



Connexions has the overarching goal of making high-quality, open-source educational content available and free to anyone, anywhere, anytime. Established in 1999, Connexions is based on a set of intuitions shared by a remarkably wide range of academics: that knowledge should be free and open to use and re-use; that collaboration should be easier, not harder; that people should get credit and kudos for contributing to research and education; and that ideas are linked in unusual and surprising ways.

Connexions welcomes authors, teachers, and learners to *create, rip, mix, and burn* textbooks, courses, and learning materials from a globally accessible, open-access repository. In Connexions, anyone can create “modules” of information – smallish, Lego™ block documents that communicate a concept, a procedure, a set of questions. Connect some modules together, and you have a web course or textbook, or build a curriculum entirely of your choosing. All content is open-licensed under the Creative Commons attribution license; all tools are free and open-source.

Connexions is designed to overcome some of the serious problems associated with the traditional method of transmitting educational information – publishing. First, Connexions strives to bring *people* back into the educational equation, in particular those people who have been “shut out” of the publishing world, like K-12 teachers, scientists and engineers out in industry, and people who do not read and write English. Now these individuals are able to participate not solely as consumers of educational content, but as active contributors to a shared global repository of knowledge. Second, Connexions reduces the *time lag* between producing a textbook and getting it into the hands of students. This is particularly important in fast-moving areas of science, technology, and medicine. Moreover, it allows instructors to rapidly customize and remediate textbooks, course by course, or even week by week. Third, Connexions brings down the extremely high cost of teaching materials, with no compromise in the quality of the presentation or print. Thanks to a collaboration with on-demand press QOOP, Inc., a new 300-page, hard-bound textbook sells for \$25 through Connexions, as opposed to \$125 from a traditional publisher. Connexions enables even less expensive options: users can print materials themselves or use them on-line at no charge. This ability will allow us to disintermediate the academic publishing industry – providing authors direct access to students.

Today, Connexions is one of the most-used open-education resources on the web, employed in traditional college and K-12 settings, in distance learning, and by lifelong learners around the globe. Demand is surging; currently the Connexions servers handle over 16 million hits per month representing over 600,000 visitors from 196 countries. Volunteers are translating modules and courses into a range variety of different languages, including Spanish, Portuguese, Japanese, Chinese, Vietnamese, and Thai; many of these are our most popular.

Connexions content development is grass-roots organized and inter-institutional. Our most active content development areas at present include music, engineering, physics, chemistry, bioinformatics, nanotechnology, and history. For example, a vibrant community of electrical engineering faculty from Stanford, UC Berkeley, University of Illinois, Michigan, Wisconsin, Ohio State, Georgia Tech, Rice, Cambridge, and TU Norway is developing a customizable digital signal processing (DSP) curriculum in Connexions. National Instruments is contributing DSP training materials as well as developing a free “player” version of their popular LabVIEW signal processing tool that will make the materials come alive with sights and sounds, adding much needed interactivity to engineering curricula.

The National Council of Professors of Educational Administration (NCPEA) is developing a Connexions knowledge base in school leadership and administration that will supersede their current print materials. NCPEA is also developing a community-based peer review process that involves practicing principals and superintendents to identify and direct readers to high-quality materials that they endorse as an organization. This effort will serve as an example to other professional societies and journals.

Connexions is the engine driving the Rice University Press, which will reopen after a decade-long hiatus in early 2007 as an all-digital press. RUP will operate just as a traditional press, up to a point. Manuscripts will be solicited, reviewed, edited, and resubmitted for final approval by an editorial board of prominent scholars. But rather than waiting for months for a printer to make an expensive bound book, RUP's digital files will instead be run through Connexions for automatic formatting, indexing, and population with high-resolution multimedia and web links. Users will be able to view the content online for free or purchase a paper copy of the book. RUP's catalog will never go out of print and will be continuously updated.

The developing world is of great interest to Connexions and its supporters. The government of Vietnam has selected Connexions as its platform for higher-education materials development and dissemination for the entire country. Teachers without Borders, which has community teaching and learning centers in 12 countries and teacher training materials in use in 84 countries, has materials available in Connexions. In the Connexions for the Americas project, we are fostering the creation of a critical mass of high-quality educational materials in Spanish, Portuguese, English, and French for use and re-use by the entire population of the Americas. Since a significant challenge in delivering content to the developing world is the availability of computer and network resources, Connexions is working with One Laptop Per Child to deploy the Connexions platform and repository on their laptops.

Connexions' open-source system software is *Rhaptos* (rhaptos.org), a Plone-based educational content management system, developed in house. All content is encoded in CNXML, a variant of XML, to maximize the use of meta-data and semantic content, thereby facilitating searching and construction of semantic webs. Connexions encourages the use of domain specific markup languages, such as MathML, which embed semantic content.

Connexions has received support since 2000 from the William and Flora Hewlett Foundation, the US National Science Foundation, and Rice University and its trustees. The Tech Museum of Innovation, one of the country's leading science and technology museums, recently named Connexions a Tech Museum Awards Laureate in its education division.

Everyone has knowledge to share. Get involved in Connexions and together we can bring textbooks and education into the Internet Age. See cnx.org for more information or contact us directly.

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