Where in Academia are ELNs?

Support for Electronic Lab Notebooks at Top American Research Universities

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Introduction

Laboratory notebooks are the primary records many researchers in the sciences use to document their research. Electronic Laboratory Notebooks (ELNs) move these records into digital formats and add functionality like collaboration, templates, searching, and specialized functions that support data collection and analysis. Although there has been discussion of ELNs for several decades (Borman, 1994; Lysakowski & Doyle, 1998) few academic research labs have adopted them (Elliott, 2008).

When evaluating ELNs, researchers must consider intellectual property, interoperability, and user experience. A poor choice could lead to significant disruption to workflows, concerns about data integrity, or challenges when working with patentable information. With over 35 ELN solutions available (Rubacha, Rattan, & Hosselet, 2011), identifying and implementing an ELN can be time-consuming .

Helping researchers evaluate, select, and use ELNs is a way for librarians to affect the the research process directly, improve data management policies and practices, and demonstrate impact to scientists. Librarians' disciplinary expertise and experience with data management and evaluating software and content platforms make us well suited to help faculty with ELNs.

The goal of this poster is to offer questions to ask researchers interested in adopting an ELN and show what major research institutions are doing to support ELNS. As disciplines, institutions, and research groups all approach lab notebooks differently, we make no attempt to suggest best practices for maintaining a lab notebook.

References

Borman, S. (1994). Electronic laboratory notebooks may revolutionize research record keeping. Chemical & Engineering News Archive, 72(21), 10-20.

Elliott, M.H. (2008). Electronic laboratory notebooks enter mainstream informatics. Scientific Computing. http://www.scientific-computing.com/Electronic-Laboratory-Notebooks-Enter-Mainstream-Informatics.aspx.

Lysakowski, R., & Doyle, L. (1998). Electronic lab notebooks: Paving the way of the future in R&D. Records Management Quarterly, 32(2), 23-30.

Rubacha, M., Rattan, A.K., & Hosselet, S.C. (2011). A review of electronic laboratory notebooks available in the market today. Journal of Laboratory Automation, 16(1), 90-98.

Environmental Scan Results

Institution	Enterprise-wide Licenses	Some classroom use	Some lab use	Instruction (libraries)	Instruction (not libraries)	Consultations	Library guides or webpages
California Institute of Technology	✓	—	—	—	—	—	✓
Columbia University	✓	—	—	—	✓	—	✓
Cornell University	✓	—	—	—	✓	✓	✓
Duke University	—	—	—	—	—	—	—
Emory University	—	—	✓	—	—	—	—
Harvard University	✓	—	—	—	✓	—	—
Johns Hopkins University	—	—	—	—	—	—	—
Massachusetts Institute of Technology (MIT)	✓	—	—	✓	✓	✓	✓
New York University	—	—	✓	—	—	—	?
Northwestern University	—	—	✓	—	—	—	—
The Ohio State University	—	✓	—	—	—	—	—
Penn State Univ. - Univ. Park	—	—	✓	—	—	—	—
Princeton University	—	—	?	—	—	—	—
Stanford University	—	✓	?	?	—	—	—
Texas A&M University - College Station	—	—	—	—	—	✓	—
Univ. of Illinois - Urbana-Champaign	—	✓	✓	—	—	—	—
Univ. of North Carolina - Chapel Hill	—	—	—	—	—	—	—
University of California - Berkeley	—	—	—	—	—	—	?
University of California - Davis	—	—	—	—	—	—	—
University of California - Los Angeles	—	—	—	?	—	—	—
University of California - San Diego	—	✓	✓	—	—	—	?
University of Chicago	—	—	—	—	—	—	?
University of Florida	—	—	—	—	—	—	?
University of Michigan - Ann Arbor	—	—	✓	—	✓	✓	?
University of Minnesota - Twin Cities	—	✓	✓	—	—	✓	✓
University of Notre Dame	—	—	✓	—	—	—	—
University of Pennsylvania - Pittsburgh	—	—	—	—	—	—	—
University of Pittsburgh	✓	—	—	✓	—	✓	✓
University of Southern California	—	—	—	—	—	—	—
University of Texas - Austin	—	—	✓	—	—	—	?
University of Washington - Seattle	—	—	✓	—	—	—	—
University of Wisconsin - Madison	✓	—	—	✓	✓	✓	✓
Vanderbilt University	—	—	—	—	—	—	—
Washington University in St. Louis	—	—	✓	—	—	—	—
Yale University	✓	—	N	—	—	—	—
Total	8 (23%)	5 (14%)	12 (34%)	3 (9%)	6 (17%)	7 (20%)	7 (20%)

Environmental Scan Protocol

Step 1. Search for ELN-specific information on website

Search institution domain for "electronic lab notebooks" OR " electronic laboratory notebooks." Look through first 3 pages of results.

Step 2. Search for lab notebook information generally

Search institutional documents and policies for "lab notebooks" OR "laboratory notebooks."

Step 3. Contact STEM librarian or IT person

Successful contact with at least one person from each institution to find out whether they are involved in supporting ELNs in any way.

Issues

- No one product meets the needs of all potential academic users. This means various groups on campus may be using different software
- Few institutions have an overall plan for purchase and support.
- Not all products allow data to be exported in useful formats.
- Most ELNs are quite costly.

Questions for Faculty

There are many ELNs to choose from and each differs in cost, functionality, and user experience. It's useful to start by thinking about a researcher's needs before evaluating products. Here are some questions to consider guiding a researcher selecting an ELN. In our experience it is best to ask the Principal Investigator these questions before selecting candidates and arranging for company demonstrations for group members.

- How much will the product cost? Is it a one-time cost or a recurring cost (subscription)? Will you be able to sustain access for as long as you need?
- What happens when you stop using the ELN? Can you export notebooks to a usable format? What functionality do you lose when you export your notebooks? Will data files stay separate and complete or be part of larger PDF files?
- How do you want to grant control and monitor access to your notebooks? (e.g. Do you need an audit trail that records who makes changes? Does each lab member 'own' their own notebook or do you 'own' every notebook? Do users need to access to each other's notebooks?)
- What types of information do you need to record and how much space will you require? (e.g. text, images, Microsoft Office documents, outputs from instruments, other data files, etc.)
- What specialized functionality do you require? (e.g. chemical structure drawing, lab inventory control, protocols and templates, etc.)
- Do you work with sensitive data and if so does the product provide measures to protect that data?

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