. In Mac OSX at the bottom of the print window there is an option called **Save As PDF...** Click that button, and then save the file by selecting a location on your computer.
- b. You could do this with all your labs and just burn them to a CD and then send the CD out to be duplicated for between \$1-\$4 (US) each depending on quantity (www.cdcentric.com or www.cdworks.com), or you could create an html page with the labs organized and embedded into the page for delivering via the Internet or on a CD.

Creating HTML Lab pages

These can be opened in a browser window like Netscape Navigator or Internet Explorer and provide a way for students to navigate through the lab material online. But, more than that, using the Web opens up many possibilities like adding color images, links to sites on the Internet, Quicktime videos, and Flash animations. We use Macromedia's program DreamWeaver (www.macromedia.com) for editing and creating web pages because of its ease of use (you don't need to know any html, and DreamWeaver contains windows which contain information about the document and allow you to easily add images and animations with just a button click), and because of the compatibility between DreamWeaver and sister programs like Macromedia's Flash.

Acknowledgements

The University of Georgia's Office of Instructional Support and Development provided funds for the conversion of our lab manual to an electronic format through a Learning Technologies Grant. Mr. Bryan McLucas, Dr. Norris Armstrong, Ms. Petra Harisay, and Emily Pitts at the University of Georgia helped with the coordination of the project, creation of figures, photographs, animations, and creation of html pages for our CD-ROM.