

Background on MathDL For MAA Digital Libraries Workshop

9/22/06

Short History of [MathDL](#). MathDL was begun with an NSF-NSDL collection grant in 2000. Originally this was a cooperative effort with Math Forum, which supplied the initial software development and hosting. Working with an earlier grant to identify exemplary applets in calculus and statistics, Gene Klotz provided most of the content for the initial issue of the *Journal of Online Mathematics and its Application* (JOMA) in January 2001. *Digital Classroom Resources* (DCR) appeared soon afterwards. The online magazine *Convergence*, focusing on the use of history in teaching mathematics, was added in 2004. The newest components of MathDL are *MAA Reviews* and *Classroom Capsules and Notes*.

The third component of the original MathDL was the *Listing of Commercial Materials*. This catalog attempted to list all books and software related to math at the undergraduate level with Tables of Contents, Prefaces, Reviews, and links to the publisher's site for the materials. The original plan was to charge publishers for listing their materials, thereby producing an income stream to support the Library. The editorial work for the Listing at MAA turned out to be extensive. In addition, the dot-com bust of fall 2000 meant that publishers cut back on technical staff and were unwilling to devote the time to deliver us information in a form we could use. Eventually the Listing was removed from the site. However, the development of MAA Reviews is, in part, an updated version of the Listing.

The Math Forum became a for-profit company briefly in 2000 and then was bought by WebCT. However, by fall 2000, WebCT was retrenching in the face of the dot-com bust and looked to divest itself of Math Forum. After protracted negotiations, Drexel finally took over the Forum and moved the operation from Swarthmore to the Drexel campus in downtown Philadelphia. All of this produced problems for MathDL with longer and longer waits for work to be done as MathDL slipped down the list of Math Forum priorities. Finally, after the Math Fest Meeting in August 2003, we decide to bring MathDL into MAA and hired Lucidea to create a content management system to support the site. The switchover to the new system took effect in summer 2004. However, it took until the end of 2004 to reenter all the archival material in JOMA into the system.

[JOMA](#). The Journal of Online Mathematics and its Applications (JOMA) is completing its sixth year of publication. Focused on articles about online learning of mathematics and exemplary online learning materials, JOMA has established a high standard for an online scholarly journal. David Smith was the founding editor of JOMA and served as editor until January 1 of this year when Kyle Siegrist took over.

All articles and other materials submitted to JOMA are **peer-reviewed**. JOMA **publishes continuously** as accepted materials are ready to be posted. Each volume (after Volume 1) represents a calendar year without subdivision into issues.

JOMA takes advantage of the World Wide Web as a publication medium for materials containing dynamic, full-color graphics; internal and external hyperlinks to related

resources; applets in Java, Flash, Shockwave, or other languages; MathML, SVG, and other XML markups; audio and video clips; and other Web-based features.

For more details about JOMA see the [Mission](#) and [About JOMA](#) pages of JOMA itself.

JOMA has incorporated one of its forerunners, [Communications in Visual Mathematics](#), as its Chapter 0. *Communications* was created by Tom Banchoff and Davide Cervone as a totally electronic journal in 1998.

[DCR](#). The Digital Classroom Resources (DCR) library is an exemplary collection of free online learning materials available through the site. Doug Ensley is the founding and current editor of DCR. All materials in the collection have been classroom tested and peer reviewed. The DCR library provides instructors with a set of tools ready for implementation in an existing curriculum as well as an ongoing forum for discussion of the issues surrounding the materials and their uses. Within this community, the library will also provide a snapshot of trends and thoughts on issues relevant to the use of technology in mathematics teaching and learning. For more on DCR see the [About DCR](#) page within this component of MathDL.

Digital Classroom Resources continues to accumulate materials at a slow, but steady rate. Of particular interest are the materials currently coming in from Bio-Quest as a byproduct of the 2003 Bio-Math Meeting, Meeting the Challenge, jointly sponsored by the MAA and the AAAS. These are Excel spreadsheets designed for use by students in biomathematics. Each spreadsheet will be accompanied by information on how to use it and examples of use.

Other new features of DCR are the [MathDL Flash Forum](#) and the [MathDL Flash Forum Learning Center](#). With the release of *Macromedia Flash MX 2004*, educators interested in developing interactive, web-based learning materials gained an exciting, new powerful tool. The latest version of *Flash* comes with the full-fledged, object-oriented programming language *ActionScript 2.0*, which makes it possible to create sophisticated applets – self-contained units running within the user's browser – as well as programs that communicate with and use applications on a server. Such applets and applications are delivered to the audience through the ubiquitous, light-weight, and reliable *Flash Player* which runs *Flash* files in any browser and on any platform. The ubiquity and the consistent performance of the *Flash Player* as well as other features make *Flash* an attractive solution to needs for online delivery of interactive material.

[Convergence](#). *Convergence* is an online magazine which provides a wealth of resources to help teach mathematics using its history. It is edited by Victor Katz and Frank Swetz. Among its features are *problem from another time, on this day* [in mathematics], *Today's Quotation*, and a featured review of a book, poster, videotape, or other mathematical material with an historical flavor. Currently featured articles include “Fibonacci and Square Numbers,” “The Great Calculation According to the Indians, of Maximus Planudes,” and “The Sagacity of Circles: A History of Isoperimetric Problem.” It is currently free, but requires registration.

[MAA Reviews](#) and [Classroom Capsules and Notes](#). The two newest components of MathDL are *MAA Reviews* and *Classroom Capsules and Notes*, both begun in the

summer of 2005. Both of these components are available as a privilege of MAA membership or by subscription.

MAA Reviews, edited by Fernando Gouvêa, is an online continuation of the Telegraphic Reviews that used to be a regular feature of *The American Mathematical Monthly*. However, the reviews are much more substantial, usually running about a page in length. Other books are listed with publication information, but no reviews. The site currently has a listing of 2,288 books with reviews for about 40% of them. The site also enables users to identify books in the MAA's [Basic Library List](#).

Classroom Capsules, edited by Wayne Roberts, is bringing together the best of 112 years of the short classroom materials from the MAA print publications. It can be searched easily by topic, author, and student level. These materials have all been peer reviewed and number in excess of 10,000 items. Of these, 368 have been selected so far by the editors, classified, and made available online in pdf format.

MAA Prize-winning Articles. MAA prize-winning journal articles are among the best writing that the Association has to offer. The prize-winning authors should continue to be celebrated and their articles should be easily available online. The new component of MathDL, *MAA Prize-Winning Articles*, will do just that. For each awarding of a prize for article writing, the new component of MathDL will feature the award citation, remarks by the author(s), biographical notes on the author(s), and an online pdf copy of the award-winning article. We expect to have this component online by the end of 2006.