The start of something bigger....

Welcome to Wikipedia, the free-content encyclopedia that anyone can edit. In this English version, started in 2001, we are currently working on 585043 articles.

CULTURE | GEOGRAPHY | HISTORY | LIFE | MATHEMATICS | SCIENCE | SOCIETY | TECHNOLOGY
Browse Wikipedia · Article overviews · Alphabetical index · Other schemes

Today's featured article
Benjamin Mountfort was an English emigrant to New Zealand, where he became one of that country's most prominent 19th century architects. He was instrumental in shaping the city of Christchurch. He was appointed the first official Provincial Architect of the developing province of Canterbury. Heavily influenced by the Anglo-Catholic philosophy behind early Victorian architecture he is credited with importing the Gothic revival style to New Zealand. His Gothic designs constructed in both wood and stone in the province are considered to be unique to New Zealand. Today he is

In the news
- In response to allegations of Qur'an desecration at Guantanamo Bay, Cuba, The Pentagon confirms that several such instances, accidental and intentional, have occurred.
- In tennis, Justine Henin-Hardenne beats Mary Pierce 6-1, 6-1 to win the women's singles title in the 2005 French Open.
- A video from the 1995 Srebrenica massacre shows...
Collective intelligence

• Collective intelligence: everyone has something to contribute
• Knowledge is created not possessed
• Shift in emphasis, e.g., wikipedia is a process not a product
• Social connections are important
• Need “skills for participation” (e.g., social skills; cultural competencies) not just individual skills
• Age doesn’t matter; a “newbie” can be 60 and the expert 16

—Jenkins, 2008
It is more than technology

- The Internet is more than a technology—it is a mindset.
- Internet provides an architecture for participation and collaborative creation.
- Use by everyone does not exclude use by anyone.
- Traditional assumptions are being re-examined.
- Our students are harbingers of change.
What do you want to achieve?
Collaborative
Daily collaboration tools

- IM
- Skye
- Wikis
- Google docs
- Web conferencing
Access without ownership

• Internet (“cloud”) use of applications, resources
• Streamlines operations
• Share across many organizations
Co-laboratories

- Distributed research centers
- Shared, community-wide data system
- Open system for community contributions
- Speeds discovery, innovation

—image from Knell & Cook, 2007
Science gateways

- nanoHUB
- Science gateway for nanotechnology
- Learning modules: lectures, podcasts
- Industry-level tools
- Community
Interactive
Patient case history

- Practice taking pharmacy patient case history in Second Life
- Prepares for working in remote clinics
- Patient avatar is interviewed by student
- Quiz follows interview
- Interview critiqued by faculty
- Accelerates learning

—Koval, 2009
Haptics

- Users feel force, pressure and temperature while interacting with virtual environment

Bertolini, 2007
Discovery
Data driven

- Large data sets; data extraction
- Data warehousing
- Statistical techniques
- Predictive modeling
- Analytics

- Uses:
  - Student recruitment
  - Student retention
**Computational science**

- Application of computer simulation (and other forms of computation) to scientific problems
- Third mode of science; adds new approach to theory and experimentation/observation
- Uses mathematical models and numerical methods

—image courtesy of NSF, 2009
Infrastructure for discovery

Sharing computers, instruments and applications
Sharing and federating data
Linking at the speed of the light:

Research facilities

—Campolargo, 2008
Sensor networks

—McCartney, 2008
Large datasets

- The amount of data is doubling every year
- Large collaborations are emerging to collect and aggregate data
- E-research is emerging; computational techniques are essential
- Scientists need to be at home with their discipline, but also data management and computational skills

—Campolargo, 2008
Distributed resources

• TeraGrid: Open, distributed scientific discovery infrastructure—brings campus resources together in grid

• Low-threshold access to more resources than a campus could afford individually

• Distributed facility; resources independently owned and managed

• 100+ discipline-specific databases

• Enable communities to use resources through a common interface

Visualization
Virtual organizations

- Distributed across space: participants span locales and institutions (can include ‘citizen scientists’)
- Distributed across time: synchronous and asynchronous
- Collaboration support systems

[Image courtesy of Rhoten, 2008]

NSF, 2008
Self-Publishing
Open educational resources

• Open Courseware Initiative
• Connexions
  — Open access educational resource
  — Collections of re-usable learning modules
  — Modules can be modified
  — 350 collections; 6500 modules
Web-based publishing

- Omeka
- Digital dissertation
- Primary source collection
- Scholars, librarians, archivists, museum professionals
Self-publishing

• Self-publishing marketplace

• Compliments publishing industry
  — Allows more voices to be heard
  — Serves small, non-profitable markets
  — Goal is to have a million authors who sell a few books rather than a few authors who sell a million books

• Web 2.0 site in the sense that the value to the web site is what users put there
Summary
Technology use in graduate education

• Connects learners to experts and communities
• Learning in real-world contexts; complex problem solving
• Expanded access to resources
• Analysis and visualization tools to “think with data”
• Streamline delivery of content

—Dede, 2007
Big questions

• How does scholarship change when it is “born digital”?

• Do we have a collaborative culture and a reward structure that encourages collaboration?

• Is the institution’s reputation best served by holding material close or giving it away?

• How do we define education in a 21st Century context?
uncommon thinking for the common good

It’s not about information. Or technology. It’s what we do with IT that counts.