

Open For Innovation

Strategically using “open” concepts and methods for sustainable development and use of online learning in higher education.

By Paul Stacey

There is a long tradition of open scholarly sharing in higher education where research and knowledge creation are built on top of the work of predecessors who receive attribution through open citation and referencing. In the high-tech world, the open-source software movement has become a viable alternative to traditional software development. At its core, the open-source approach reduces the cost of software development and maintenance by distributing it among many developers¹, and increases rates of innovation by providing a common code base on which others are free to build.²

Open initiatives in higher education have crystallized around three major areas of activity:

- the creation of open software and development tools
- the creation and provision of open course content
- the development of standards and licensing tools.³

BCCampus has adopted and adapted “open” concepts and methods as a deliberate strategy for building a sustainable approach to the development and use of online learning resources across British Columbia’s entire public post-secondary sector. This approach builds on the long tradition of higher education research, applying its open ethos to teaching and learning resources. By incorporating an open strategy into a suite of linked system-wide educator services, BCCampus supports sustainability by—

- revealing supply
- aggregating demand and requirements across multiple institutions

- forming partnerships between institutions to avoid duplication of effort
- stimulating innovation through open publishing, sharing and reuse.

BCCampus educator services include an annual Online Program Development Fund (OPDF), a set of **licenses** for making online learning resources shareable, a **Web-based repository** where educators can contribute and find accredited online learning resources, **communities of practice** for peer support and sharing, and **professional development**.

As the William and Flora Hewlett Foundation points out, “At the heart of the movement toward Open Educational Resources (OER) is the simple and



powerful idea that the world’s knowledge is a public good and that technology in general and the Worldwide Web in particular provide an extraordinary opportunity for everyone to share, use, and reuse knowledge. OER are the parts of that knowledge that comprise the fundamental components of education—content and tools for teaching, learning and research.”⁴

The BCCampus approach has much in common with other Open Educational Resource initiatives around the world, though it has relied on government leadership and vision via public funding provided through the Ministry of Advanced Education. Its origins contrast with those of the OER projects with the best-known names: MIT, Carnegie Mellon, Rice. These have all received special grant funding from the William and Flora Hewlett Foundation. Moreover, while the BCCampus approach shares aspects of these other Open Educational Resource initiatives, it is unique in

¹ Wershler-Henry, D. (2002), *Free as in Speech and Beer – open source, peer-to-peer and the economics of the online revolution*, Toronto: Prentice Hall, p. 39.

² Lessig, L. (2001), *The Future of Ideas: The Fate of the Commons in a Connected World*, New York: Random House, p. 57.

³ Albright, Paul (2006), *Open Educational Resources, Open Content for Higher Education*, at <http://www.unesco.org/iiep/eng/focus/opensrc/PDF/OERForumFinalReport.pdf>

⁴ *Open Educational Resources (OER) – Making High Quality Educational Content and Tools Freely Available on the Web*, at <http://www.hewlett.org/Programs/Education/OER/openEdResources.htm>

the strategic way it incorporates open approaches into a suite of bundled services at a system-wide rather than institutional level. This approach fits very well with the BC government's Campus 2020 initiative.⁵



MIT OpenCourseWare (OCW)

<http://ocw.mit.edu/index.html>

Rice University Connexions <http://cnx.org>

Carnegie Mellon Open Learning Initiative

<http://www.cmu.edu/oli/>

For more on how these initiatives compare to one another and are affecting education globally, see [OER In A Global Context Report](#) on the BCcampus website.⁶

Online Program Development Fund



The British Columbia Ministry of Advanced Education annually provides the OPDF to BCcampus for the support of inter-institutional collaboration and external partnerships. The fund's purpose is to develop online learning resources: courses, full programs, learning objects, tools, and technologies.

The OPDF is strategically structured to target development of credit-based online learning resources in areas of high student demand or labour-market need. Projects often involve development of multiple courses that build out or represent complete online degree programs. The aim is to give students access to more programs and resources that help them complete degrees, diplomas, and certificates.

The OPDF has been issued via a Request for Proposals (RFP) for four consecutive years: 2003, 2004, 2005, and 2006. Evaluation, selection, and award are done

by an independent review committee against the criteria expressed in the RFP guidelines.

OPDF funding awards made 2003–2006 total over \$5 million dollars for development of 261 courses, 44 course modules, 150 learning objects, and 18 virtual labs and tools. The development process for many of the projects from earlier OPDF rounds has now ended so that the resources are in active use by learners and educators across the province.

2006 OPDF included grants for:

- a post-graduate diploma in Geographic Information Systems
- a certificate program in Renewable Energy Technology
- trades competency-based education for auto collision and repair
- online courses students need to complete a fully online Bachelors Degree in Tourism Management
- libraries partnering in the development of an online toolkit for information literacy, writing skills and learning skills
- creation of an Integrated Laboratory Network (ILN) in the province of BC that will provide online, any-time/any-place, shared access to scientific instrumentation, instructional materials and expertise for science education
- development of resources to help make online media accessible to people with disabilities
- online learning resources dealing with soil-forming processes for use in soil, agriculture, forestry, and natural resource management courses.
- creation of needed online courses in areas of adult basic education, early childhood education, psychology, visual arts & culture, health, and business office administration.⁷

The digital nature of these resources brings with it some unique value propositions, including their ability to be socially authored, economically distributed, and easily customized.

A key BCcampus educator service is using contractual agreements and licenses to sort out Intellectual Property (IP) rights and copyright of resources in advance, as part of the development process.

⁵ "Province Launches Campus 2020 – Thinking Ahead" online at http://www2.news.gov.bc.ca/news_releases_2005-2009/2006AE0032-000949.htm

⁶ <http://www.bccampus.ca/Assets/Educator+Services+Reports/BCcampus+Open+Educational+Resources+in+a+Global+Context+Report.pdf>

⁷ OPDF Projects Funded complete listing available at <http://www.bccampus.ca/EducatorServices/CourseDevelopment/OPDF/FundedOPDF.htm>

Agreements and licenses state:

- who owns what
- for what uses the property is offered
- what conditions of acknowledgment and/or payment apply to each use.

In consultation with the Ministry of Advanced Education, BCcampus developed a unique open strategy that supports local and global sharing.

Creative Commons and BC Commons Licenses

Using contractual agreements, BCcampus accords the IP of all online resources produced through the Online Program Development Fund to the original developer, not BCcampus. Contractual agreements are between public post-secondary institutions and BCcampus. Diverse IP policies are in place at different public post-secondary institutions in BC. For some institutions, IP rights rest with the faculty; in others, with the institution. OPDF funds are distributed via contracts with public post-secondary institutions. IP of OPDF resources is governed by the policy of the particular institution where development is occurring.

OPDF developers are given two options for licensing the resource they create. They may choose to share and reuse according to the terms of the Creative Commons Share Alike-Attribution Canada license.

Optionally they may apply a BC Commons license. Both licenses acknowledge copy rights of the developer while defining a set of terms by which the resource can be shared and used by others.



The Creative Commons license shares the resource globally with others. Resources licensed with Creative Commons allow others to copy, use, distribute and make derivative works. The provision is that they share back with others and give attribution to the original author. The Creative Commons license provides a means by which developers become part of the global open educational resource community.



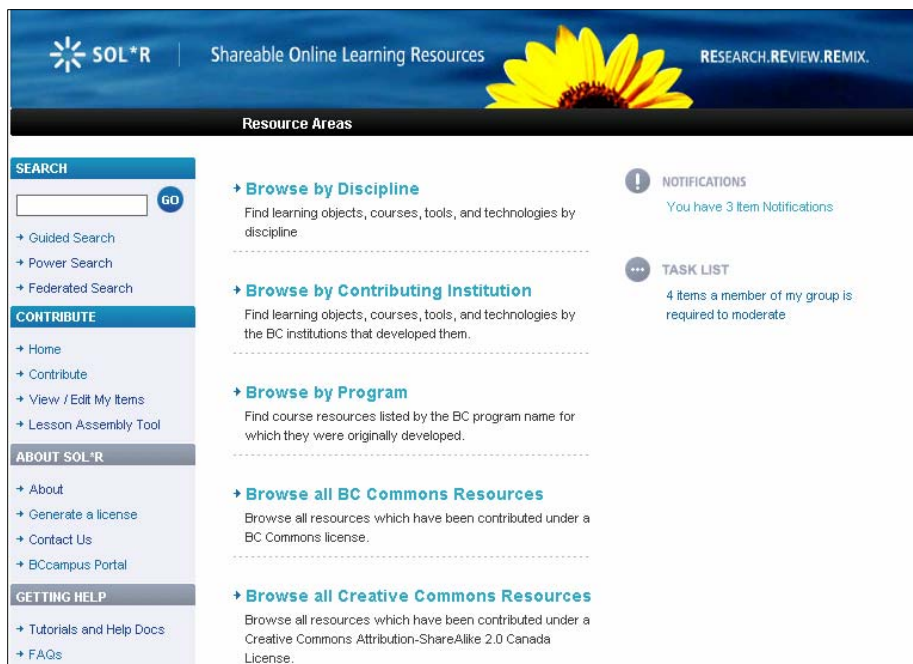
The BC Commons license is similar to the Creative Commons license but limits sharing to the local context

of BC's public post-secondary system. Resources licensed via BC Commons are available to BC public post-secondary faculty and staff only. This option provides developers with an opportunity to experience sustainable development benefits through sharing on a local level, among peers, before considering the larger global context. Over 90% of OPDF developers have chosen the BC Commons license.

The Creative Commons and BC Commons licenses have three components:

- A plain English human-readable deed
- A full legal lawyer-readable license
- An icon and piece of script code embedded into each resource which expresses the terms of the license in a computer Web friendly way.

OPDF developers use the "Generate a license" online service at <http://solr.bccampus.ca> to specify their choice of Creative Commons or BC Commons license. Both licenses require attribution: that is, whenever online learning resources are used by others, the original developer is credited. Enhancing developer reputation through attribution is a key aspect of sustainability. Higher education is reputation-based, and acknowledging the work of others helps developers earn the regard of peers in much the same way as do research and publishing. Reputation has become a key factor in many Internet sites such as Slashdot, Amazon, eBay and Google where reputation systems are used to enhance participation, service and sales. ⁸



The screenshot shows the SOL*R website interface. At the top, there is a navigation bar with the SOL*R logo, the text "Shareable Online Learning Resources", and the tagline "RESEARCH.REVIEW.REMIX." A large yellow flower graphic is on the right. Below the navigation bar is a "Resource Areas" section. On the left, there is a "SEARCH" box with a "GO" button and links for "Guided Search", "Power Search", and "Federated Search". Below the search box are sections for "CONTRIBUTE" (Home, Contribute, View/Edit My Items, Lesson Assembly Tool), "ABOUT SOL*R" (About, Generate a license, Contact Us, BCcampus Portal), and "GETTING HELP" (Tutorials and Help Docs, FAQs). On the right, there are "NOTIFICATIONS" (You have 3 Item Notifications) and "TASK LIST" (4 items a member of my group is required to moderate). The main content area lists several browsing options: "Browse by Discipline", "Browse by Contributing Institution", "Browse by Program", "Browse all BC Commons Resources", and "Browse all Creative Commons Resources".

⁸ "Manifesto for the Reputation Society" by Hassan Masum and Yi-Cheng Zhang. *First Monday*, volume 9, number 7 (July 2004), at: http://firstmonday.org/issues/issue9_7/masum/index.html

The Creative Commons and BC Commons licenses both allow for the original resource to be modified by others. This enables other educators to add enhancements to the resource or customize it to fit their understanding of a domain or method of teaching.

If a new user modifies or improves an original resource, he or she must contribute the new and improved version back for the benefit of all. This requirement is similar to practices used in Open Source Software development and supports sustainability by fostering a community-based development environment where online learning resources are adaptable and subject to continuous improvement by a network of professional peers.



Shareable Online Learning Resources (SOL*R) Repository

In November 2005, BCcampus deployed SOL*R as a service for British Columbia's post-secondary educators.

SOL*R enables educators to contribute and access online learning resources for use in delivery of courses and programs. SOL*R is a Web-based online service that facilitates the sharing, discovery, reuse and enhancement of post-secondary online learning content.

SOL*R has initially been seeded with content funded through the OPDF. As part of the completion of the development of an OPDF project, developers license and upload the resources they have developed to SOL*R. Resources include courses, modules, full programs, learning objects and technologies. Hundreds of online learning resources are now available for sharing and reuse by BC public post-secondary educators through SOL*R.

While initial content comes from the OPDF, all online learning resources are welcome, and developers are encouraged to contribute non-OPDF resources.

All BC public post-secondary educators can access SOL*R through the BCcampus portal by creating an account and requesting membership in the SOL*R group. Documents giving step-by-step help to prospective users are available at the Access SOL*R Web page, <http://solr.bccampus.ca>.

A public interface to SOL*R provides a means of making Creative Commons licensed resources available globally.

SOL*R resources are categorized and searchable in a wide range of ways, including academic discipline, contributing institution, program of study and license type. Within SOL*R, resources can be previewed and then downloaded for use if the viewer so wishes. Learning resources in SOL*R differ from most other OER initiatives in that they are in an interoperable format that optimizes them for use in a variety of online course management systems, including WebCT and Moodle. This contrasts with MIT's OCW initiative, which primarily provides instructors' course notes in Adobe Acrobat .pdf format for use in classroom teaching and learning scenarios.

BCcampus is interested and actively pursuing opportunities to integrate and federate the SOL*R repository with other collections of academic learning resources and authoring environments.

Together the OPDF, BC Commons/Creative Commons licenses and SOL*R fit together like puzzle pieces as a suite of services that foster open development, sharing, and reuse of online learning resources.

Open Online Communities

To support knowledge mobilization, communication, interaction and peer sharing of expertise and practices associated with teaching, learning and research, BCcampus has established a network of online communities. Online communities are different from standard websites in that they provide a means for grassroots communication and collaboration among peers through self-service posting of resources, requests and advice.

This approach applies open principles of distributed innovation and methods for cultivating communities of practice.⁹

BCcampus online communities provide a forum where members can:

- publish events to community calendars
- pose questions, issues, and observations for discussion
- find partners and peers from other institutions to collaborate with
- post news, resources, and best practice contributions
- showcase and promote online learning initiatives
- upload and share images and stories of people, programs and events

⁹ Wenger, E., R. McDermott, & W. Snyder (2002), *Cultivating Communities of Practice*, Boston: Harvard Business School Press, p.51.

- interact with others “live” using text messaging and Web-based meeting rooms that support use of Voice over IP, whiteboard, and multimedia.

The network of BCcampus online communities includes:

- a community for faculty and education technology specialists across all public post-secondary institutions in British Columbia
- a marketplace and expo community that supports collaboration between and among K-12, post-secondary and corporate online learning practitioners
- a research community supporting a Community University Research Alliance mapping the Quality of Life and Culture of Small Cities in Canada.

BCcampus invites expressions of interest from other BC public post-secondary entities looking to establish similar online communities for teaching, learning or research purposes.

Local and global educators in the Marketplace and Expo online community are using the community space to collaboratively write a book: *Using Emerging Technologies to Teach and Develop Robust Online Learning*.

Researchers in the Small Cities online community are using their community to publish and distribute research results, profile researchers and their projects, and coordinate research efforts across hundreds of participants.

Professional Development

The growth in demand and use of online learning touches all aspects of higher education. Faculty and staff throughout the institution—from student services to IT, academic departments, and senior management—all need skills and knowledge to ensure that educational technologies are deployed effectively. BCcampus supports the Educational Technology User Group of British Columbia in offering spring and fall professional development workshops open to everyone. Expanded professional development opportunities are being planned with the intention of building out use and expansion of institution specific offerings to benefit the entire post-secondary sector.

Open to the Future

Moving forward, BCcampus expects to see growing use and synergy between open strategies. In addition to open-source software and open educational resources, there is a movement in higher education

pushing for open access: the free online availability of peer-reviewed scientific and scholarly journal articles. A convergence between these open approaches will support and sustain higher education’s role in knowledge production and global development of a commonwealth of learning.¹⁰

As an early pioneer of open strategies and open educational resources, BCcampus is seeking to establish partnerships and collaborations with others engaged in similar work. With an open strategy, innovation and efficiency are best achieved collectively. By working with others BCcampus hopes to refine and further develop this open “Do-It-Together”¹¹ open approach for OER.



The screenshot shows the BCcampus.ca website interface. At the top, there is a navigation bar with 'What's New', 'Welcome', 'What's New', 'Administration', 'Highlight', and 'Help'. Below this is a 'What's New' section with a search bar and a list of highlights including 'Community Neophytes', 'Sandbox', 'Online Program Development Fund', 'Professional Development', 'WebCT', and 'Moodle'. On the right side, there is a 'Search' box, a 'Polls' section, and a 'Note Board' section with a post by Sandy Hirtz.

These open strategies and educator services are only a piece of the overall BCcampus mission. BCcampus’s executive director describes the complete BCcampus mission in his white paper *Strategic Collaboration: Requirements for Sustainability*.

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¹⁰ Willinsky, J. (2005), “The Unacknowledged Convergence of Open Source, Open Access, and Open Science”, *First Monday Online Journal*, http://firstmonday.org/issues/issue10_8/willinsky/index.html
¹¹ IIEP, (2006), “UNESCO’s International Institute for Educational Planning (IIEP) Forum on Open Educational Resources/Open Content – Do It Yourself Portal discussion forum May through June 2006” at <http://www.unesco.org/iiep/virtualuniversity/forums.php>, accessed August 30, 2006. Online discussion forum url is: <https://communities.unesco.org/www/info/iiep-oer-opencontent>.