

# Connexions

## Create Globally, Educate Locally

**ABSTRACT:** Founded in 1999, Connexions (<http://cnx.org/>) was built upon the philosophy that high-quality, open-licensed scholarly materials can revolutionize the way we think about education. Built upon a core of open software and driven by innovators in the open education movement, Connexions has made it possible for authors worldwide to publish content that teachers and learners can rip, mix, and burn to develop customized learning solutions at no cost. Authors create learning objects, called modules, that can be assembled into online courses, printed textbooks, or academic journals. All content in the Connexions repository is licensed under the Creative Commons Attribution license, giving educators the tools and materials necessary to create unique works tailored to the needs of their students and colleagues. As the Connexions content repository continues to grow, traditional educational consumers will find themselves in a position to become producers, taking full advantage of the knowledge available in a global, digital society.

## Introduction

Built on the philosophy that the free, open exchange of educational materials benefits everybody, the Connexions project seeks to change the way information is delivered to students and teachers around the world. With rising costs of textbooks, shrinking budgets, and changes to the way students participate in the learning process through distance learning and technology, the traditional publication model is proving to be both slow and cumbersome in meeting today's educational needs.

Connexions has shattered this model, taking a prominent role among the open education movement and leading the charge towards affordable, flexible alternatives for learning. Built upon a core of open-source technologies and designed from the ground-up as a free, open project, Connexions combines a rich repository of free content and powerful XML tools to allow authors and educators to share information instantly with others around the world. Far from one-way communication, these users and learners are free to rip, mix, and burn existing content – combined with personalized changes and additions – to create new works to meet their unique needs.

As the open education movement continues to build support, innovative projects such as Connexions will become more and more powerful. As users continue to add rich, high-quality content, more users will be drawn into a world where ideas flow at the speed of thought, free from the physical, financial, and political limitations of previous generations. Connexions provides the world with an alternative to costly, restrictive education by encouraging not only the free exchange of ideas but by putting educators in full and total control of their students' learning experiences.

## Origins

Connexions began as the brainchild of a single professor struggling to make his mark on the academic landscape – in all the wrong ways. As a newly-minted tenured faculty member in the field of electrical engineering, Richard Baraniuk set out to write his textbook, just as hundreds had done before him. Along the way, however, he and then-Dean Sidney Burris came to the following, eye-opening realizations:

1. Rich didn't know everything about electrical engineering. Sure, he may know a lot about his area of specialization, but he was not the leading expert in the entire field – in fact, no single person could possibly make that claim.
2. Publication takes time. By the time he had written the book, had it accepted for publication, gone through editorial review and finally seen a printed book on the shelf, it was almost guaranteed to be outdated and increasingly irrelevant.

Faced with this reality, Rich took a new approach. He realized that rather than attempting to create an entire book, he could develop a small number of learning modules. Combined with the contributions of other experts in the field, and shared using dynamic, flexible, and open technologies such as XML, this team could create the ultimate textbook: accurate, authoritative, instantaneously updatable and, above all, free. With this idea, Connexions was born.

## Features

Over the past ten years, Connexions has grown and matured far beyond its modest beginnings. With over 8,000 content modules, 450 collections, and over 1 million monthly visitors, Connexions is now used in classrooms, living rooms, and conference rooms around the world. As the project has grown, new features have been added to facilitate content entry and provide new ways for content to be used by the community. Among these are the following key features:

- The ability to view content online as a free electronic e-book OR download a free PDF file for offline or print use. Users can even order a printed and bound copy of any collection through our print-on-demand partner, QOOP, for very low cost. By taking advantage of the semantically-oriented CNXML language, authors are able to share their ideas in a highly flexible, translatable, and future-proof format.
- The ability to mix and match existing content with custom creations. By leveraging the Creative Commons Attribution license, users are free to translate, adapt, reorder, or overhaul existing content or create their own.
- The ability to access any version of any module or collection ever created. This content permanency assures educators and authors seeking to reuse content that they materials they need will always be available, even if the author makes changes to current versions.

- The ability to conduct post-publication peer-review. Users can create content “lenses” to allow students, colleagues, or the casual observer to focus the repository down to a well-defined subset of interesting content. Organizations can take this a step further, creating affiliation and endorsement lenses to identify high-quality or high-impact content. This feature allows the community to determine a module or collection’s value and quality without restricting authors with a pre-publication review system.
- The ability to include multimedia and other technologies in learning modules. While traditional textbooks are limited to print and images, Connexions can support almost any web-enabled technologies, and allows authors to post files, handouts, and other extras as downloadable resources.

As the project continues to develop, additional features are continuously being added to the Connexions platform. Efforts are currently underway to allow authors to create more dynamic printed works, allow organizations such as universities or corporations to “brand” content viewed online, and provide methods for allowing schools and other agencies to restrict internal users to a specific set of “zoned” content.

## Current Projects

Connexions has partnered with a number of educational, corporate, government, and humanitarian groups to add additional content to the repository and meet the needs of a global audience. Among these include:

- Pratham Books (<http://prathambooks.org/>), an initiative based in India seeking to provide low-cost, culturally relevant reading materials to children in the poorest parts of India and the surrounding region to promote childhood literacy.
- National Instruments, which has worked with Connexions to bring their LabView player into classrooms around the world to recreate science and engineering experiments without the need for expensive labs and equipment (<http://cnx.org/content/col10241/latest/>).
- Siyavula, a South African-based project adopting Connexions as its platform for delivering a complete curriculum of K-12 materials at no charge, opening the door to a windfall of savings for state and national governments worldwide (<http://cnx.org/news/rice-african-partnership-is-open-education-blockbuster>).
- Vietnam Open CourseWare (<http://www.vocw.edu.vn/>), which has implemented a version of the Connexions platform as the official content delivery system for the nation’s higher education system.
- Community College Open Textbook Project, which has partnered with Connexions to provide free textbooks for popular community college courses in order to reduce the burden for students with often limited financial resources (<http://cnx.org/content/col10522/latest/>).

As the Connexions content commons continues to grow, more and more users will be drawn to the system. By seeding the repository with high-quality content from our educational partners, individual users will have greater access to materials and, in turn, greater motivation for making their own contributions. This cycle of adoption and contribution will soon lead to a self-sustaining explosion of growth, allowing the project to grow well beyond its current reach and ushering in a new era of open education resources.

## **Conclusion**

Connexions is, without question, the epitome of innovation. By combining forward-thinking licensing strategies with cutting-edge, powerful XML technologies, Connexions has built a repository rich with both quality content and potential. By allowing users to create modest, focused content modules and share them across a global network of educators and learners, authors are able to reach across oceans and share their ideas with the world without the expense, frustration, and limitations of traditional publication. Consumers become producers themselves, customizing repository content to create unique, personalized learning solutions that can be used in any format. By sharing its repository of ideas and powerful web-based tools with the world, Connexions has brought together a global community that can literally change the face of education – and all for free.