



Frequently Asked Questions on Connexions and Open-Access Education

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This FAQ has been compiled from seven and a half years of conversations with authors, instructors, learners, reporters, and other interested folk worldwide.

What is “open education” and what are open educational resources (OERs)?

The open-education movement takes the inspiration of the open-source software movement (Linux) and the power of the internet and applies it to teaching and learning materials like course notes and textbooks. OERs are teaching and learning materials that are free to use and also re-use in new ways around the world.

What is Connexions?

Connexions (cnx.org) is a non-profit start-up launched at Rice University in 1999 that aims to reinvent how we write, edit, publish, and use textbooks and other learning materials. It's a global repository of educational content that can be described in four words that borrow from an Apple advertising slogan and a great book by Larry Lessig:

- Create* – in Connexions, everyone is free to create educational materials and contribute them to the repository
- Rip* – in Connexions, everyone is free to copy the material and customize it
- Mix* – in Connexions, everyone is free to mix the material together into new books and courses
- Burn* – in Connexions, everyone is free to create finished products like e-learning web courses, CDroms, and even printed books

How is Connexions different from other open education projects?

First, in *scale*: Connexions has content from all over the world in a growing variety of languages, not just materials from one specific school or university. It also collects materials to support education in K-12, community college, university, continuing education, and industrial training settings.

Second, by the way we support *communities*: Connexions is globally accessible to anyone to not only read and use our materials, but also take them, make them your own, and *contribute them back* to the repository. In reality, most other open education projects are of the “look but don’t touch” variety.

Third, in the way we’re *organized*: Connexions is grassroots organized from the bottom up rather than from the top down like many other open education projects. Everyone is free to join and take on a leadership role.

Who is using Connexions?

Right now, per month, Connexions is averaging over 600,000 visitors from every country connected to the internet. The vast majority of them are students who visit to learn, most from Google and other search engines.

Authors contributing content include professors from several major universities in North America, Europe, and Asia. Other contributors include former “shut outs” like Kitty Jones, a private music teacher from Champaign, IL, USA, who is writing on music theory. Already her material is in high demand; to date, her materials have been used (page views) over 7 million times. This gives you a sense of the size of the audience out there for OERs.

Volunteer translation projects are progressing rapidly in Spanish, Chinese, Japanese, and a number of other languages. Already, this is some of Connexions’ most popular material.

Teachers Without Borders is using Connexions for training and certifying teachers in 84 countries around the world. The *University of California at Merced*, the latest addition to the UC system, is developing a range of courses in their engineering and science curricula in Connexions. The *National Council of Professors of Educational Administration* (NCPEA) is developing their knowledge base and a peer review quality control process in Connexions. They aim to include not just faculty members in the review process, but also practicing school administrators and superintendents.

Why is open education important?

First, open education strives to bring *people* back into the educational equation, in particular those people who have been “shut out” of the publishing world, like

talented K-12 teachers, scientists and engineers out in industry, and people who don't read and write English.

Second, open education appears to be the most viable way to bring down the *extremely high cost of teaching materials* – for example from a \$125 textbook to a \$25 textbook with no compromise in the quality of the presentation or print quality (\$15 in quantity). The average community college student in the US spends more money on textbooks than tuition; something is out of balance there.

Third, open education strives to reduce the *time lag* between producing a textbook and getting it into the hands of students. By the time most books are printed, they're out-of-date. This is particularly problematic in fast-moving areas of science, technology, and medicine.

Connexions sounds like Wikipedia. What's the difference?

Wikipedia is a great example of an open educational resource. It is freely available, and everyone is welcome to contribute.

On a simplistic level, the difference lies in that Wikipedia is an encyclopedia, and people generally don't teach from encyclopedias. So, in a sense, Connexions is a kind of textbook equivalent of Wikipedia.

On a deeper level, there are important differences in how Wikipedia and Connexions handle the credit that goes to authors: in Wikipedia authors are more or less anonymous while in Connexions they are clearly identified. This sort of academic "credit" is important to many authors and is often a prerequisite for them to participate. Moreover, having a named author authenticates the work, which helps out later with quality control.

Finally, Connexions has a fundamentally different approach to quality control; more on this below.

What are the legal ramifications of this? Isn't this a violation of copyright law?

The materials in Connexions all feature a *license* – created by an organization called the Creative Commons – that makes sharing, using, and even changing the content free and legal, as long as you attribute the original author. And importantly, authors retain their copyright in Connexions, and so they retain control of their materials.

So while Connexions is a totally different way to approach the publication process, it's all carefully designed to be totally legal. This is in stark contrast to what's going on in the music industry today with remixing, file-sharing, and so on.

Don't professors make money by writing textbooks? Why would they want to give their work away for free?

First, the vast majority of faculty do not make significant amounts of money from writing textbooks. If you take into account that most fairly successful textbooks sell a couple thousand copies a year, then amortized over the 3+ years it usually takes to write a book, the royalties work out to something like 25 cents an hour.

Connexions is working out in the “long tail” of the publishing industry. We’re trying to make a difference for textbooks that typically sell a few hundreds or thousands of copies; we’re not trying to supplant Harry Potter from the best seller list.

Actually, when you get down to it, faculty write textbooks not to make money but to make an *impact*, and systems like Connexions make their work accessible to more people, thus increasing their potential impact. So it’s a win-win for both writers and readers.

Electronic books have been slow to catch on. Is there any benefit for students or professors that prefer a printed textbook?

Print is going to be important for a long time. One thing Connexions has been working really hard towards is the ability for anyone anywhere to mix together their own book in Connexions and then have it *printed-on-demand* to arrive the next day by courier. We can do this now, and the savings can be incredible, for example bringing the cost of a 300-page hardback engineering textbook from \$125 to \$25.

And then there’s the publication time-lag issue from above. Connexions’ web courses and printed books are always up-to-date with the latest material from the global repository.

What about quality control?

Connexions invites everyone to contribute their materials. Because of this inclusive policy, the global repository will have content at different stages of development. In order to help users find the materials they need, we are developing a system that enables anyone (individuals, institutions, professional societies, and so on) to set up their own *review process* that sifts through the entire repository and directs users through a *lens* to the content judged to be “high quality”. It’s basically analogous to the “peer review” systems used in academic journals, but more scalable.

We rolled out lenses in March 2007; for examples, see cnx.org/lenses. One reviewing community is the Institute of Electrical and Electronic Engineerings (IEEE) – the world’s largest professional society. The IEEE Signal Processing Society is partnering with Connexions on a major initiative to develop and review a critical

mass of signal processing modules and courses. The materials will pass through a careful IEEE society review for quality and content that will earn them the imprimatur of the IEEE brand for quality.

Another reviewing community is the *National Council of Professors of Educational Administration* (NCPEA); they are engaging not just faculty members in the review process, but also practicing school administrators and superintendents.

What are the most significant trends you see in the academic publishing world?

Disintermediation (cutting out the middle man) is starting to move from websites like Ebay and sweep through all aspects of "content" development and distribution, from books and the press to music and movies. For example, we are going to see the re-emergence of many of those university presses that were shut down in the 1980s.

Another trend is the increasing use of XML, meta data, and other semantic web (Web 2.0, Web 3.0) features to enable new and flexible ways of developing and connecting ideas. Connexions has been XML-based from day one, and we could never have done what we have without it.

How did you get interested in open education?

In 1999, one of us (RGB) was frustrated with teaching an electrical engineering course and thought about writing a new textbook. Instead he decided to "do something modern" and think about how the then emerging open source software world could impact education. Connexions was born out of that "itch that needed to be scratched."

For more information on Connexions, see cnx.org or contact us directly.

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