http://mathdl.maa.org/mathDL/

Math Gateway

Ed Level: Undergraduate    Discipline: Mathematics

Math Gateway, a project of the Mathematical Association of America (MAA), brings together collections with significant mathematical content and services of particular importance to the delivery and use of mathematics on the Web. The portal site features Math in the News – a daily column, This Day in Math – mathematical related events on this day in history, and the ability to search over materials in 16 partner collections. In addition, Math Gateway also offers a “My Library” feature that allows users to save and share articles. Launch date: September 1, 2006.

**Project Goals:** Assume stewardship for undergraduate web-based mathematics education; support the existing community of individuals and organizations concerned with creating and delivering mathematics on the Web; and increase awareness and usage of MathDL, Math Gateway and NSDL within the mathematics community.

**Personnel:** Lawrence (Lang) Moore – PI, Don Albers – Co-PI, Pamela Richardson – Web Master (all technical issues)


**Additional Partners:** webODE, Eduworks, WeBWorK, College Board, MERLOT
**Collection size and collection development:** 20,000+ online resources in sixteen partner collections.

**Web portal:** Current site is MathDL, the primary MAA library of Math Gateway. A new portal is in development and testing – will resolve to: http://mathgateway.maa.org.

**Search and browse:** Search engine will partner OAI metadata on a regular basis and will enable users to search over keywords. Searches may be refined.

**Special features:** Personalization will include My Library links with the option for participation by others, space to upload materials, and discussion board capability for community collaboration.

**Community sign-on:** Math Gateway will employ a centralized authentication system with initial emphasis on coordination between MathDL and Math Gateway. As soon as the initial portal is in production, developers will begin working with the CI on this.

**Cataloging/metadata generation/ NSDL MR:** Content management system is developed and provided by Lucidea Corporation. A CWIS tool is available for cataloging small collections and making metadata available on an OAI server. Rights management and restricted metadata issues are of interest to this Pathway.

**Web 2.0 technologies such as blogging, tagging/bookmarking systems (e.g. del.icio.us); RSS feeds; gaming technologies:** Math Gateway is participating as a tester for the developing NSDL Expert Voices blogging system, and is conducting a blog around the topic of *Presentation of Math on the Web*. The second release of Math Gateway will include RSS feeds for at least the Math in the News columns.

**Evaluation activities:** Evaluation workshop participation in August 2006. Omniture is being implemented on Math Gateway.

**Outreach activities:** Partners meeting April 2006; Pathway workshop scheduled for October 6-8, Washington DC.

**Privacy policy:** Available at http://mathdl.maa.org.

**Unique assets / synergies:** Strong professional society sponsorship and relationships. MAA is the largest professional society focused on undergraduate math education. Extensive membership includes university, college and high school teachers, computer scientists, statisticians, researchers, business, government, and industry. Collaborating with ComPADRE – Physics and Astronomy Pathway to produce math tutorials suitable for physics and astronomy education. Potential user/testers within partnership for the Content Alignment Tool (CAT) for standards application to K-12 resources (MathForum and the Canadian Mathematics Society).
Welcome to the Math Gateway, a portal to undergraduate mathematics in the National Science Digital Library (NSDL). This is a project of the Mathematical Association of America.

Math in the News

Geometry in the Amazon
Humans are apparently born with the ability to grasp geometrical concepts, say researchers who tested an indigenous group of people called the Munduruku, who live in the Amazon.
read on....

Content Highlights

The Linear Algebra Behind Search Engines (Journal of Online Mathematics and its Applications)
The pressing need for organizing and sorting through this mushrooming amount of information presents an enormous challenge, one whose solution is of paramount importance. The entire field of information retrieval is devoted to meeting this challenge.
read full text....

The Brachistochrone (The National Curve Bank)
Gordillo's animations won the 2005 Renie Award. The National Curve Bank invites you to join Galileo, Newton, Leibniz, Huygens, L'Hospital, and two Bernoullis in thinking about one of the most celebrated problems of 17th century mathematics.
read full text....

A Colorful Linear Combination Demo (Demos With Positive Impact)
Geometry in the Amazon

Stanislas Dehaene, of the Collage de France, in Paris, led the research effort. He and his team tested 14 Munduruku children and 30 adults. They then compared their findings against test results of U.S. children and adults.

To test the subjects, Dehaene's team designed arrays of six images, five of which were the same. One image varied slightly.

Participants were asked, in their own language, to identify which one didn't belong or looked "weird" or "ugly".

It turned out that even six-year-olds scored above what would be expected by chance. The average score was nearly 57 per cent: the same as U.S. children, the researchers discovered.

American adults performed better, which seems to lend credence to the idea that formal education enhances understanding.

These results imply that geometrical concepts are universal across humanity, with cultural factors such as maps or language enriching understanding, the researchers said.

"The spontaneous understanding of geometrical concepts and maps by this remote human community provides evidence that core geometrical knowledge, like basic arithmetic, is a universal constituent of the human mind," the study's authors said. The Munduruku children and adults, living along the Cururi River in the Amazon region of Brazil, "made use of basic geometric concepts such as points, lines, parallelism, or right angles to detect intruders in simple pictures," the researchers concluded.