

# Teaching and Learning Unleashed with Web 2.0 and Open Educational Resources

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**A**t a meeting of the OpenCourseWare Consortium, Dr. Richard Rowe, former president of the One Laptop per Child Foundation and founding partner of the Open Learning Exchange, challenged us to change the frame through which we view the world: to perceive our world based on abundance and not on scarcity.<sup>1</sup> Looking at education, how can we create abundance, and what would it look like? Though Rowe was focusing on education in developing countries, his frame is also useful for viewing education systems for formal and informal learning in developed countries.

Taking up Rowe's challenge, this essay examines how the latest web capabilities (Web 2.0), in combination with open educational resources (OER), are creating abundance for teaching and learning.<sup>2</sup> Let's consider this abundance by looking at Gwyn's story and exploring what this might mean for formal education.

## **Gwyn's Story**

Meet Gwyn, a typical adult in her early 30s in the United States. She is involved in one of the nation's leading hobbies and shares many of the characteristics of web users described by the Pew Internet and American Life research.<sup>3</sup>

Gwyn is passionate about horses—she rides a friend's horse every weekend, has been taking riding lessons for two years, and attends many local horse shows with the dream of being a competitor herself. She is planning to buy two horses of her own. Gwyn owns a house and enough land for horses, but needs to build the horse barn and set up her pasture before her dream of being a horse owner can become a reality.

## **Gwyn's Network Activities**

Gwyn shares the progress on her plans for setting up her horse farm on her blog, where she regularly gets advice and feedback from other horse lovers. Some of the feedback is from people she knows, including friends, new acquaintances from horse shows, a local riding instructor, and a growing number of like-minded people who are either looking to do what she's doing or have already done it and are giving advice.

She says that writing in her blog helps her pull her ideas together and that when she gets comments back, it really makes her feel as though she's getting it and that she can really do what she plans. She also talks about how people in online groups have helped her decide what kind of equipment to look for when she sets up her barn and have her thinking about using wind energy to power her farm. She's starting to gather resources and make contact with people on that topic in order to incorporate it into her planning. At least two of the groups she's found in her social network applications are sharing helpful resources, and she plans to attend some of their local events.

Gwyn is continuously trying to learn all she can about what horse to buy. She reads online articles on horses and has downloaded many educational horse posters on topics such as horse breeds and colors. She also found a free and open horse breeding textbook online. She seeks advice from horse professionals using an online ask-the-expert service and in the leading discussion forum for horse breeders.

Gwyn stays up to the minute on the latest happenings in the horse world with the custom page she set up for horses. Right now it displays horse news from the leading publishers, horse photos, the latest postings from her two online groups, the latest links in her social bookmark site, and the latest feeds from the 50 horse blogs she subscribes to. She checks her site every time she's at her computer throughout the day. She also has daily photos and blog headlines sent to her PDA.

She's starting to use her PDA to send short video blog posts when she rides on weekends. It's show season now, so she's been getting lots of photos and text messages from friends about what they are wearing and who is winning at the shows. She likes to take lots of photos, too, which she shares online, and has had a few used by others on their sites, which makes her want to take even more and better pictures.

When asked how she's figuring out how to set up her farm, Gwyn says she seeks advice mostly from her friend who shares her horse and some of the people she's gotten to know from riding, such as her riding instructor. She says she's been able to go deeper into details and options through what she's learned on the web and that her website and social

bookmark site have really helped her organize her resources and even find a lot more.

Gwyn reports that some of the free web tools she's found have really helped her plan. She found a landscape planning tool she's used to diagram her farm and share it in her blog; she's used the map coupled with site data to prepare her land use permit; and she found a pasture management calculator and a nutrition calculator.

Gwyn also found a number of online courses that could help her; some were free and some were not. She went through a free OpenCourseWare (OCW) university course on pasture management that she said helped her a great deal, even without the instructor. Since it was licensed using Creative Commons, she copied parts of it, combined it with her photos, and shared it on her blog. Other open educational resources have provided her with valuable information about caring for and managing horses. Next, she's planning to enroll in a noncredit online course in horse management offered by Michigan State University's My Horse University (<http://www.myhorseuniversity.com>). She'd like to make sure she knows what she's doing for her new horse and she trusts the university will have the best research-based information.

Next month, Gwyn breaks ground on her farm. Then, she'll update her goals on 43 Things (<http://www.43things.com>) and start working on her next goal.

## **Gwyn's Personal Learning Environment**

Gwyn's story describes today's web-enabled environment for informal, personalized learning. Let's look at the kinds of learning activities in which Gwyn is engaged.

Gwyn is discovering, selecting, and assembling resources; doing analysis and data visualization; engaging in both local and global communities of novices and experts; creating and publishing content; writing to reflect, synthesize, and apply; receiving feedback on her progress from experienced peers; and setting and publicly stating learning and performance goals for herself. Gwyn is also engaged in formal learning with a trusted, reliable source to achieve a particular level of expertise.

The breadth, depth, and volume of resources on the topic, the high level of engagement with a global community of interest, and the ability to create and publish resources as part of the community set this experience apart from any other form of informal learning prior to Web 2.0. The speed, scope, scale, and personal control of what Gwyn is able to do in this environment is unlike anything that has existed before for individuals. With

the growing number of open educational resources and tools, personal learning environments are growing faster, richer, more individualized, and even more socially connected and complex.

## **Teaching and Learning Unleashed**

Fortunately, networked environments thrive on abundance and complexity. The more people use them, tag them, mash them up, and remix them, the more useful they become. In many ways this is the opposite of what happens in institutional environments trying to manage scarce resources. For example, lectures enable one expert to teach many; office hours schedule scarce faculty time; curriculum and course syllabi standardize content; class schedules pace interactions; and credit hours standardize outcomes. OER and Web 2.0 are creating an abundance of what has been scarce in the past while enabling us to manage the growing complexity.

### **Open Educational Resources**

What happens when universities make their structured educational content available via the web? It leads to even more resources and increases our chances of finding things that are useful, or can be made useful, in our own context. From MIT's pioneering OCW project (<http://ocw.mit.edu>) to the United Kingdom Open University's OpenLearn project (<http://www.open.ac.uk/openlearn/home.php>) to the more than 120 universities worldwide that are publishing open resources through the OCW Consortium, the OER Commons site (<http://oercommons.org>) shows 24,000 such resources, and there are thousands more in other portal and repository sites. From computer literacy to irrigation to biotechnology, resources range from course presentations and readings to videos and animations. Moreover, there are hundreds of schools and organizations around the world translating materials into multiple languages and making them available as open resources (for an example, see <http://oops.editme.com>).

A growing number of these resources use licensing such as the Creative Commons license (see <http://creativecommons.org>) that enables free use and reuse of the resources. The increasing recognition of this license around the world is one of the enablers of the rapid growth in OER.

Anything can be used as a resource for learning, but an "educational" resource is intended to facilitate learning. The OCW Consortium defines it as having a planned structure to achieve defined learning outcomes. Jon Dron defines it, from the learner's perspective, as being "... sufficient to encapsulate a learning need that may be experienced as a choice in a

learning trajectory.”<sup>4</sup> As educational resources become open and available, learners have the freedom to utilize the information they need to construct their own learning as well as create new resources that may be useful to others. Open educational resources take knowledge out of the hands of few into the minds of many.

## **Abundance of Active, Constructive, Collaborative Interaction**

Making resources available is only the beginning. As resources proliferate, more tools are emerging to find them, remix them, mash them up, and cocreate them in social networks. Finding educational resources is being made easier by the ccLearn project of Creative Commons (<http://learn.creativecommons.org>). Tools such as wikis enable people to contribute, edit, and discuss resources in an environment of shared creation. Wikiversity (<http://en.wikiversity.org>), WikiEducator (<http://wikieducator.org>), and Curriki (<http://www.curriki.org>) are examples of open educational resource wikis for teaching and learning. Remix and mashup tools include Rice University Connexions (<http://cnx.org>), which enables custom textbooks. If you have access to the software that created the original resources, and if they are licensed in a way that enables derivative works, you can download and edit resource files such as those on Teachers’ Domain (<http://www.teachersdomain.org>). For this reason, open file formats, such as OpenOffice (<http://www.openoffice.org>) and Kaltura (<http://www.kaltura.com>) are used to enable global access.

## **Freedom of Time and Place**

One of the important legacies of distance and online learning is growing acceptance that learning online can be as good as, and even better than, learning face to face. The No Significant Difference research phenomenon (<http://www.nosignificantdifference.org>) has matured to the extent that the majority of academic officers in U.S. institutions agree that online is as good as face to face and getting better. Online learning is offered by more than two-thirds of U.S. higher education institutions and the rate of compound annual growth in online enrollment has been 21.5 percent during the past five years.<sup>5</sup> Clearly, we know how to create effective learning experiences that are available anytime, all the time, and anywhere.

## Access to Expertise

While it is still not easy to fill faculty positions in institutions, the web is making it easier to tap into a range of people from novice to expert. Self-publishing in blogs, podcasts, video, and image archives does not make anyone an expert, but reputation systems certainly start to provide information useful in making judgments about someone's level of expertise. Finding peers, mentors, coaches, and experts—people who play key roles in learning experiences—is enabled by services such as Tutor.com (<http://www.tutor.com>) and social learning sites such as Livemocha (<http://www.livemocha.com>), eHow (<http://www.ehow.com>), and LearnHub (<http://learnhub.com>). Gwyn, for example, could have asked questions of university equine experts at Extension.com (see [http://www.extension.org/expert/ask\\_an\\_expert](http://www.extension.org/expert/ask_an_expert)) or of peers at EquiSearch.com's community site (<http://forum.equisearch.com>). She also could have used ChaCha (<http://www.chacha.com>) for quick answers to her horse questions on her mobile phone.

## Additional Credentialing

One of the constraints in the new environment is a lack of credentialing mechanisms. Curriculum standards, unit skill standards, and knowledge and skill competency definitions are growing open resources. Open self-diagnostic tests and the ability for learners to organize their e-portfolios around standards are here now. Yet measuring, valuing, and recognizing learner performance remains an exclusive function inside formal education systems.

Quality is traditionally tied closely to the brand of the institution. The brand has many factors that influence its perceived value, including price and exclusiveness, alumni network, job placement rate, and much more. Another view of quality comes from a focus on the performance of the learner. Direct-assessment universities such as Western Governors and a number of adult competency-based institutions place the assessment of learning outcomes at the center of their quality brands.

It is possible that we'll see growth in credentialing bodies such as formal organizations, institutions, and communities of practice that will endorse various assessments and value them within their communities. We may see the emergence of performance records aggregated and maintained by individuals independent of their service providers. Today's search tools enable an informal record of contributions to communities—blog posts, the contribution of resources, and the participation in communities—which are all means of creating a reputation,

a measure of expertise in context. It has yet to be seen if, or in what ways, Web 2.0 and OER will trigger the emergence of an abundance of credentialing options focused on the performance of the learner outside the walls of formal education.

## Conclusion

Gwyn's story illustrates how Web 2.0 and OER are creating an abundance of resources and emergent structures that enable a rich environment to support individual, personalized learning:

- an environment organized by the learner to define and achieve their learning goals;
- learning where “learners” and “teachers” are freed from constraints imposed by a scarcity of expertise and a scarcity of learning resources; and
- learning where learners choose and cocreate their resources and support services.

This gives us a glimpse into what is becoming possible using an ever-growing abundance of digital, socially networked resources and systems that thrive on complexity and self-organization. There is still a long way to go, and critical issues to be worked out, from these pioneering efforts to widespread adoption. Yet, it is already becoming clear that Web 2.0, OER, and the legacy of online learning hold the potential to help us create education systems that thrive on large-scale abundance to enable individual performance.

## Endnotes

1. For information about the OpenCourseWare Consortium, see <http://www.ocwconsortium.org>; for the One Laptop per Child Foundation, see <http://laptopfoundation.org>; for the Open Learning Exchange, see <http://ole.org>; for the agenda of the OCW Consortium Santander 2007 meeting, see <http://ohana.mit.edu/ocwc/display/Meetings/Santander+07+Agenda>.

2. Open educational resources (OER) is a global social movement to provide free-to-use and reuse teaching and learning resources— from K–12 lesson plans to college courseware—for anyone to use, reuse, tag, rate, and review. For examples, see <http://www.oercommons.org>. Also see the OECD 2007 report, *Giving Knowledge for Free: The Emergence of Open Educational Resources*, at <http://www.oecd.org/dataoecd/35/7/38654317.pdf>.

3. Pew Internet and American Life Project, “Hobbyists Online,” September 19, 2007, [http://www.pewinternet.org/pdfs/PIP\\_Hobbies\\_2007.pdf](http://www.pewinternet.org/pdfs/PIP_Hobbies_2007.pdf).

4. Jon Dron, *Control and Constraint in E-Learning: Choosing When to Choose* (Hershey, PA: Information Science Publishing, 2007), 134.
5. I. Elaine Allen and Jeff Seaman, *Online Nation: Five Years of Growth in Online Learning* (Needham, MA: Sloan Consortium, 2007), 5, [http://www.sloan-c.org/publications/survey/pdf/online\\_nation.pdf](http://www.sloan-c.org/publications/survey/pdf/online_nation.pdf).

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