E-Learning 2.0

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E-learning as we know it has been around for ten years or so. During that time, it has emerged from being a radical idea—the effectiveness of which was yet to be proven—to something that is widely regarded as mainstream. It's the core to numerous business plans and a service offered by most colleges and universities.

And now, e-learning is evolving with the World Wide Web as a whole and it's changing to a degree significant enough to warrant a new name: E-learning 2.0.

Where We Are Now

Before talking about where e-learning is going, it is worth spending a few words to describe here we are now.

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When we think of learning content today, we probably think of a [learning object [https://edtechbooks.org/-nLgm]](https://edtechbooks.org/-nLgm). Originating in the world of computer-based delivery (CBT) systems, learning objects were depicted as being like [lego blocks [https://edtechbooks.org/-gjo]](https://edtechbooks.org/-gjo) or [atoms [https://edtechbooks.org/-pPc]](https://edtechbooks.org/-pPc), little bits of content that could be put together or organized. Standards bodies have refined the concept of learning objects into a [rigorous form [http://ltsc.ieee.org/wg12]](http://ltsc.ieee.org/wg12) and have provided specifications on how to sequence and organize these bits of content into [courses [https://edtechbooks.org/-CVBg]](https://edtechbooks.org/-CVBg) and package them for [delivery [http://www.intrallect.com]](http://www.intrallect.com) as though they were books or training manuals.

Today, e-learning mainly takes the form of online courses. From the resources distributed by MIT's [OpenCourseware project [http://ocw.mit.edu/index.html]](http://ocw.mit.edu/index.html) to the design of learning materials in [Rice's Connexions project [https://edtechbooks.org/-BFs]](https://edtechbooks.org/-BFs) to the offerings found from colleges and universities everywhere, the course is the basic unit of organization.

As a consequence, the dominant learning technology employed today is a type of system that organizes and delivers online courses—the learning management system (LMS). This piece of software has become almost ubiquitous in the learning environment; companies such as WebCT, Blackboard, and Desire2Learn have installed products at thousands of universities and colleges and are used by tens of thousands of instructors and students. The learning management system takes learning content and organizes it in a standard way, as a course divided into modules and lessons, supported with

quizzes, tests and discussions, and in many systems today, integrated into the college or university's student information system.

In general, where we are now in the online world is where we were before the beginning of e-learning [1] [https://edtechbooks.org/-AaE]. Traditional theories of distance learning, of (for example) transactional distance, as described by Michael G. Moore [https://edtechbooks.org/-AMx], have been adapted for the online world. Content is organized according to this traditional model and delivered either completely online or in conjunction with more traditional seminars, to cohorts of students, led by an instructor, following a specified curriculum to be completed at a predetermined pace.

Trends

As we approach the halfway mark of the new millennium's first decade, the nature of the Internet, and just as importantly, the people using the Internet, has begun to change. These changes are sweeping across entire industries as a whole and are not unique to education; indeed, in many ways education has lagged behind some of these trends and is just beginning to feel their wake.

One trend that has captured the attention of numerous pundits is the changing nature of Internet users themselves. Sometimes called "digital natives" and sometimes called "n-gen," these new users approach work, learning and play in new ways [2] [https://edtechbooks.org/-yZc].

They absorb information quickly, in images and video as well as

text, from multiple sources simultaneously. They operate at "twitch speed," [https://edtechbooks.org/-VDo] expecting instant responses and feedback. They prefer random "on-demand" access to media, expect to be in constant communication with their friends (who may be next door or around the world), and they are as likely to create their own media (or download someone else's) as to purchase a book or a CD [3] [https://edtechbooks.org/-zts].

The manner in which this new generation of users is changing markets is captured evocatively in a document called *The Cluetrain Manifesto* [http://www.cluetrain.com]. First posted online in April 1999, the document begins with the declaration that "markets are conversations" and continues with a redefinition of the relation between producer and consumer. "Markets are getting smarter, more informed, more organized… People in networked markets have figured out that they get far better information and support from one another than from vendors." Jay Cross, writing in the same vein, talks about the "augmented learner" and the "hyper-organization" [4] [https://edtechbooks.org/-fGu].

In learning, these trends are manifest in what is sometimes called "learner-centered" or "student-centered" design. This is more than just adapting for different learning styles or allowing the user to change the font size and background color; it is the placing of the control of learning itself into the hands of the learner [5] [https://edtechbooks.org/-XLz].

"The changing demographics of the student population and the more consumer/client-centered culture in today's society have provided a climate where the use of student-centered learning

is thriving" [6] [https://edtechbooks.org/-mLP]. Learning is characterized not only by greater autonomy for the learner, but also a greater emphasis on active learning, with creation, communication and participation playing key roles, and on changing roles for the teacher, indeed, even a collapse of the distinction between teacher and student altogether [7] [https://edtechbooks.org/-xIT].

Taking this approach even further is George Siemens's *Connectivism* [https://edtechbooks.org/-zKa]. "We derive our competence," writes Siemens, "from forming connections... Chaos is a new reality for knowledge workers... Unlike constructivism, which states that learners attempt to foster understanding by meaning-making tasks, chaos states that the meaning exists— the learner's challenge is to recognize the patterns which appear to be hidden. Meaning-making and forming connections between specialized communities are important activities." Readers of Douglas Rushkoff's Cyberia will recognize a similar theme as knowledge-working is no longer thought of as the gathering and accumulation of facts, but rather, the riding of waves in a dynamic environment [8] [https://edtechbooks.org/-wgz].

The breaking down of barriers has led to many of the movements and issues we see on today's Internet. File-sharing, for example, evolves not of a sudden criminality among today's youth but rather in their pervasive belief that information is something meant to be shared. This belief is manifest in such things as free and open-source software [http://www.fsf.org], Creative Commons licenses [http://creativecommons.org] for content, and open access [https://edtechbooks.org/-gKi] to scholarly and other works. Sharing content is not considered

unethical; indeed, the hoarding of content is viewed as antisocial [9] [https://edtechbooks.org/-hkr]. And open content is viewed not merely as nice to have but essential for the creation of the sort of learning network described by Siemens [10] [https://edtechbooks.org/-kib].

Numerous writers, even, have called for what is often referred to as the "open society." Tapscott, for example, writes about "the transparent burger" [https://edtechbooks.org/-VfC] and "the naked corporation." [https://edtechbooks.org/-aVc] Mougayar tells us that "the future organization is an "open corporation." [https://edtechbooks.org/-cTM] And in a widely popular online essay Rob Paterson asked, "Is not the new "big idea" of our time to disintermediate the institutional middleman and to enable direct relationships? Are supermarkets eternal? Do we need factory universities to learn? Is our health dependent on a doctor? Is the news what we see on TV?" [11] [https://edtechbooks.org/-akc].

In short, the structures and organization that characterized life prior to the Internet are breaking down. Where intermediaries, such as public relations staff, journalists or professors, are not needed, they are disregarded. Consumers are talking directly to producers, and more often than not, demanding and getting new standards of accountability and transparency. Often, they inform the productive process itself, and in many cases, replace it altogether. Passive has become active. Disinterested has become engaged. The new Internet user may not vote, but that is only because the vote is irrelevant when you govern yourself

The Web 2.0

The first sign that something was changing on the Web was the underground popularity of a site called *LiveJournal* [http://www.livejournal.com] and the very visible surge of interest in a site called *Friendster* [http://www.friendster.com]. These sites, which came to be called "social networking sites," were rapidly emulated by such services as Tribe [http://www.tribe.net], LinkedIn [http://www.linkedin.com], Google's Orkut [http://www.orkut.com], Flickr [http://www.flickr.com], and Yahoo 360 [http://360.yahoo.com]. Writers conversant with the works of social network analysts, people like Duncan J. Watts [https://edtechbooks.org/-nZz] and Mark Buchanan [https://edtechbooks.org/-tcu], for example, noticed that similar patterns existed in these online networks [12] [https://edtechbooks.org/-EcZA]. Something was happening here.

What was happening was that major parts of the World Wide Web were acquiring the properties of communications networks, the sorts of networks found to exist (albeit on a much smaller scale) in the physical world. And that the Web itself was being transformed from what was called "the Read Web" to the "Read-Write Web," [https://edtechbooks.org/-EHM] in accordance with Tim Berners-Lee's original vision [https://edtechbooks.org/-FEv]. Proponents of this new, evolving Web began calling it Web 2.0 and in short order the trend became a movement.

"Enter Web 2.0, a vision of the Web in which information is broken up into "microcontent" units that can be distributed over dozens of domains. The Web of documents has morphed

into a Web of data. We are no longer just looking to the same old sources for information. Now we're looking to a new set of tools to aggregate and remix microcontent in new and useful ways" [13] [https://edtechbooks.org/-kCK].

In a nutshell, what was happening was that the Web was shifting from being a medium, in which information was transmitted and consumed, into being a platform, in which content was created, shared, remixed, repurposed, and passed along. And what people were doing with the Web was not merely reading books, listening to the radio or watching TV, but having a conversation, with a vocabulary consisting not just of words but of images, video, multimedia and whatever they could get their hands on. And this became, and looked like, and behaved like, a network [https://edtechbooks.org/-Ikg].

Nowhere is this clearer than in the world of blogging. In a few short years the blog went from a few idiosyncratic Web sites to something used by millions of people empowered by content creation tools such as Blogger [http://www.blogger.com] and Wordpress [http://www.wordpress.org]. Even more importantly, these blogs were *connected* to each other through the mechanism of RSS [https://edtechbooks.org/-RFIy], a simple XML format that allows bloggers to send their content to a network of readers (called 'subscribers').

But it wasn't just blogging. Creating an online community became a snap with tools such as Plone [http://www.plone.org] and Drupal [http://www.drupal.org]. Moreover, using a collaborative writing tool called the wiki [https://edtechbooks.org/-NKt] Jimmy Wales and a few thousand of his friends created a site called Wikipedia

[https://edtechbooks.org/-nW], rendering Encyclopedia Britannica obsolete in the process. Others, using the free audio-recording tool Audacity [https://edtechbooks.org/-KVn], began recording their own talk and music; this, when combined with RSS, became podcasting [https://edtechbooks.org/-rZY], a rapidly rising phenomena that is transforming what we think about radio.

For all this technology, what is important to recognize is that the emergence of the Web 2.0 is not a technological revolution, it is a social revolution. "Here's my take on it: Web 2.0 is an attitude not a technology. It's about enabling and encouraging participation through open applications and services. By open I mean technically open with appropriate APIs but also, more importantly, socially open, with rights granted to use the content in new and exciting contexts" [14] [https://edtechbooks.org/-xpH].

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In the world of e-learning, the closest thing to a social network is a community of practice, articulated and promoted by people such as Etienne Wenger [http://www.ewenger.com/theory] in the 1990s. According to Wenger, a community of practice is characterized by "a shared domain of interest" where "members interact and learn together" and "develop a shared repertoire of resources."

For the most part, though, what constituted "community" in online learning were artificial and often contrived "discussions" supported by learning management systems [15] [https://edtechbooks.org/-gvX]. These communities were

typically limited to a given group of learners, such as a university class, had a fixed start and end-point, and while substantially better than nothing, rarely approached Wenger's theory.

That's not to say no communities of practice were forming. There were some attempts to foster them, as for example [MuniMall [http://www.munimall.net]](http://www.munimall.net), directed toward the municipal governance sector, and [PEGGasus [http://www.peggasus.ca]](http://www.peggasus.ca), directed toward engineers and geophysicists. Moreover, as commentator [Erin Brewer [https://edtechbooks.org/-oBn]](https://edtechbooks.org/-oBn) has noted, places on the Internet like Yahoo! Groups have become a locus for community learning activities. But in general, the uptake has been slow, and the support from traditional institutions almost nonexistent.

Educators began to notice something different happening when they began to use tools like wikis and blogs in the classroom a couple of years ago. All of a sudden, instead of discussing pre-assigned topics with their classmates, students found themselves discussing a wide range of topics with peers worldwide. Imagine the astonishment, for example, when, after writing a review of a circus she had viewed, a Grade 5 student received a response from one of the performers [16] [https://edtechbooks.org/-Ctk]. In a very short time, blogs were used for a wide variety of purposes in [education [https://edtechbooks.org/-Ts]](https://edtechbooks.org/-Ts); an [educational bloggers' network [https://edtechbooks.org/-YrPd]](https://edtechbooks.org/-YrPd) formed and by this year thousands of teachers were encouraging their students to blog.

Blogging is very different from traditionally assigned learning content. It is much less formal. It is written from a personal

point of view, in a personal voice. Students' blog posts are often about something from their own range of interests, rather than on a course topic or assigned project. More importantly, what happens when students blog, and read reach others' blogs, is that a network of interactions forms-much like a social network, and much like Wenger's community of practice.

It's not just blogging. Educators have also taken an interest in podcasting. Some have started broadcasting, such as at McMaster, where engineering professors now host an online show [17] [https://edtechbooks.org/-QFP].

"We're talking to the download generation," said Peter Smith, associate dean, Faculty of Engineering. "Why not have the option to download information about education and careers the same way you can download music? It untethers content from the Web and lets students access us at their convenience." Moreover, using an online service such as Odeo [http://www.odeo.com], Blogomatrix Sparks [https://edtechbooks.org/-UNc], or even simply off-the-shelf software, students can create their own podcasts [http://podcast.fdfz.cn].

What happens when online learning ceases to be like a medium, and becomes more like a platform? What happens when online learning software ceases to be a type of content-consumption tool, where learning is "delivered," and becomes more like a content-authoring tool, where learning is created? The model of e-learning as being a type of content, produced by publishers, organized and structured into courses, and consumed by students, is turned on its head. Insofar as there is content, it is used rather than read— and is, in any case, more likely to be

produced by students than courseware authors. And insofar as there is structure, it is more likely to resemble a language or a conversation rather than a book or a manual.

The e-learning application, therefore, begins to look very much like a blogging tool. It represents one node in a web of content, connected to other nodes and content creation services used by other students. It becomes, not an institutional or corporate application, but a personal learning center, where content is reused and remixed according to the student's own needs and interests. It becomes, indeed, not a single application, but a collection of interoperating applications—an environment rather than a system.

It also begins to look like a personal portfolio tool [18] [http://eport2.cgc.maricopa.edu]. The idea here is that students will have their own personal place to create and showcase their own work. Some e-portfolio applications, such as ELGG, have already been created. IMS Global as put together an e-portfolio specification [19] [http://www.imsglobal.org/ep]. "The portfolio can provide an opportunity to demonstrate one's ability to collect, organize, interpret and reflect on documents and sources of information. It is also a tool for continuing professional development, encouraging individuals to take responsibility for and demonstrate the results of their own learning" [20] [https://edtechbooks.org/-jND].

This approach to learning means that learning content is created and distributed in a very different manner. Rather than being composed, organized and packaged, e-learning content is syndicated, much like a blog post or podcast. It is aggregated by students, using their own personal RSS reader

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[http://www.bloglines.com] or some similar application. From there, it is remixed and repurposed with the student's own individual application in mind, the finished product being fed forward to become fodder for some other student's reading and use.

More formally, instead of using enterprise learning-management systems, educational institutions expect to use an interlocking set of open-source applications. Work on such a set of applications has begun in a number of quarters, with the E-Learning Framework [http://www.elframework.org] defining a set of common applications and the newly formed e-Framework for Education and Research [http://www.e-framework.org] drawing on an international collaboration. While there is still an element of content delivery in these systems, there is also an increasing recognition that learning is becoming a creative activity and that the appropriate venue is a platform rather than an application.

In the future it will be more widely recognized that the learning comes not from the design of learning content but in how it is used. Most e-learning theorists are already there, and are exploring how learning content-whether professionally authored or created by students— can be used as the basis for learning activities rather than the conduit for learning content.

A great amount of work is being done, for example, in educational gaming and simulations. Theorists such as Seymour Papert, James Paul Gee, Clark Aldrich, and Marc Prensky have all touted the efficacy of games.

Papert writes, "The most important learning skills that I see

children getting from games are those that support the empowering sense of taking charge of their own learning. And the learner taking charge of learning is antithetical to the dominant ideology of curriculum design" [21] [https://edtechbooks.org/-UXV]. This is most evidenced when learners engage not only in playing, but in the design, of games. In the gaming world this practice is widely recognized and encouraged—game "modding" allows players to make the game their own. [22] [https://edtechbooks.org/-Hzm].

Where games encourage learning is through the provision of what a student needs to know in a context where it will be immediately used. As Gee recommends, "Words are only meaningful when they can be related to experiences," said Gee. If I say "I spilled the coffee," this has a different meaning depending on whether I ask for a broom or a mop. You cannot create that context ahead of time— it has to be part of the experience. And in just the same way, the science text doesn't make any sense to someone who has not done any science (though it makes a great deal of sense to an experienced scientist)" [23] [https://edtechbooks.org/-Zsp].

A similar motivation underlies the rapidly rising domain of mobile learning [24] [https://edtechbooks.org/-vLv]—for after all, were the context in which learning occurs not important, it would not be useful or necessary to make learning mobile. Mobile learning offers not only new opportunities to create but also to connect. As Ellen Wagner and Bryan Alexander note, mobile learning "define(s) new relationships and behaviors among learners, information, personal computing devices, and the world at large" [25] [https://edtechbooks.org/-fek].

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As this trend progresses, we find ourselves in a world characterized by the phrase "ubiquitous computing." "Where virtual reality puts people inside a computer-generated world, ubiquitous computing forces the computer to live out here in the world with people" [26] [https://edtechbooks.org/-PgY]. The "Father of ubiquitous computing," Mark Weiser, compares computing of the future to writing. "Today this technology is ubiquitous in industrialized countries. Not only do books, magazines and newspapers convey written information, but so do street signs, billboards, shop signs and even graffiti" [27] [https://edtechbooks.org/-KmH].

In the world of learning, what this means is having learning available no matter what you are doing. Jay Cross captures this idea in the concept of "workflow learning." Sam Adkins writes, workflow learning is "a deep integration with enterprise applications assembled from Web Services into composite applications" with "task and work support fused into the aggregated business processes that make up the real-time workflow" and supported by "contextual collaboration with people and systems" and "design and modification achieved by modeling and simulation" [28] [https://edtechbooks.org/-JoF].

Of course, there is no reason to expect that this form of learning would be restricted to the workplace. Learning integrates into every aspect of our lives, from daily household chores to arts and culture. Learning and living, it could be said, will eventually merge. The challenge will not be in how to learn, but in how to use learning to create something more, to communicate.
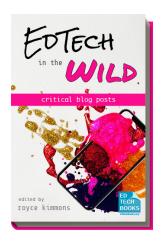
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