The Future of Online Learning Ten Years On

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Discussing the Future

- What I said ten years ago:

  Today, and for the last century, education has been practised in segregated buildings by carefully regimented and standardized classes of students led and instructed by teachers working essentially alone.

In ten years, this model will be seen in many quarters to be obsolete, and a new model, where education is practised in the community as a whole, by individuals studying personal curricula at their own pace, guided and assisted by community facilitators, online instructors and experts around the world.

- Are we there? No…
  - But we are closer, and the trends are much clearer now
  - And overall, *The Future of Online Learning* stands up very well

Future Technology

a. bandwidth

- Ten years ago, bandwidth was a genuine problem everywhere
- Today, I have a realistic chance of videoconferencing from the Canary Islands
- It is unevenly distributed
- But for most of the world, multimedia and online applications are realities

- LEOs were tried and mostly abandoned (but we have satellite radio)
- The biggest change in ten years has been wireless broadband
- With WiMax and additional wireless technology, the future for bandwidth looks promising

b. computers

- Windows notwithstanding, computers are more reliable
- 64 bit processing arrived, mostly without fanfare, in the MacBook Pro
- More power: virtual machines running on top of multiple processors

- Computers are moving off the desktop; the laptop is now standard
- Specialized devices are common, for viewing media, for reading (Kindle), for learning (OLPC), for gaming, for communicating (Blackberry), and more
- Embedded computers now common

c. operating systems

- Operating systems remain crucil - the failure of Vista makes that evident
- Still - Microsoft has tried (and failed) to create the virtual internet machine
- And even Microsoft realizes that the next generation of applications is online - wtness Windows Live

- Online ‘operating systems’ hover in the background
- The best example: a photo in Flickr
  - Upload and tag the photo in Flickr
  - Edit the photo in Piknik
  - Convert the photo to a calendar in another application

- What we now call ‘Web 2.0’ is a much more pervasive change in paradigm than is commonly acknowledged
  - The free movement of data allows for very very sophisticated applications
  - And yet, none of these reside on the desktop - we run locally only the minimum
  - And yet - we *can* run locally - we are not using ‘dumb terminals’

d. over-riding trends

- First: simplicity
  - It is *still* absurd that a person needs to learn Windows to send a postcard
- Second: invisibility
  - The dominant model - seen especially in games - is that the computer will guide you
  - In most cases, learning how to use the system will *not be needed*

New Technology in Education

a. education

- Education is fundamentally a process of communication (*learning* is fundamentally a process of growth)
- As such, educators have over the years attempted to keep the tools invisible, and to focus on the teaching
- This focus is not simply content, but includes, as Terry Anderson says, *presence*

b. tools

- Ten years ago, I wrote:

  To identify trends in education, perhaps the best methodology is to identify trends which work well today, whether technologically-based or not.

- These tools remain staples:
  - Books and other reading implements
  - Notepads and other writing implements
  - Blackboards and other demonstration tools
  - Communication environments such as the classroom
  - A facilitator or teacher

- What changes?
  - The *big* change is in the nature of content - from text to interactive multimedia
  - The *other* big change is in the nature of the environment - from local to global
  - In the future still: education becomes personal, and education becomes mobile

c. personal access device

- In 1998, I called it the PAD - personal access device - and we've come close…
- We've had the Tablet, we've had the OLPC, we've had the Blackberry, and more
- We also have the wall-area display (WAD)

d. presentation software

- Two worlds of presentation software:
  - First, increasingly sophisticated DIY tools for video, simulation, multimedia, more
  - Second, even more sophisticated tools for specialists (that allow them to make increasingly sophisticated DIY tools)
  - Interestingly - DIY HTML didn’t become too difficult - it became unnecessary

- We still see (mostly) the use of multimedia by reference… that is, of linking to, rather than creating, useful content (hence the blog)

e. educational software

- A whole industry - outside of traditional education - has grown up around educational software
  - This bears watching, even though most don't
  - Look, eg., at the wave of online and offline language learning applications
  - Children's educational software is also huge

- I said in 1998 that educational software would have all the features of video games
  - This isn't the case for institutional software, which has focused on presentation
  - But it *is* the case for stand-alone educational software

f. virtual reality

- Is here, and is being used in education
- Examples such as SWAT, used by Canadian military, and flight simulators, etc.
- There is a growing wave of immersive simulations being developed
- Still in the second (specialist) world - but will be huge when it becomes DIY

g. the future

- The future is a combination of these trends:
  - Types of immersive simulations or games
  - Access through mobile personal devices
  - With an emphasis on content consumption and creation, presentation, communication, and teaching and facilitation
- Think: Second Life meets Civilization meets Facebook

Interaction and Online Conferencing

a. The role of conferencing

- Conferencing in education is key because education is mostly about communication
- (Plays a less central role in *learning* because there are many ways to grow and develop capacities)

- Still two major emphases in conferencing:
  - First, a discussion of the subject matter
  - Second, lessons in *how* to conference online, and how to conduct conferences online
  - (These correspond to the twin objects of traditional education: curriculum and socialization)

b. conferencing tools

- Still a wide range of tools to choose from, but the trends are evident…
  - A shift from expensive, specialized systems such as Tanburg and Polycom
  - A shift toward simple and easy to use systems
  - Move from single-function (such as video or audio) to integrated multi-function (such as Elluminte or Adobe Connect)

- The basic formula is now established:
  - Start with a single platform
  - Import and share other applications as needed
  - Exchange and share data files and other content

c. asynchronous conferencing

- Has shifted from the plain text of ten years ago to a fully multimedia function
  - Don’t think of discussion boards or mailing lists
  - Think instead of MySpace and YouTube

- Conferencing is being increasingly based on the idea of a *personal space* rather than a shared space
  - Issues of control made it desirable
  - Issues of spam made it inevitable
- This is a movement that begins with blogging, then social networks, then (eventually) personal web sites

d. system and standards

- The confrencing battle is playing out between systems and standards
  - *Systems* are large and proprietart - 1998 saw Lotus Notes, First Class, Web Crossing (none of which matter today)
  - *Standards* allow interaction between small diverse sites and systems - standards, like Atom, RSS, OPML, etc. are huge today

- Standards are still in a state of flux
  - We never achieved an IM standard (though Jabber is coming close)
  - We saw what MP3 did for audio - still waiting for the equivalent in video and videoconferencing (today, still H.323)
  - But it’s going to happen - witness what happened with HTTP, HTML, Javascript, etc.

Personalized Education

a. The idea

- In 1998 I said

  > The development of such a tool makes it not just possible, but inevitable, that education of the future will become deeply personalized

- It’s still true, but this future hasn’t happened yet (at least, not obviously so)

- The concept of the *class*
  - Is still basic to education
  - Still is determined (at lower levels) by age rather than inclination or achievement
  - Is sometimes disguised (as, eg., the *cohort*)

- I have explored this via the concept of *groups versus networks*
- I think there are emotional factors holding us to the idea of the class
- The feeling is, without the group, we will atomize - nobody is willing to risk that

- The motivation - I said in 1998 - was that it was more efficient
  - This is still true in an institutional setting today
  - But it's less true, an it is less of a reason for holding on to the class
- My own belief is that it prevails today because it preserves existing power

b. toward personalization

- In 1998 I predicted a shift in the fundamental unit of education:
  - *From* the class
  - *To* the topic
- This is being realized today in the development of *competences* and competency-based systems (eg. TenCompetence)

- The idea of competences:
  - Competences are based on identifiable skills or capacities (hence, are tied to *growth* (rather than content)
  - Students can select their own track or achievement path
  - Competences correspond to identifiable learning resources (learning objects?)

- However:
  - It's not clear that an outcomes-driven system is what we want
    - Many valuable things - art appreciation, for example - is identifiable as an outcome
  - It's not clear that all learning is identifiable as a measurable competence
    - Traditional education includes the idea, not only of passing the test, but of being *recognized* as competent by an expert

- Where we are headed:
  - Competences become just one way (and a generally employer centered way) to identify learning opportunities
  - The selection of learning resources will not be a stand-alone activity, but will be embedded in other activities (think, again, of how we learn in the context of a game)

c. educational delivery systems

- Learners will select ‘topics’
- Topics will be selected by:
  - Learner interest
  - Learner aptitude
  - Educational level
  - Social need (that is, the desire of the learner to accomplish something specific with a community)

- Topic selection options (or menus) will be based on:
  - Prior learning
  - Parent input and control
  - Relevant legislation and jurisdiction
  - Employer criteria and recommendations

- The process of topic selection:
  - *Can* be like selecting a television channel, but…
  - Will *also* be something that happens in the context of some other activity
  - (The idea is that learning and living are *not* separate activities)

- Topic *delivery* systems…
  - Are like game module (or level) delivery systems, or are like (content) resource delivery system
  - The original intent was that such systems would delivery *learning objects*
  - But today, I say ‘learning resources’ because the term ‘learning objects’ has become corrupted

d. delivery systems today

- Are essentially *content* delivery systems
- Are based on a *publication* model of storage and distribution
- Are *institutionally* based
- Tend to focus on delivery to *classes*

e. The PLE

- Will replace learning management systems
- Is based on the idea of personal access to resources from multiple sources
- Like conferencing, is based on a personal we presence
- Focuses on creation and communication rather than on content completion

- In an important sense, the PLE is a concept, not an application
  - Though the PLE *could* be an application…
  - The idea is that the envisioned functionality is available through many applications
    - So, eg., “using an interface in Civilization VI to write a brief report for your blog on Napoleon’s tactics” *is* an instance of th PLE

- I used to call this the ‘Quest Model’ (still do, actually)
- Think of the internet as a big game…
  - It presents challenges to you, that you engage singly or in *ad hoc* groups
  - Your accomplishments and achievements become part of your personal profile
  - Which in turn informs new challenges

f. the menuization of learning

- This exists today - *outside* educational institutions - both online and in the software store (go, *browse*)
- For all practical purposes, the internet *is* a big game - think (again) of Facebook
- Once we can keep score, this will become evident

g. understanding ed delivery

- Today's dominant understanding of educational technology is as a *system*
- This needs to be contrasted (as before) with one based on *standards*
- By this I do *not* mean 'learning object metadata' (which is totally a publisher mindset)

- Educational institutions need to think of their offerings as entities that will be a part of, and interact with, the larger environment
- For example, again: the photo editor that connects to Flickr
- Think about what an *art appreciation* resource would do with Flickr photos

- Not just that - they need to *use* this data to form composite wholes
- Eg. The application that takes photos tagged ‘St. Peters’ to create an image built from thousands of Flickr photos
- (This is the fundamental understanding behind connectivism)

- Educational institutions need to:
  - *Make resources available* for use in other contexts (rather than having students come to them)
  - Such material will be offered to people automatically, in other contexts, and may or may not be used (deal with it)

- Resources will be offered:
  - Student-selected, from a ‘library’ (which you share with other ‘publishers’)
  - Event-driven, by the system, which will offer a resource at an appropriate time
  - Time-driven (think of Tony Hirst’s RSS-driven course)
  - Instructor (or mentor, or coach) driven - as in a blog offering or RSS feed

- These resources need to:
  - Be able to learn about the environment they are being offered in
  - Be able to learn about the student
  - And to get this information, not just locally, but from anywhere on the internet
  - Communicate state and other information to other (authorized) systems and services

h. where we are

- Not ‘there’ yet…
- Institutions do not (yet) understand how to deliver to external systems
- But we are seeing first signs - eg., iTunes University
- We may see it inside ‘courses’ first - but the long-term trend is to open delivery

i. why we need it

- Personalization is simply more efficient and people will be less satisfied to waste time in class
- People prefer some measure of control over learning, especially regarding delivery and learning styles
- Such a system automates much of the paperwork in education

j. What it isn't

- It isn't machine learning
- People will not be judged by machines
  - They (still) won't stand for it
  - Machine judgments are inaccurate
  - The role of peer and community recognition remains vital (because it's a more fine-grained and complex system

Time and Place Independence

a. time independence

- ‘time independence’ means, essentially, working to your own schedule
- This has various permutations:
  - Starting and stopping when desired
  - Taking as long as desired
  - Choosing the timing, or frequency, of events (eg., working on rainy days, working in winter)

- Time as a unit of measurement of learning…
  - Is obsolete - or *should* be
  - The ‘hour’ can at best be understood as a unit of informational content
    - But even this is relative to the individual learner

- Time as a tracking variable
  - Start and end time
  - Hours of work (Civ reports this)
  - Time per activity
  - Hours of the day, days of the week
- Time as a matching variable
  - To schedule events
  - To identify *ad hoc* groups

Learning Communities

The Triad Model

Accreditation

Modularity

Ownership and Copyright

Instructional Management Systems

The Economics of Online Learning

The Future

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