Abstract

The *Journal of Chemical Education* has a long tradition of providing chemistry teachers with the information and tools they need to perform their craft. The *Journal of Chemical Education* Digital Library (JCE DLib) extends this tradition into the digital realm of the Internet. A collection of the National Science Digital Library (NSDL) project of the NSF, the JCE Digital Library currently consists of JCE DigiDemos: Tested Demonstrations, JCE QBank: Resources for Student Assessment, JCE SymMath: Symbolic Mathematics in Chemistry, JCE WebWare: WWW-based Learning Aids. We will discuss the rationale for JCE DLib, demonstrate some of the tools currently available in the collection, and preview future features and additions to the collection.
Topics

- Why *JCE* Digital Library?
- What is in the *JCE* Digital Library?
- Lessons learned from NSDL
- Future features and additions
Why JCE Digital Library?

- JCE already was a digital library
- We can better serve our subscribers
- To retain relevance in digital world
- To become part of a broader community
JCE: From Publisher To Library

- **Publishers provide**
  - Community of authors
  - Review of submitted materials
  - Editing
  - Dissemination / distribution channel

- **Libraries provide**
  - Comprehensive collections
  - Review and approval
  - Search and retrieval
  - Archival storage
  - Community among patrons
JCE Digital Assets Are Comprehensive

- **Journal of Chemical Education**
  - Broad-based publication
  - 1924 to present: 81 years
    - 30,600 articles indexed
  - September 1996 to August 2004: 8 years
    - 5,466 PDF articles
    - 932 PDF supplements
  - 1975–1996 archive now available online
JCE Digital Assets Are Comprehensive

- **JCE Software**
  - 160 program titles
  - Chemistry Comes Alive!
    - 1,996 video clips
    - 33,831 still images

- **JCE Online**
  - 85,000 files, 15 GB
  - Only@JCE Online
    - 3,600 files, 380 MB
  - Discussion forums, store not included
Review and Approval

- All materials at *JCE Online* undergo peer-review

- All materials at *JCE Online* are approved by consensus of reviewers and editors
Finding JCE Materials Online

- **JCE Index**
  - Author index of articles published in *Journal*
  - > 30,000 records
  - Search titles, authors, keywords, year, issue, description
  - Full-text searching of digital archive

- **Project Chemlab**
  - Annotated laboratories published in *Journal*
  - > 5,000 records
  - Search title, author, keywords, year, issue, domain, level, annotation
Finding *JCE* Materials Online

- Chemistry Comes Alive!
  - Video clips on CD-ROM
  - Search glossary of terms, textbook cross reference
Archiving JCE Online

- URLs maintained
- Data backup

- Not yet redundant
  - Lots of Copies Keeps Stuff Safe (LOCKSS)
Topics

- Why JCE Digital Library?
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What is in JCE DLib?

- JCE DigiDemos: Tested Demonstrations
- JCE QBank: Resources for Student Assessment
- JCE SymMath: Symbolic Mathematics in Chemistry
- JCE WebWare: WWW-Based Learning Aids

www.jce.divched.org/JCEDLib/
JCE DigiDemos: Tested Demonstrations

- Tested Demonstrations is long-running JCE feature
- Print medium not easily updated, no forward references
- Digital medium allows updates and media
- New safety concerns can be addressed
- Discussion forum format promotes sharing of ideas, tips, techniques

www.jce.divched.org/JCEDLib/DigiDemos/
JCE QBank: Resources for Student Assessment

- Collections of digital questions and answers
- Course management system compatible: WebCT, Desire To Learn, Blackboard
- Digital questions allow assessment of digital media e.g., movies, molecular modeling
- Answers to some collections of questions available separately

www.jce.divched.org/JCEDLib/QBank/
**JCE SymMath:**
Symbolic Mathematics in Chemistry

- Learning modules using Mathcad, Mathematica, Maple, MATLAB, Stella
- More intimate connection between chemical phenomena and data and the equations used to model them
- Promotes higher-order reasoning/thinking skills
- Applicable to many areas of chemistry although collection is currently limited to physical chemistry

www.jce.divched.org/JCEDLib/SymMath/
JCE WebWare: WWW-Based Learning Aids

- JCE Software → JCE WebWare
- JCE WebWare: It is not about WWW-based learning aids, it is WWW-based learning aids
- WebWare is generally run within an Internet browser —no installation required
- WebWare is more easily distributed
- Open review and peer review
- Sophisticated programs can be presented within an Internet browser using plug-ins, applets, media, JavaScript
- Discussion forums promotes user/user and user/author interchange of ideas

www.jce.divched.org/JCEDLib/WebWare/
Topics

- Why JCE Digital Library?
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- Future features and additions
Lessons Learned from NSDL

- Metadata is good (or is it)?
  - Adopt metadata standard (Dublin Core)
  - Develop controlled vocabulary
  - Apply vocabulary consistently

- Building a digital library is a BIG job.
Topics

- Why JCE Digital Library?
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- Lessons learned from NSDL
- Future features and additions
Future Features: Applying What We Learn

- Applying consistent metadata to all *JCE* materials using adopted standards and controlled vocabularies
  - *Journal* articles, including expanding archive of scanned articles
  - *JCE Software* programs
  - Chemistry Comes Alive! collection of video and images
- Adopting and deploying technologies that facilitate searching and retrieval
Future Features: Applying What We Learn

- Bridging current and new methodologies for publishing
  - Application of controlled vocabulary to incoming submissions and reviewers
  - Alternative methods of metadata assignment
- Building new collaborations
Acknowledgement

- Ed Vitz, Theresa Zielinski, “Flick” Coleman
- Darin Burleigh, Ed Fedosky, Ieva Reich, Rachel Bain, Kevin Cunningham
- Jerrold Jacobson, et al
- NSDL and NSF

nsdl.org