Emerging Technologies that Hold Promise for Education

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http://www.flickr.com/photos/rubyblossom/3950982378/
Initial Question

- "What is are the most important emerging technologies that e-learning institutions should pay attention to over the next 3 to 5 years?"

To participate:

- Text 92010 and your message to 99503
- tweet @poll99503 and your message
- Or visit [http://tinyurl.com/y8gwbyf](http://tinyurl.com/y8gwbyf)
Why is it important to keep up with emerging technologies?

- To innovate
- To reach students
- To meet needs
- To plan
- To increase efficiency & productivity
- To do our jobs better
- To be “cool”

http://www.flickr.com/photos/lalquier/205271690/
How do you discover emerging technologies?

- Colleagues
- Blogs such as Liberal Education Tomorrow, ProfHacker and Wired Campus
- Podcasts such as Digital Campus
- Conferences such as ED-MEDIA
- Twitter
- Professional organizations such as Educause
Discover Useful Tools via the Digital Research Tools (DiRT) Wiki

Digital Research Tools (DiRT)

This wiki collects information about tools and resources that can help scholars (particularly in the humanities and social sciences) conduct research more efficiently or creatively. Whether you need software to help you manage citations, author a multimedia work, or analyze texts, Digital Research Tools will help you find what you're looking for. We provide a directory of tools organized by research activity, as well as reviews of select tools in which we not only describe the tool's features, but also explore how it might be employed most effectively by researchers.

This wiki is just being launched, so expect to see more reviews soon. Check back regularly.

Please provide feedback on DiRT and recommend tools not included here (yet).

If you're interested in contributing to this wiki, please email Lisa Spiro at lspiro@rice.edu.

If you are unfamiliar with some of the jargon, please see our Glossary page.

Types of Tools

I want to...
- Analyze texts
- Analyze statistics
- Author an interactive work
- Blog
- Brainstorm/generate ideas
- Build and share collections
- Collaborate
- Collect data
- Communicate with colleagues
- Compare resources
- Conduct linguistic research
- Convert/manipulate files

http://digitalresearchtools.pbwiki.com/
Horizon Report

- [http://www.nmc.org/horizon](http://www.nmc.org/horizon)
- Collaboration between NMC & Educause Learning Initiative
- Annual report profiles six emerging technologies that promise to advance teaching, research & creative expression
Horizon Report Selection Process

- International advisory board drawn from across higher ed & new media
- Uses modified Delphi Method to distill knowledge from panel of experts by asking them to answer key questions
- Board members
  - review information (tagged via delicious)
  - answer research questions on wiki
  - rank technologies (twice)
  - comment on report
Sneak Peak: Work on the 2010 Horizon Report Is Underway


**Research Question One**

What would you list among the established technologies that learning-focused institutions should all be using broadly today to support or enhance teaching, learning, or creative expression?

*NOTE: Because this question is about "established" technologies, answers should be easy to support with actual examples and pointers to demonstration projects.*

Compose your entries like:

- **Idea Name.** Add your ideas like this with few sentences description including full URLs for examples e.g. [http://horizon.nmc.org](http://horizon.nmc.org) And do not forget to sign your contribution with 4 ~ characters!

## Five Years of the Horizon Report

<table>
<thead>
<tr>
<th>Year</th>
<th>One Year or Less</th>
<th>Two to Three Years</th>
<th>Four to Five Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Extended Learning Ubiquitous Wireless</td>
<td>Intelligent Searching Educational Gaming</td>
<td>Social Networks/ Knowledge Webs Context-Aware Comp/Augmented Reality</td>
</tr>
<tr>
<td>2006</td>
<td>Social Computing Personal Broadcast.</td>
<td>Mobile Phones Educational Gaming</td>
<td>Augmented Reality Context-Aware Devices</td>
</tr>
<tr>
<td>2007</td>
<td>User-Created Content Social Networking</td>
<td>Mobile Phones Virtual Worlds</td>
<td>New Scholarship Massively Multiplayer Educational Gaming</td>
</tr>
<tr>
<td>2008</td>
<td>Grassroots Video Collaboration Webs</td>
<td>Mobile Broadband Data Mashups</td>
<td>Collective Intelligence Social Operating Systems</td>
</tr>
<tr>
<td>2009</td>
<td>Mobiles Cloud Computing</td>
<td>Geo-Everything The Personal Web</td>
<td>Semantic-Aware Applications Smart Objects</td>
</tr>
</tbody>
</table>
Promising Technologies

- Mobile devices
- Social computing
- Information visualization

http://www.flickr.com/photos/leonardlow/2091934
http://www.flickr.com/photos/silvertje/2517016818/
http://www.flickr.com/photos/smannion/2949490438/

http://www.flickr.com/photos/leonardlow/2091934
http://www.flickr.com/photos/silvertje/2517016818/
837/in/set-72157594196518712/
Mobile Devices are Catching On

- “mobile access to the internet is taking root in our society” (Pew Internet & American Life Project, 2009)
- 87% of Americans own mobile phones
- By end of 2010, 1.2 billion people will have smart phones (Gartner)
- 51.2% of students in ECAR Study of Undergraduates owned Internet-capable handheld device, 11.8% planned to purchase one in the next 12 month
- Cisco: “Globally, mobile data traffic will double every year through 2013, increasing 66 times between 2008 and 2013.”
How Mobile Devices Can Be Used to Promote Learning

- Support anywhere, anytime learning; overcomes scheduling barriers
- Deliver content: audio, video, documents, games, images, etc
- Promote interaction: quizzes, drill & practice, polls,
- Enable communication: email, voice, microblogging, texting, chat
- Conduct field research: collect data, record interviews
- Create content: video, voice, photos, art, digital stories
- Engage with community: microfinance via mobile
- Explore augmented reality
- Play educational games
Approaches to Mobile Learning

- Cyber University in Japan delivers courses on smartphones.
- Ball State U’s nursing school delivers class content to mobiles, replacing “two-foot stack of reading material.”
- HCC students who were loaned iPhones in Lifang Tien’s Anatomy class at HCC spent more time studying & connecting with classmates.
Mobile Learning at Abilene Christian University

- Students, faculty & staff were given iPhones or iPod Touches
- Survey results indicate that the program was a success
- How mobiles were used in classes:
  - Podcasts to scaffold chemistry experiments
  - Polling students
  - Videotaping play rehearsals
  - Looking up information
  - Reading texts
  - Students developed their own games & apps
Augmented Reality

- Superimposes images, data, video, etc. on the physical environment
- Example: Layar
Augmented Reality Games: MIT’s Environmental Detective

- [http://education.mit.edu/ar/ed.html](http://education.mit.edu/ar/ed.html)
- Participants investigate presence of toxin in water
- Used PocketPCs with GPS devices to sample water and mark location
- Accessed multimedia database of research materials
- Conducted virtual interviews
Challenges of Mobile Learning

- Diversity of devices, operating systems, standards
- Technical limitations: battery life, slow download speeds, screen size, small keyboard, etc.
- Cost: not only the device, but also the data plan
- Designing appropriate technologies & pedagogies
- Preparing content for mobile delivery and transferring it to devices
- Security & privacy
- Concerns about ability to focus & immerse oneself while using mobiles
“Mobile phones have the potential to become the hub of Social Computing activities and to be more than just a complement to the PC experience. Mobile phones will increasingly become the glue that holds the social graph together, offering creative tools and immediacy, presence, location, and context when interacting with the real world.”  (Thomas Husson, Sr. Analyst, Forrester)
Social Computing

- **Definition:** “supporting any sort of social behavior in or through computational systems.” (Wikipedia)
- **Examples:**
  - Blogs
  - Wikis
  - Social networking
  - Social bookmarking
  - Collaborative filtering
  - Reputation systems
Walt Whitman and the Levi’s Ad Campaign: A Provocation, A Challenge, and an Invitation

Nov 11th, 2009 by Matthew Gold. No comments yet

This is the first in a series of posts on The Vault, a new conversational space in the Looking for Whitman project that is devoted to creating public conversations about Walt Whitman and his work.
Rationale for “Looking for Whitman”

- 4 colleges in NY, Camden & Virginia are exploring the significance of place in Whitman’s works
- “experiment in multi-campus digital pedagogy” (or “distributed learning”)
- “connect our classrooms to the world in exciting ways” (Matt Gold)
- “how social media can re-imagine the possibilities for sharing amongst and between students of a similar topic from a wide range of institutions.” (Jim Groom)
- Aggregates contributions by students at different institutions
- Creates “personalized learning network of peers, both local and afar” (Groom)
Social Software Used in Looking for Whitman

- Blog
- YouTube
- Flickr
- delicious
- Twitter
- Collaborative annotation
Collaboration Webs:
Michael Wesch’s “Mediated Cultures”

http://www.netvibes.com/wesch#Digital_Ethnography
Collaborating Using Zotero

http://www.zotero.org/

![Zotero interface with a group library containing a list of titles and their creators and dates added.](image)
Challenges

- Getting people to participate
- Privacy
- Security
- Trust; integrity of information
Information Visualization

http://www.ted.com/talks/hans_rosling_shows_the_best_stats_you_ve_ever_seen.html
What Is Information Visualization?

- Information into pictures
- “An external representation that makes it easy to see certain patterns in data.” (Palo Alto Research Center)
- “The great fun of information visualization is that it gives you answers to questions you didn’t know you had.” (Ben Shneiderman, NYT)
- Example: “historical weather maps” illustrating dynamic changes (Ed Ayers at Educause 2006)
  - Social cold and warm fronts
  - Interplay of different forces
  - Simultaneity
  - Social networks
Many Eyes Chart: Survival on the Titanic

http://services.alphaworks.ibm.com/manyeyes/view/SWUK0lsOtha6R4kJ96G1I2~
Text Visualization: Presidential Speeches Tag Cloud

1933-03-04: First Inaugural Address
Franklin D. Roosevelt (1933-45)

abandonment administrative advancement agreements agriculture aims appropriations armed army assert associations assurance banking built changers convert cooperation corporation currency curtailment dedicate democratic devotion distress drastically economic education endeavor endure europe evils expenditure fact false families frankly frankness freedom fulfillment fundamental god guides honestly honesty industries insistence interdependence investments july june languishes mandate march minister mobilized monetary necessities opinion opponents permanently pledging prosper railways readjustment realities recognition reconstruction resolutely resorted restore revive risen rounded safeguards securities selfish speculation stimulate strength stricken strife submit taxes temple territory toil treasury treating true uneconomical unemployment unjustified unprecedented utilities values vigor war wealth welfare wisely

http://chir.ag/projects/preztags/
Spatial Visualization: The Emancipation Project

http://www.vcdh.virginia.edu/emancipation/index.html
Challenges

• Finding data
• Getting data into the right form
• Learning how to use the tools
• Producing accurate visualizations
• Understanding visualizations
What educational goals can these technologies support?

- Collaboration
- Interactivity and immersion
- Flexible learning
- Understanding large amounts of information
- Making learning authentic
Call to Scholarship

- Select one of the emerging technologies we’ve looked at today: mobiles, social computing, visualization
- Answer the following questions
  - What kind of research would you like to see around this topic?
  - What are some of the learning implications of this topic?

* This exercise is adapted from the [NMC](#)