Social Computing and Its Influence in Education

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Social Networking

HOW TO USE WEB 2.0 IN THE ENTERPRISE

PART 1:
COMMUNICATE WITH YOUR EMPLOYEES

The Billionaire Shuffle

2007

William Gates

Warren Buffett

Carlos Slim Helu & family

Mark Zuckerberg

Facebook in 2004.02

2008

at **23** and $**1.5** billion later...

2008

Warren Buffett

Carlos Slim Helu & family

William Gates

Facebook's Global Audience
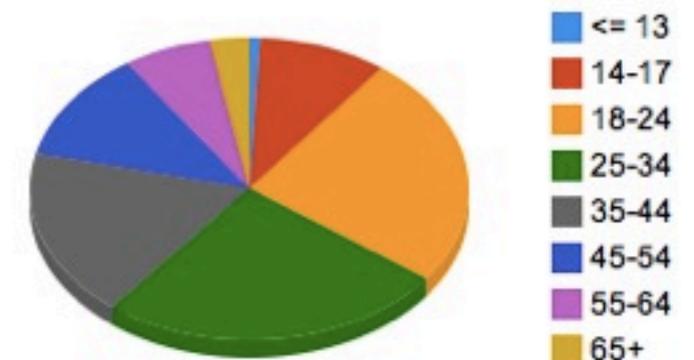
Facebook's Growth Table

General Growth

More than 300 million active users

50% of our active users log on to Facebook in any given day

The fastest growing demographic is those 35 years old and older

10 Largest Countries		10 Fastest Growing Over Past Week		
1. United States	86,406,460	1. China	100.58 %	6,920
2. United Kingdom	20,214,180	2. Taiwan	11.14 %	322,900
3. Turkey	13,104,960	3. Vietnam	8.91 %	74,460
4. Canada	12,862,140	4. Philippines	6.77 %	360,360
5. France	12,245,140	5. Iraq	6.05 %	4,800
6. Italy	11,573,640	6. Romania	5.17 %	15,300
7. Indonesia	9,642,620	7. Sweden	5.11 %	127,760
8. Australia	6,572,900	8. Ireland	5.1 %	47,220
9. Spain	6,554,500	9. Ukraine	4.81 %	7,780
10. Argentina	6,380,080	10. Qatar	4.49 %	8,500

Global Internet Traffic

Alexa as of May 2009	China	USA	Japan	India	Brazil	Global
1	Baidu	Google	Yahoo.jp	Google.in	Google	Google
2	QQ	Yahoo	FC2	Google	Orkut.br	Yahoo
3	Sina	Facebook	Google.jp	Yahoo	Windows Live	YouTube
4	Google.cn	YouTube	YouTube	Orkut.in	Universo Online	Facebook
5	Taobao	Myspace	Rakuten	YouTube	YouTube	Windows Live
6	163	MSN	Livedoor	Blogger	Globo	MSN
7	Google	Windows Live	Ameblo.jp	Rediff	MSN	Wikipedia
8	Sohu	Wikipedia	mixi	Facebook	Google	Blogger
9	Youku	Craigslist	Wikipedia	Wikipedia	Yahoo	Baidu
10	Yahoo	EBay	Google	Windows Live	Terra	Myspace

Twitter in Spotlight

Today's Road Map

- The Social Computing Revolution...

- Social Computing Education 2.0

- Constructivism and Social Computing

- Future Research and Challenges

- Final Remarks
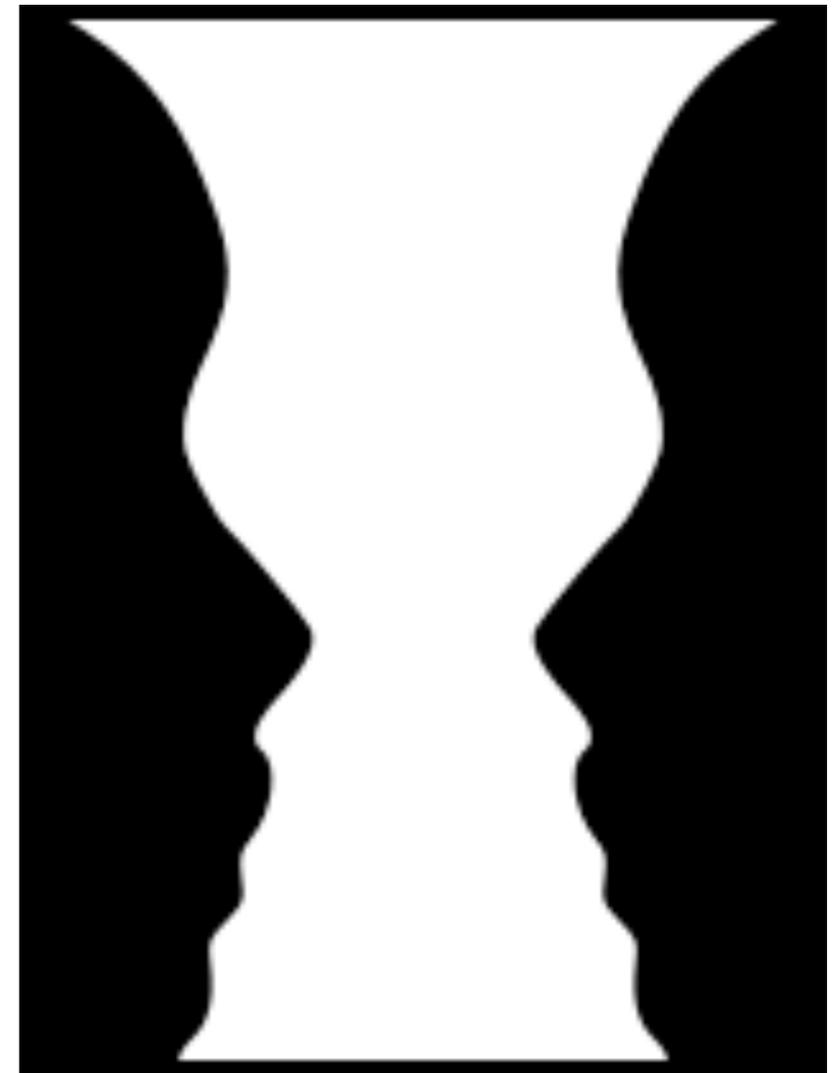
Web 2.0

- Web as a medium vs. **Web as a platform**

- Read-Only Web vs. **Read-and-Write Web**

- Static vs. **Dynamic**

- Restrictive vs. **Freedom & Empowerment**

- Technology-centric vs. **User-centric**

- Limited vs. **Rich User Experience**

- Individualistic vs. **Group/Collective Behavior**

- Consumer vs. **Producer**

- Ownership vs. **Experiences**

- Transactional vs. **Relational**

- Top-down vs. **Bottom-up**

- Institutions vs. **Communities**

- People-to-Machine vs. **People-to-People**

- Search & browse vs. **Publish & Subscribe**

- Closed application vs. **Service-oriented Services**

- Functionality vs. **Utility**

- Data vs. **Value**

Social Computing and Its Influence in Education
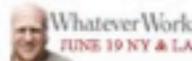Irwin King, 2009 Pacific Neighborhood Consortium (PNC) Annual Conference, Taipei, Taiwan, October 8, 2009

Web 2.0 vs. Social Computing

Web 2.0 is about specific technologies (blogs, podcasts, wikis, etc) that are relatively easy to adopt and master. Social Computing is about the new relationships and power structures that will result. Think of it another way: Web 2.0 is the building of the Interstate Highway System in the 1950s; Social Computing is everything that resulted next (for better or worse): suburban sprawl, energy dependency, efficient commerce, Americans' lust for cheap and easy travel.

Forrester Research, 2006

☑ Innovation is moving from a top-down to bottom-up model
☑ Value is shifting from ownership to experiences
☑ Power is moving from institutions to communities

Social Computing
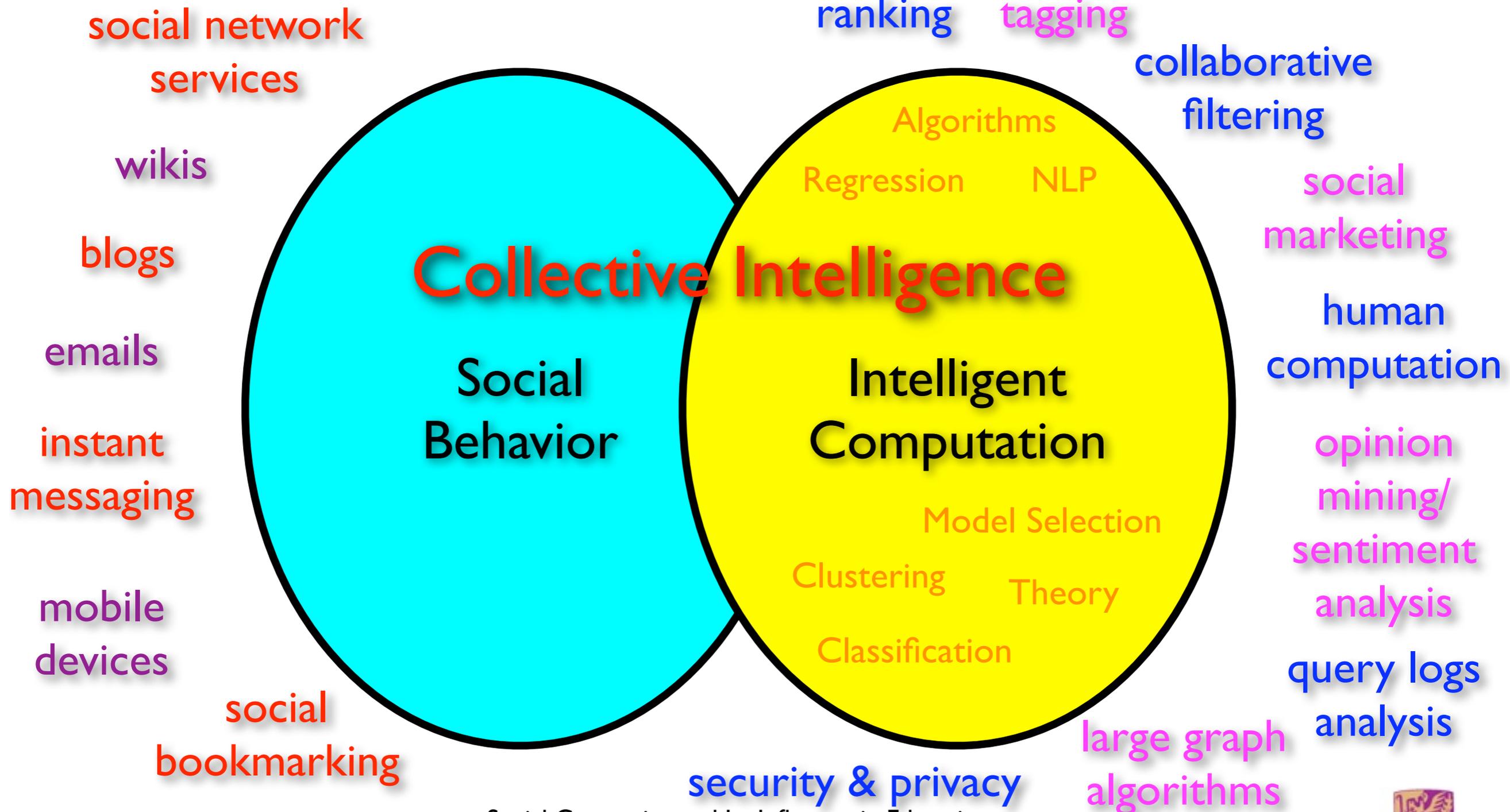
social network
services

ranking   tagging

collaborative
filtering

wikis

Algorithms

Regression   NLP

social
marketing

blogs

Collective Intelligence

human
computation

emails

Social
Behavior

Intelligent
Computation

instant
messaging

Model Selection

opinion
mining/
sentiment
analysis

Clustering   Theory

Classification

mobile
devices

query logs
analysis

social
bookmarking

large graph
algorithms

security & privacy

Forms of Social Computing

Social technology	Examples	Current usage
Social networks *Technology that allows users to leverage personal connections.*	Linked in, facebook, orkut, friendster, myspace a place for friends	• 6% of North American online consumers use social networking sites weekly, up from 4% in 2004.
RSS *An XML standard that lets users collect and read content feeds.*	Bloglines, FeedBurner, My YAHOO!, newsgator, Pluck	• 6% of North American online consumers use RSS weekly. • 47% of marketers use or plan to use RSS feeds.
Open source software *Publicly available software that can be copied or modified without payment.*	The Apache Software Foundation http://www.apache.org/, OpenOffice.org, Linux POWERED, MySQL	• 56% of US firms use open source software; 19% plan to use it. • 39% of European firms use open source software; 29% plan to.
Blogs *Online diaries of text, photos, or other media.*	GAWKER, Blogger, TypePad, WEBLOGS.COM, msn Spaces, xanga	• 10% of North American online consumers visit blogs weekly. • 51% of marketers use or plan to use blogs in some way.
Search engines *Services that find Web content based on user-specified criteria.*	YAHOO!, msn, Ask Jeeves Ask.com, AMERICA Online, Google, Technorati	• 79% of US online consumers use a search engine weekly in 2005. • 79% of marketers use or plan to use search marketing.
User review portals *Web portals that allow users to search for peer reviews on a product or service.*	tripadvisor, reviewcentre informed choices, Insider Pages, cnet CNET.com, Game Rankings.com	• 12% of North American and 21% of European online consumers visit ratings sites.

Social Computing Revolution

- **Glocalization**-think globally and act locally!

- **Weblication**-Web is the application!

- **3 Cs**
  - **C**onnectivity
 - **C**ollaboration
  - **C**ommunities

Categories of Educational Activities

- Media sharing

- Media manipulation

- Conversational arenas

- Online games and virtual worlds

- Social networking

- Blogging

- Social bookmarking

- Recommender systems

- Collaborative editing

- Wikis

- Syndication

collective intelligence

published content

user generated content

Media Sharing

General	Educational
Uploading and downloading media files for audience or exchange	Sites have emerged that welcome creative digital material organized by educators
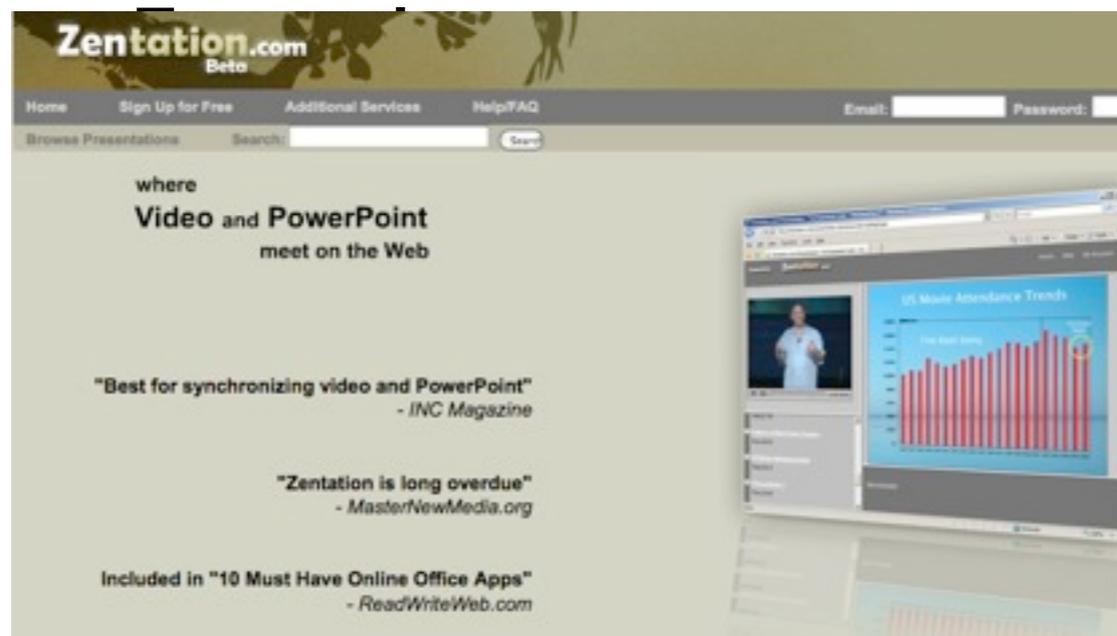
Zentation: Share video and powerpoint
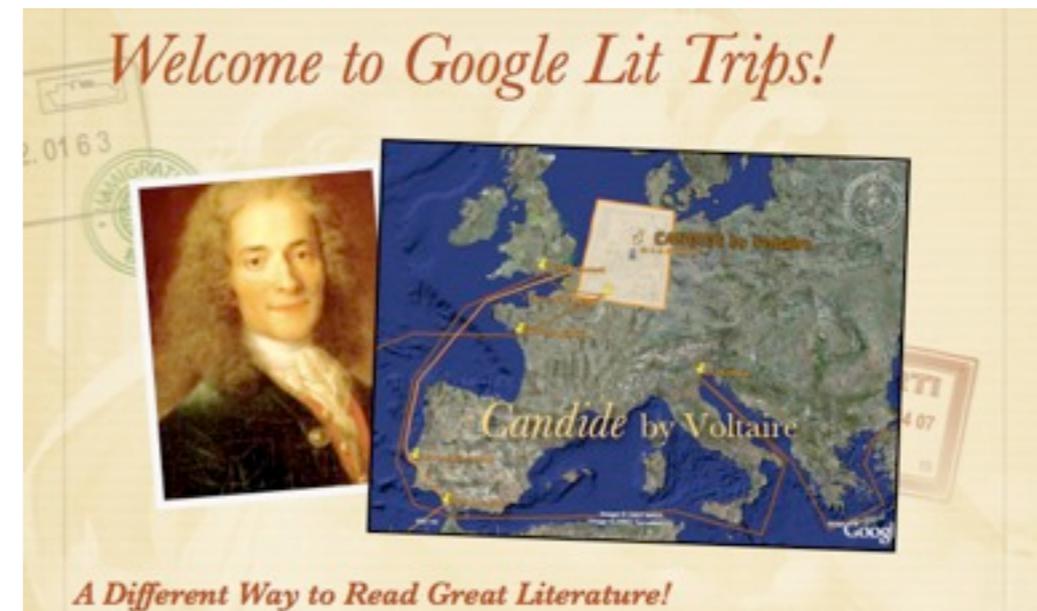
NoteCentric: Share university class notes

Media Manipulation

General	Educational
Use web-accessible tools to design and edit digital media files	Provide graphical representations education materials

Thumbstacks: Allow presentations to be built and played online

Googlelittrips: Link literature to places or maps

Conversational Arenas

General	Educational
One-to-one or one-to-many conversations between internet users	Support educational conversations by a variety of tools

Think: Teachers and students create learning projects, participate in a website competition...

Chatmaker: Users can create chat rooms for personal websites, blogs, newsgroups...

Online Games and Virtual Worlds

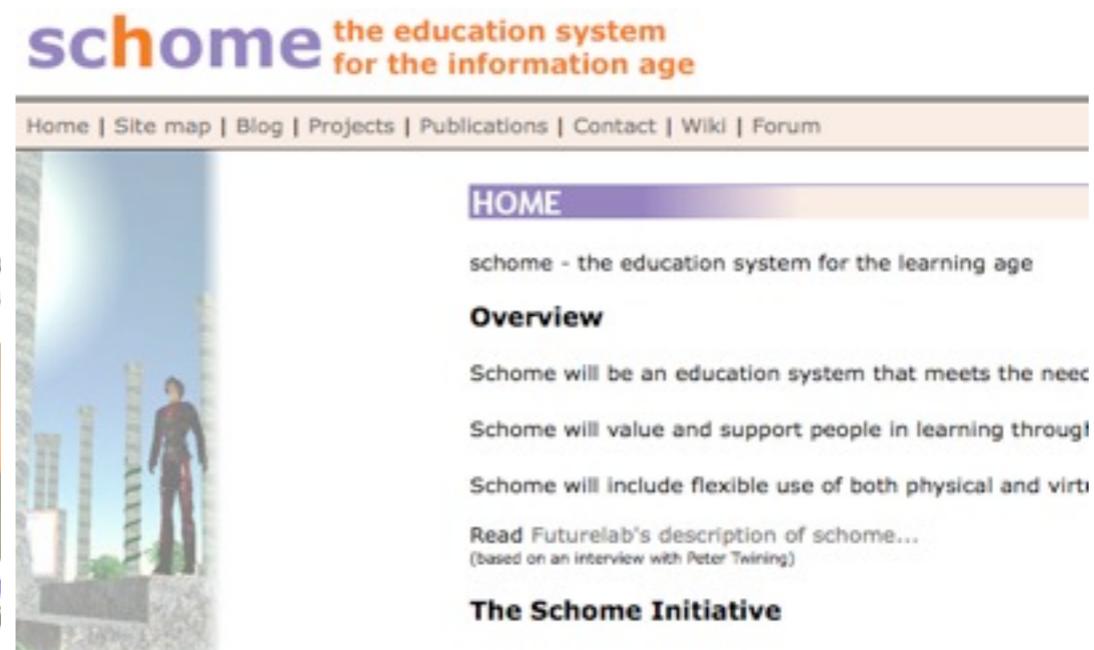| General	Educational
Rule-governed games or themed environments that invite live interaction with other users	Develop multi-player online games for educational purpose

Vue: Provide a virtual educational and research institute

Schome: An education system to support people in learning throughout their lives

Online Games: Second Life

- Second Life: The Second Life Grid platform provides a powerful platform for interactive experiences. Many universities and colleges use it for classes, research, learning and projects with their students, bringing a new dimension to learning.

- A large, active education community is engaged in the Grid. Harvard University, Texas State University, Stanford University, etc. have set up virtual campuses where students can meet, attend classes, and create content together.

Second Life is an online, 3D virtual world imagined and created by its Residents.
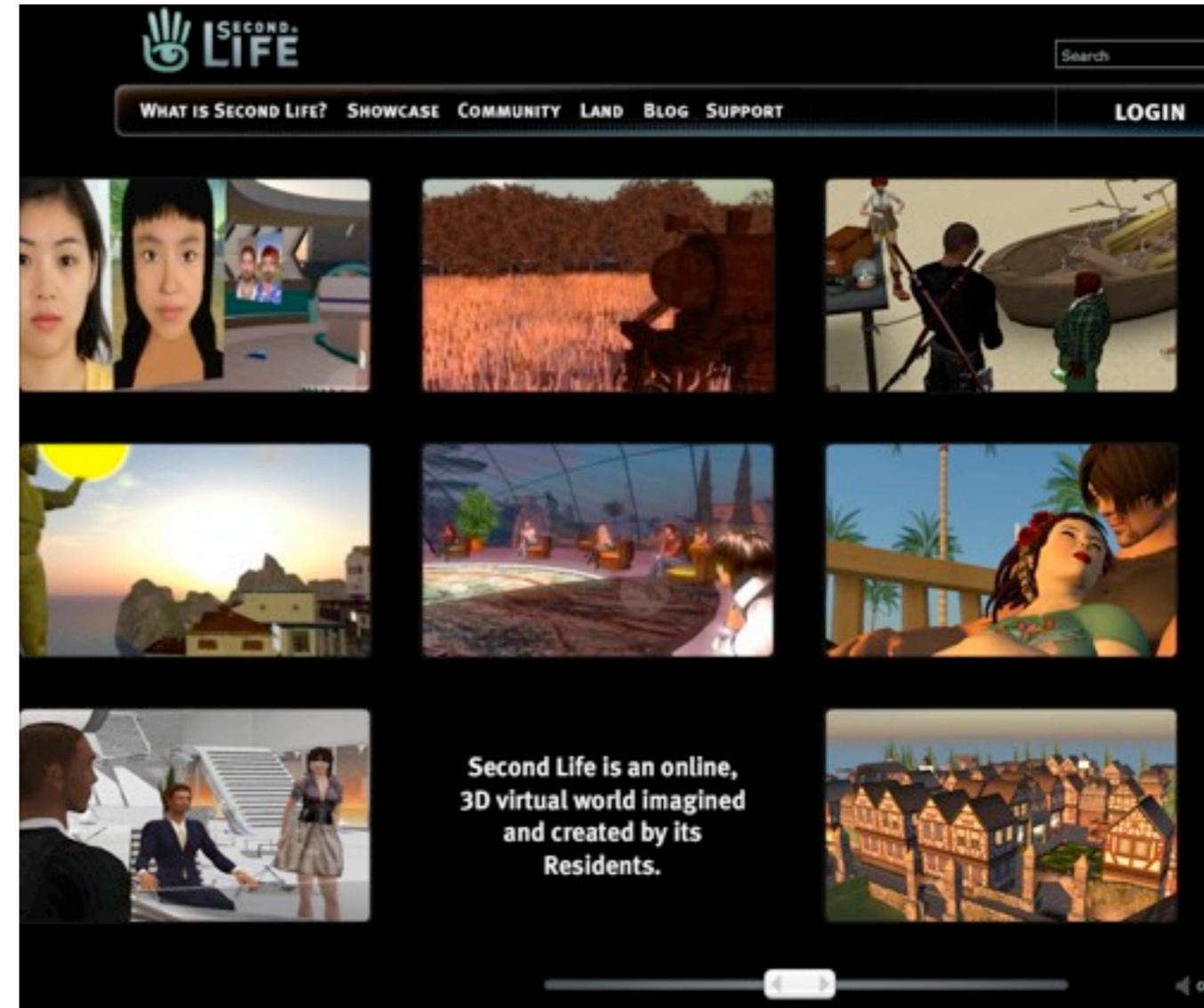
Social Networking

General	Educational
Websites that structure social interaction between members who form subgroups of 'friends'	Typically include education-oriented friendship groups
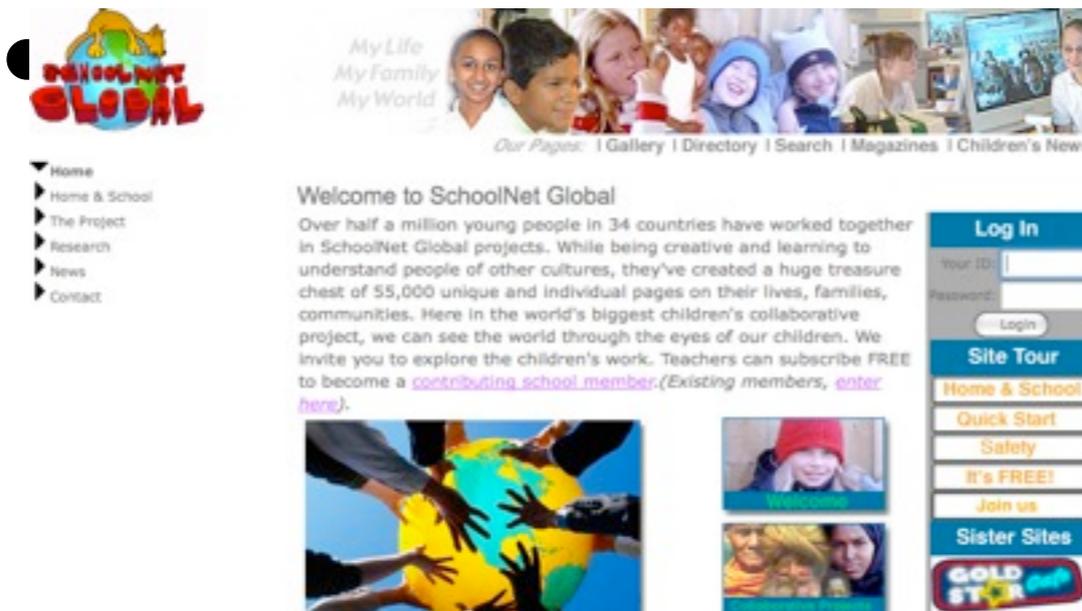
Schoolnetglobal: Provides a child-oriented design and security service for cross-site collaboration
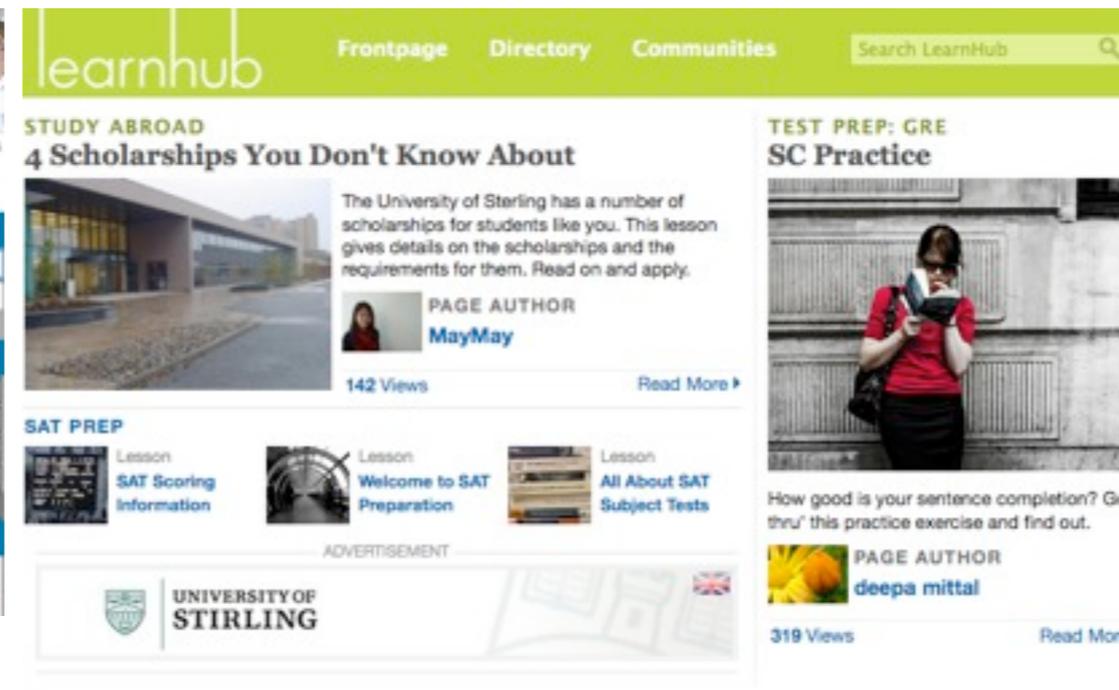
Learnhub: Teachers can create learning communities.

Blogging

General	Educational
An on-line journal or diary in which a user can post text and digital material while others can view and comment	Blog sites exist especially for students and teachers
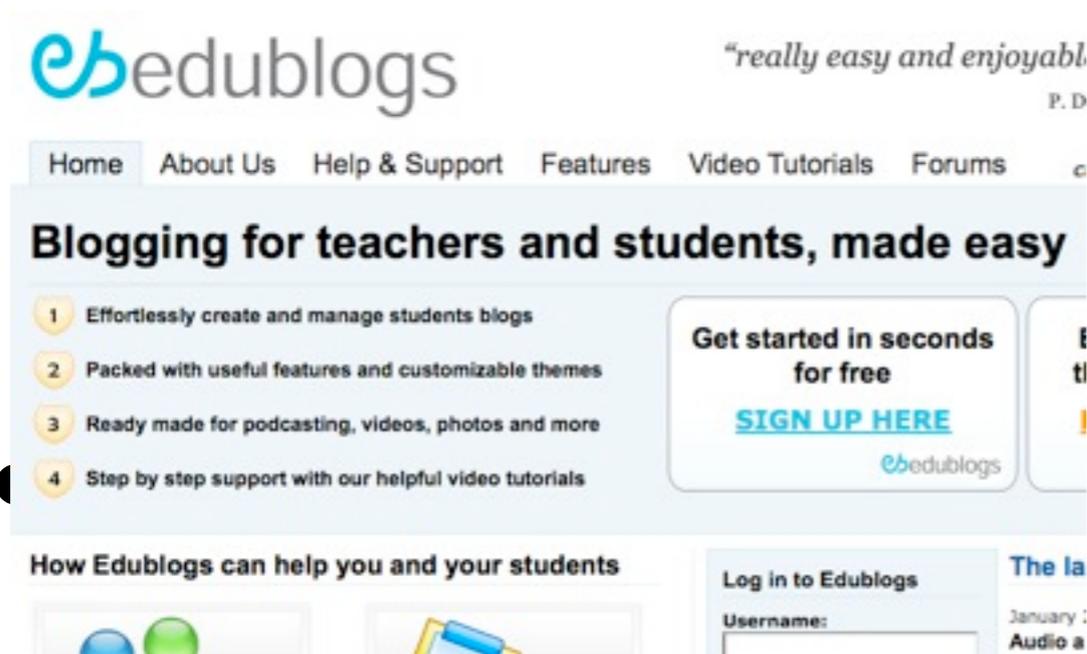
Edublogs: Blogging for teachers and students

Nature: Encourages scientific authors to blog around their findings

Wikis

General	Educational
Web-based services allow users unrestricted access to create, edit and link pages	Sites that allow students and teachers to establish their own wiki with an educational slant

Wikiversity: devoted to learning resources, learning projects, and research for use in all levels, types, and styles of education
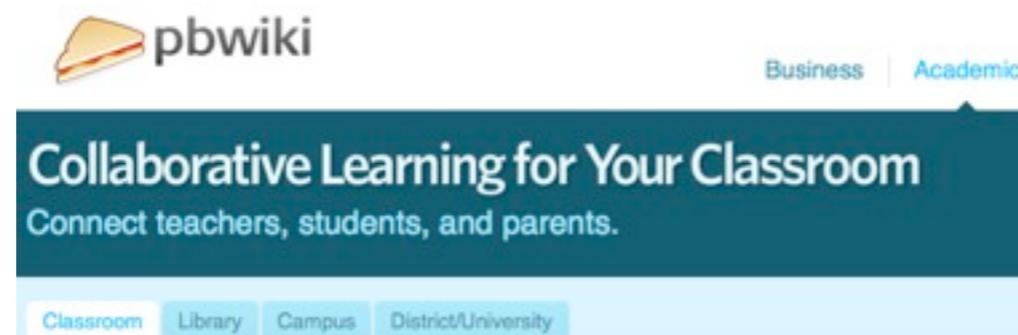
Pbwiki: students and teacher can create their own wiki

Social Bookmarking

General	Educational
Allow users to submit their bookmarked web pages to a central site where they can be tagged and found by others	Bookmarks sharing systems designed for research and education users

BibSonomy: A system for sharing bookmarks and list of literature

Citeulike: A website for the collecting and sharing research publications

Recommender Systems

General	Educational
Websites aggregate and tag user preferences to make novel recommendations	Recommender systems designed for research and education users

Ratemyteachers: An (infamous) example of recommendation technology in education involves user evaluation of teachers.

Collaborative Editing

General	Educational
Web tools used collaboratively to design, construct and distribute digital product	Text, spreadsheets and other documents can be stored centrally and permit collaborative editing
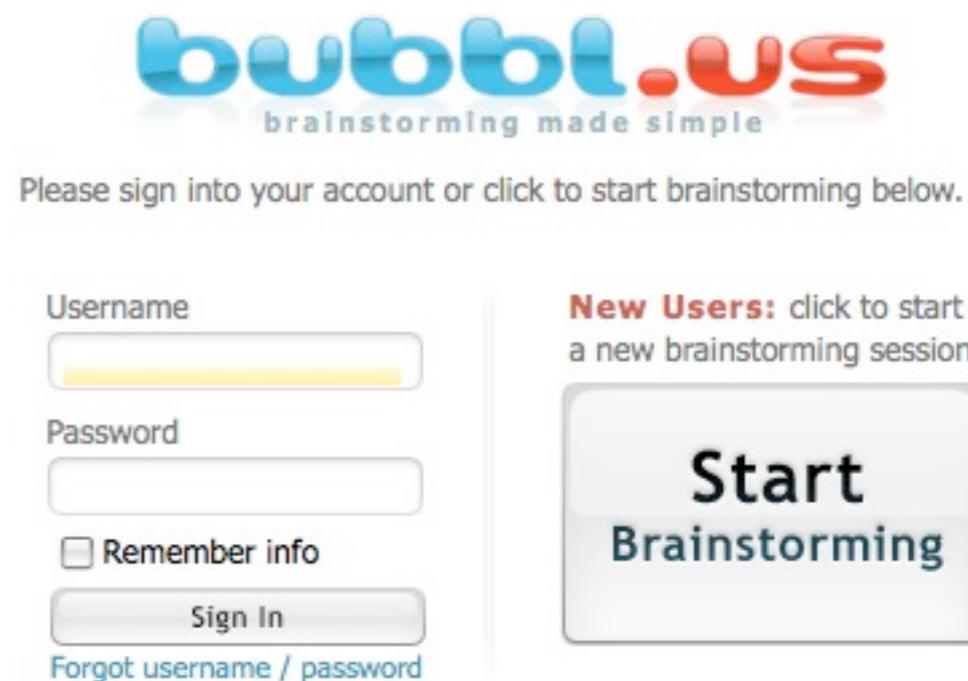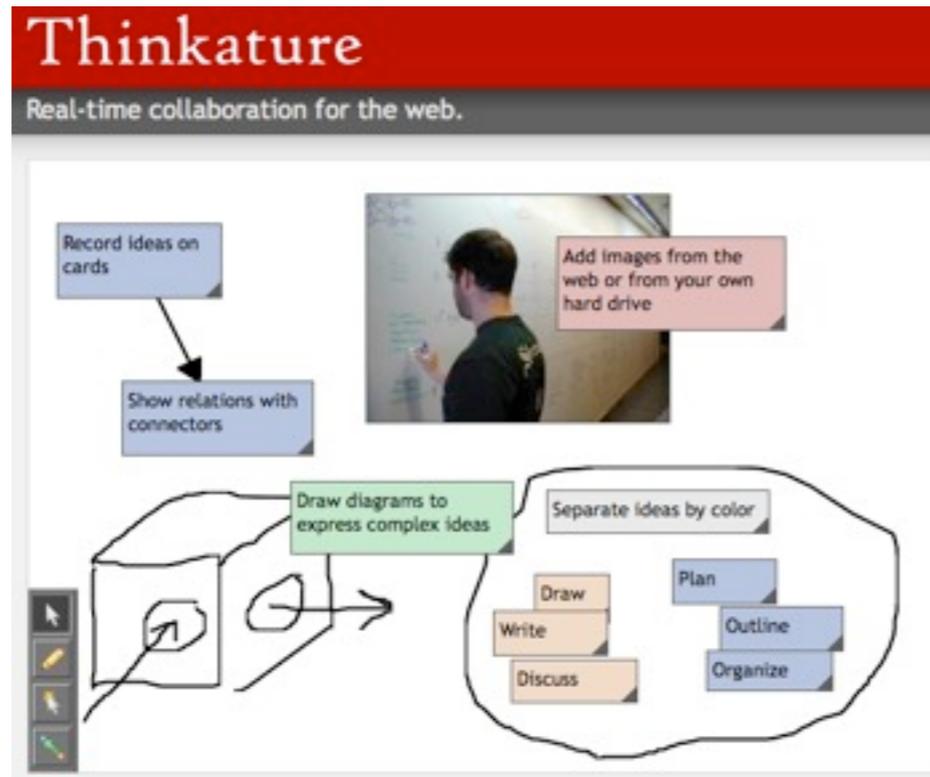
Thinknature: Websites incorporate more visual tools for collaborative pages

Bubbl.us: Some emphasizing mind-maps for brainstorming

Syndication

General	Educational
Users can 'subscribe' to RSS feed enable websites so that they are automatically notified of any changes or updates in content via aggregator	Websites from which students can take advantage of syndicated content

Podcastschool: A website contains podcasts for school students

Stanford: A website contains syndicated sponsored materials

Constructivism and Social Computing

- Constructivist Learning Theory

- Social Computing for Constructivism

- Issues and challenges
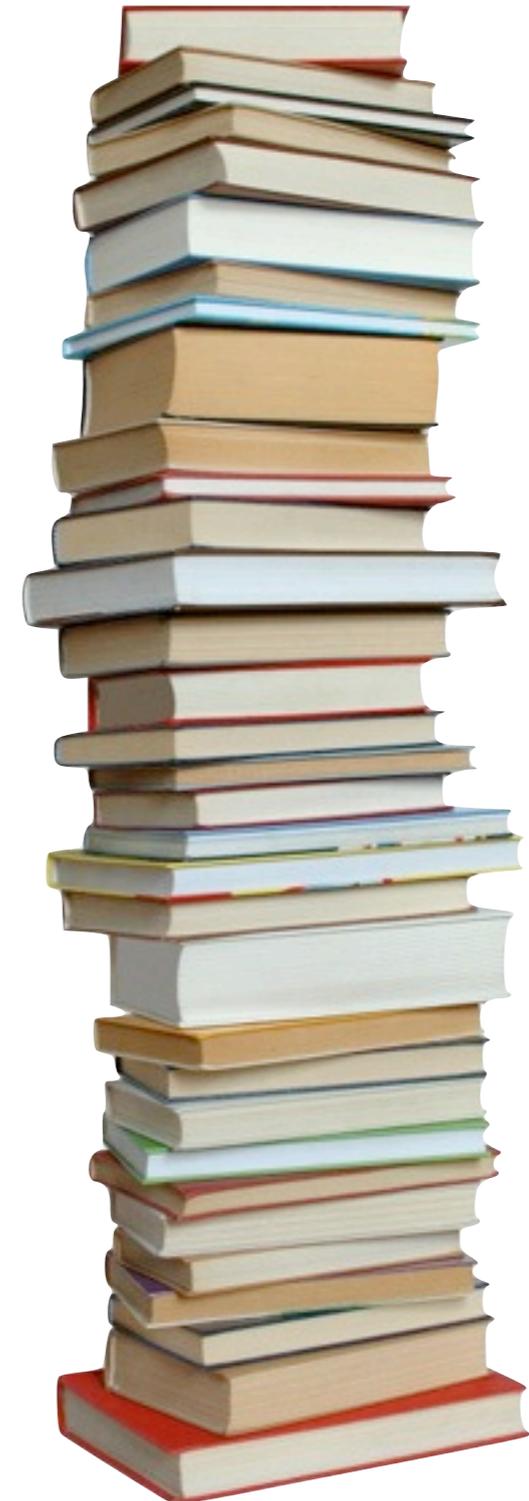
Constructivist Learning Theory

- Humans generate knowledge and meaning from their experiences

- Individuals construct their own understanding and knowledge of the world, through experiencing things and reflecting on those experiences--each learner individually (and socially) constructs meaning

  - We have to focus on the learner in thinking about learning (not on the subject/lesson to be taught)

  - There is no knowledge independent of the meaning attributed to experience (constructed) by the learner, or community of learners

Enlightenment? **NOT!**

Constructivist's List of DON'Ts

- Knowledge is an identifiable entity with absolute truth value

- Meaning can be passed on to learners via symbols or transmission

- Learners can incorporate exact copies of teacher's understanding for their own use

- The whole concepts can be broken into discrete sub-skills, and that concepts can be taught out of context

Learning Principles

George E. Hein, 1991

1. Learning is an active process--Active Learner

2. Learners learn to learn as they learn--learning provides context for other learning

3. The action of constructing meaning is mental--engaging the mind

4. Learning involves language: the language we use influences learning

5. Learning is a social activity

Learning Principles

6. Learning is contextual--a corollary of the idea that learning is active and social

7. One needs knowledge to learn--the more we know, the more we can learn

8. It takes time to learn--learning is not instantaneous

9. Motivation is a key component in learning--it is essential for learning!

Traditional vs. Constructivism

Traditional Classroom	Constructivist Classroom
Curriculum begins with the parts of the whole. Emphasizes basic skills.	Curriculum emphasizes big concepts, beginning with the whole and expanding to include the parts.
Strict adherence to fixed curriculum is highly valued.	Pursuit of student questions and interests is valued.
Materials are primarily textbooks and workbooks.	Materials include primary sources of material and manipulative materials.
Learning is based on repetition.	Learning is interactive, building on what the student already knows.
Teachers disseminate information to students; students are recipients of knowledge.	Teachers have a dialogue with students, helping students construct their own knowledge.
Teacher's role is directive, rooted in authority.	Teacher's role is interactive, rooted in negotiation.
Assessment is through testing, correct answers.	Assessment includes student works, observations, and points of view, as well as tests. Process is as important as product.
Knowledge is seen as inert.	Knowledge is seen as dynamic, ever changing with our experiences.
Students work primarily alone.	Students work primarily in groups.
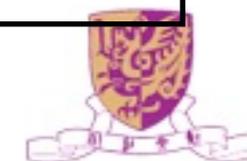
Designing Principles

- Embed learning in complex, realistic and relevant environments

- Provide a social negotiation as an integral part of learning

- Support multiple perspectives and the use of multiple modes of representation

- Encourage ownership in learning

- Nurture self-awareness of the knowledge construction process
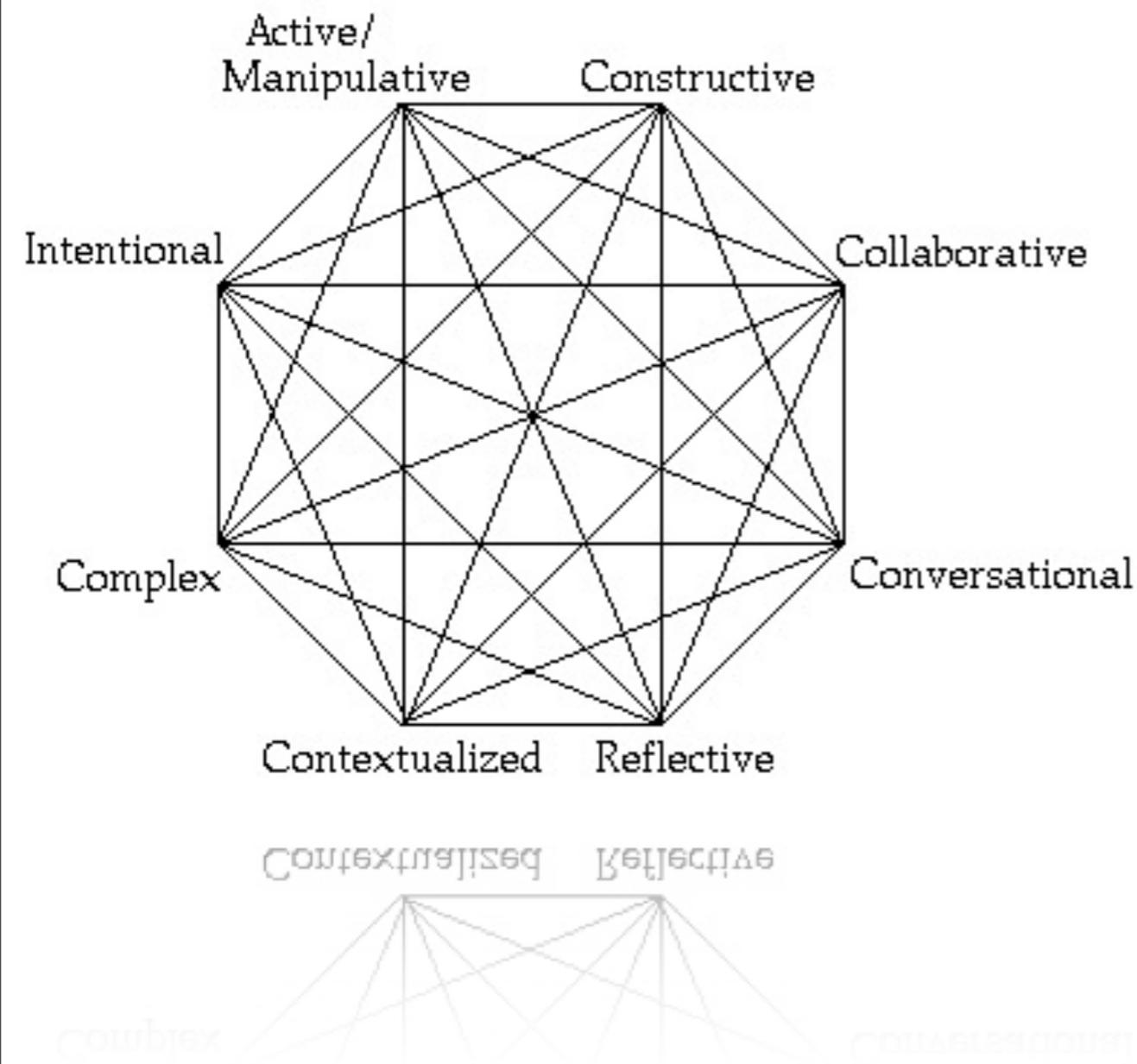
Driscoll, 2000

Designing Constructivist Learning Experiences Rubric

Learner Name:

| Authentic Activity Checklist	Beginning 1	Developing 2	Accomplished 3	Exemplary (Expert) 4
1. Has real-world relevance.	Doesn't have any real world relevance.	Has very little real world relevance	Has some real world relevance.	Has real-world relevance.
2. Is ill-defined.	Isn't ill-defined.	Is somewhat ill-defined.	Is nearly ill-defined.	Is ill-defined.
3. Comprises complex tasks to be investigated by learners over a sustained period of time.	Doesn't include complex tasks to be investigated by learners over a sustained period of time.	Includes some simple tasks to be investigated by learners over a sustained period of time.	Includes many simple tasks to be investigated by learners over a sustained period of time.	Comprises complex tasks to be investigated by learners over a sustained period of time.
4. Provides the opportunity to examine a task from different perspectives, using a variety of resources.	Doesn't provides the opportunity to examine a task from different perspectives, using a variety of resources.	Provides some opportunities to examine a task from a different perspective, using a one resource.	Provides the opportunity to examine a task from two different perspectives, using a one or two resources.	Provides the opportunity to examine a task from different perspectives, using a variety of resources.
5. Provides the opportunity to collaborate.	Doesn't use any tools of collaboration.	Provides very little opportunity to collaborate.	Provides some opportunity to collaborate.	Provides the opportunity to collaborate.
6. Provides the opportunity to reflect.	Provides no opportunity to reflect.	Provides very little opportunity to reflect.	Provides some opportunity to reflect.	Provides the opportunity to reflect.
7. Is integrated and applied across different subject areas and leads to beyond domain specific outcomes.	Is not integrated and applied across different subject areas and leads to beyond domain specific outcomes.	Is integrated and applied across different subject areas and does not lead to beyond domain specific outcomes.	Is integrated and applied across different subject areas and leads to possibly one or two beyond domain specific outcomes.	Is integrated and applied across different subject areas and leads to beyond domain specific outcomes.
8. Is seamlessly integrated with assessments.	Is not seamlessly integrated with assessments.	Is somewhat integrated with assessments.	Is nearly seamlessly integrated with assessments.	Is seamlessly integrated with assessments.
9. Creates a polished product valuable in its own right.	Does not create a polished product valuable in its own right.	With much realignment, could create a polished product, valuable in its own right.	Nearly able to Create a polished product valuable in its own right.	Creates a polished products valuable in its own right.
10. Allows competing solutions and diversity of outcomes.	Does not allow for competing solutions and diversity of outcomes.	Allows for some competing solutions and some diversity of outcomes.	Allows competing solutions and some diversity of outcomes.	Allows competing solutions and diversity of outcomes.

Social Computing as Tools

- Centralized, institution-based system vs. a decentralized and informal creation and sharing of knowledge

- Social software can be used for education purposes, helping to create novel learning experiences

Social Computing Software

↕

Tools for Constructivism Learning
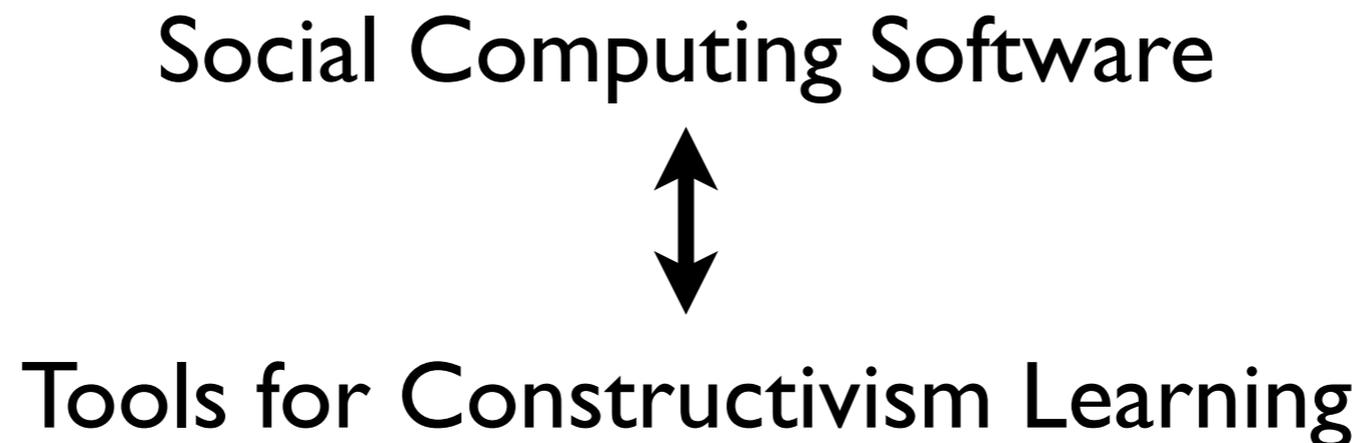
Social Computing for Education

- Manage the information space

- Write to the information space

- Computer enhanced project-oriented learning

- Personal learning environments

- Integrated authoring and management of activities

- Microlearning

- … more

Manage the Information Space

- Bookmarks
- References
- Feeds
- Aggregations
- Mashups

Organize own/
other's productions
Share all that

- Teachers
- Students
- Others
- ... ...

E.g. blog portfolio
factories like ELGG
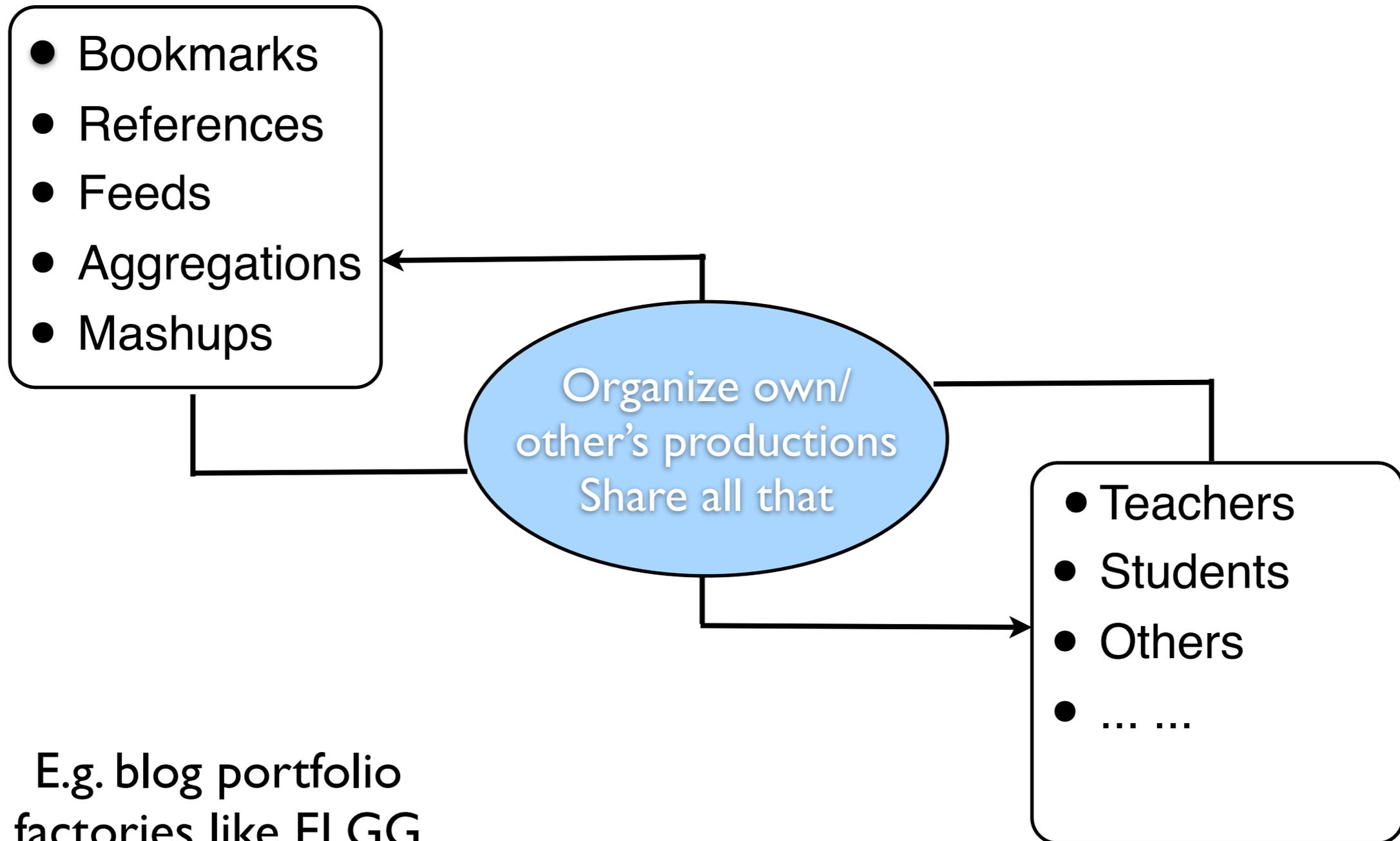
Write to the Information Space

- Digital story telling
  - "Be there" with (multimedia) stories
  - Connect them to other stories, to resources, ..
  - Kids to it all the time, some teachers do it too
    - MySpace, YouTube, Blogs, ….

- Contribute to expertise
  - Add articles to wikis, post podcasts to YouTube, upload slides to Furl, …
  - Fix / comment productions
  - Link ideas, remix productions

Project-Oriented Learning

- Organizing and augmenting the information space does not guarantee formal learning …

- Teachers have to engage in storyboarding

  - Orchestrate

  - Monitor

  - Scaffold (Tutor)

- Levels of cooperation between learners

  - Individual, group

  - Class, school (social environments!)

  - Virtual community, world (social environments!)

Personal Learning Environment

My social life

My work

My school(s)

My calendar

My family

My hobbies

My classmates

My publications

My files

My conversation(s)
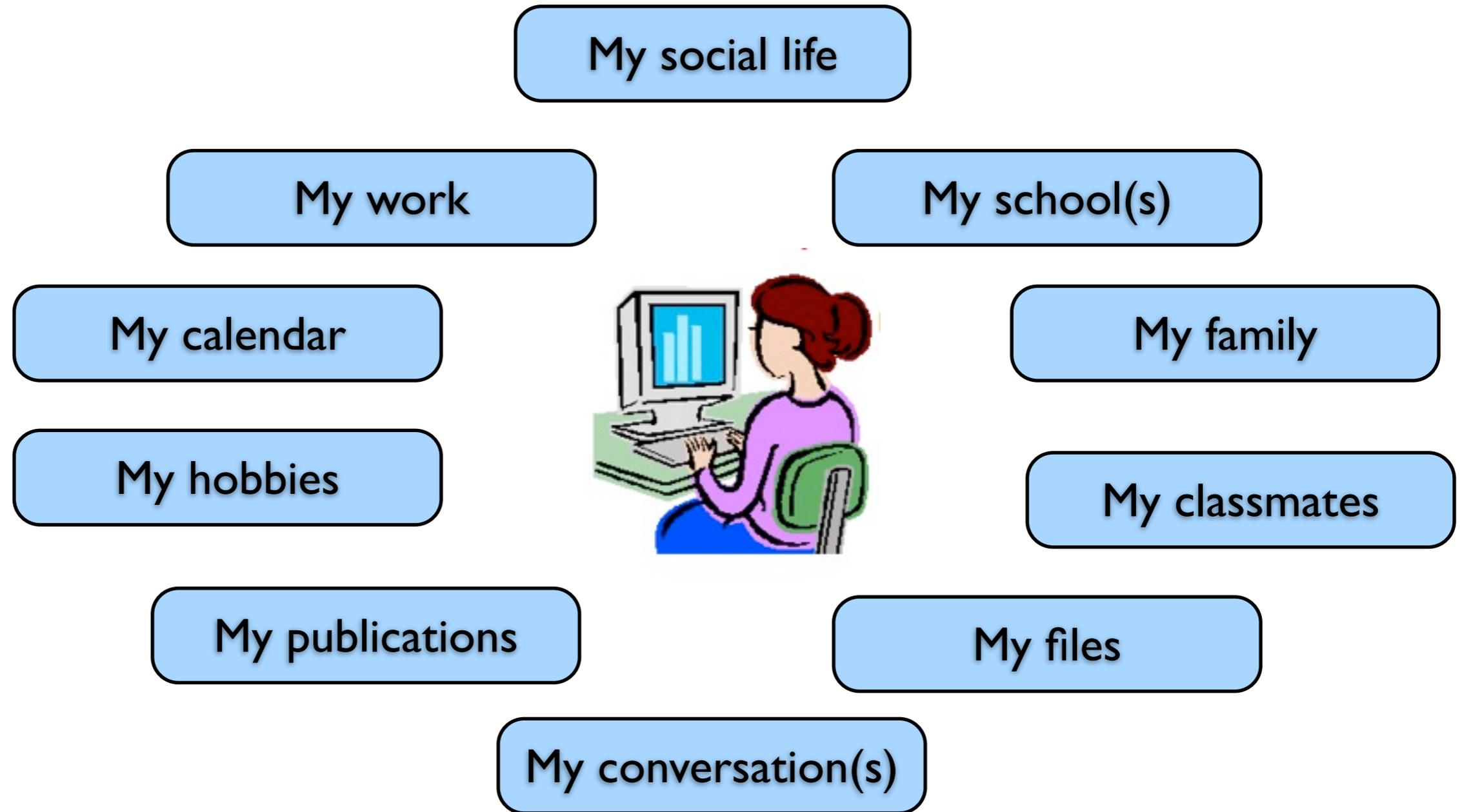
Learners do have an environment, and school is part of it
But learners **organize** it ...

Social Computing Tools

TYPE	FUNCTION	TOOLS
Communicative	To share ideas, information, and creations	• Blogs • Audio- and Video-blogs • IM-type tools • Podcasts • Webcams
Collaborative	To work with others for a specific purpose in a shared work area	• Editing/writing tools • Virtual communities of practice • (VCOPs) • Wikis
Documentative	To collect and/or present evidence of experiences, thinking over time, productions, etc.	• Blogs • Videoblogs • E-portfolios
Generative	To create something new that can be seen and/or used by others	• Mashups • VCOPs • Virtual Learning Worlds (VLWs)
Interactive	To exchange information, ideas, resources, materials	• Learning objectives • Social bookmarking • VCOPs and VLWs

McGee et al. 2007

Google Previews WAVE
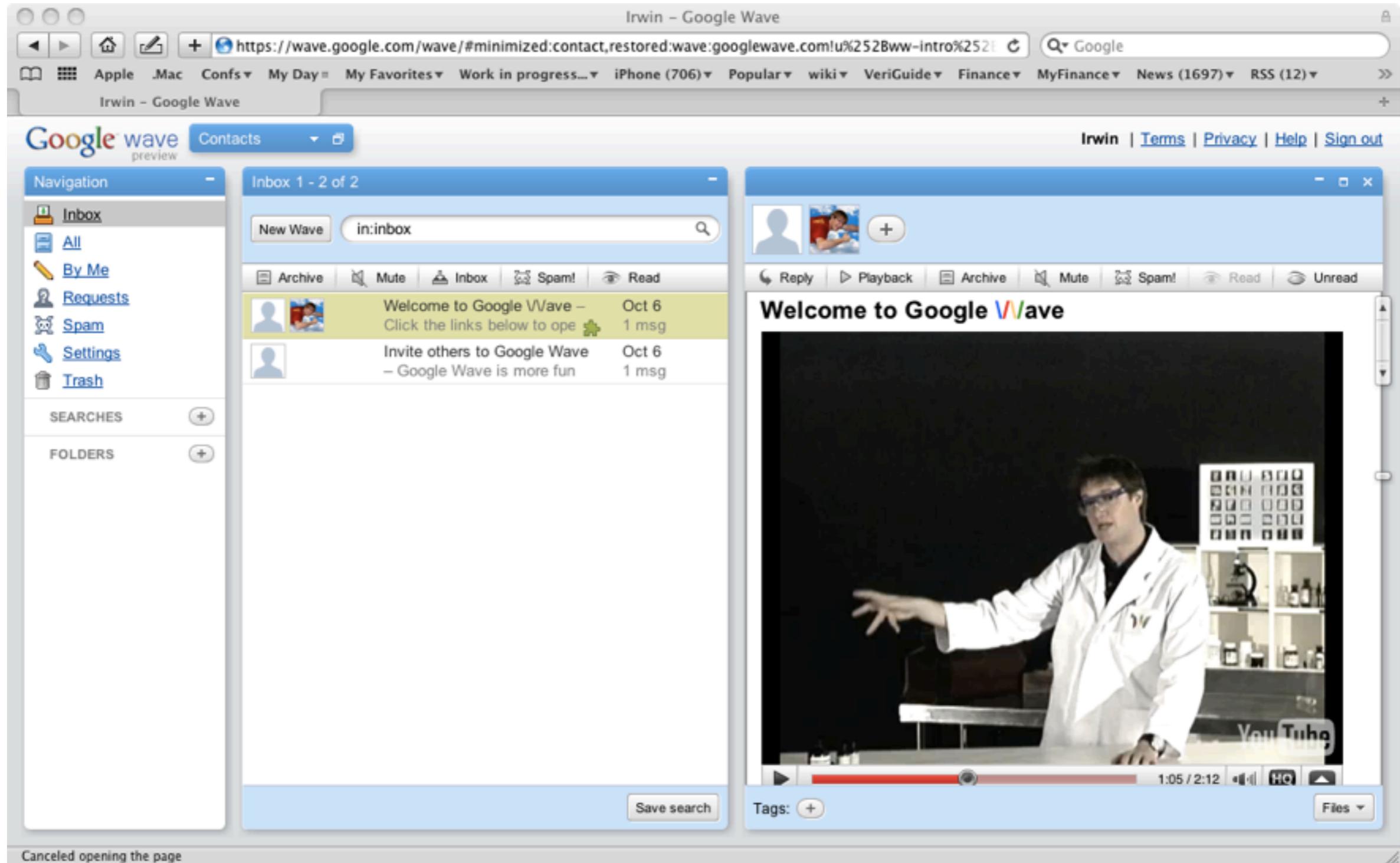
Evolution of Learning and Training
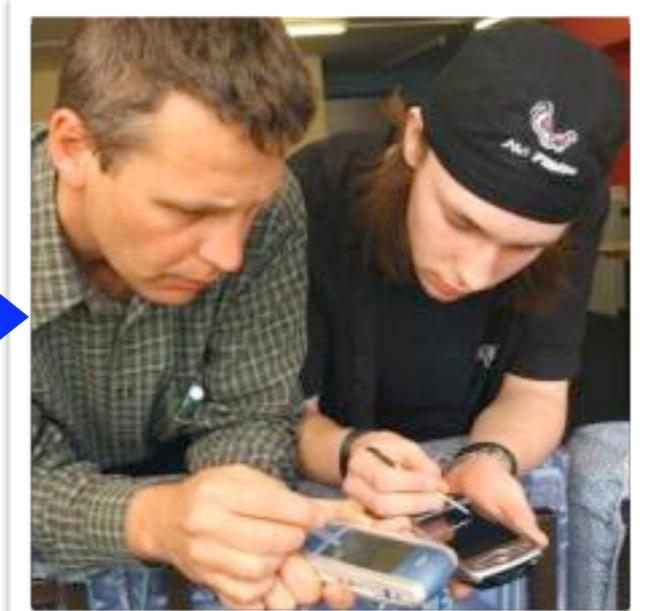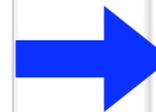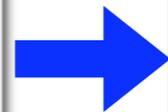
distance learning
d-Learning

electronic learning
e-Learning

mobile learning
m-Learning

What is m-Learning?

New Learning Paradigms		Mobile Technologies
Individual/Learner centered	⬌	Personalized Services
Collaborative learning	⬌	Networked/Wireless
Situated learning	⬌	Mobile awareness
Contextual learning	⬌	Context awareness
Ubiquitous learning	⬌	Ubiquitous
Life long	⬌	Durable

Limitation of m-Learning Devices

- Small screen size and limited storage capabilities

- Batteries require regular charging

- Lack of common platform

- More easily lost or stolen

- Much less robust than desktops

- Get outdated very quickly

- Security and privacy issues

- Limited bandwidth problems

- Difficulties to upgrade

Tensions and Areas for Further Research

- Teaching vs. learning

- Walled garden vs. open arena

- Private learning vs. collaborative learning

- Digital native vs. digital immigrant

- Social networking vs. anti-social networking

- Rip-mix-burn vs. cut-tweak-paste

- Transitory marks vs. persistent marks

- Print literacy vs. digital literacy

- Serial processing vs. parallel processing

Economist Intelligent Unit 2008

Which tools does your institution currently use, and which do you think will be used within five years?
(% respondents)
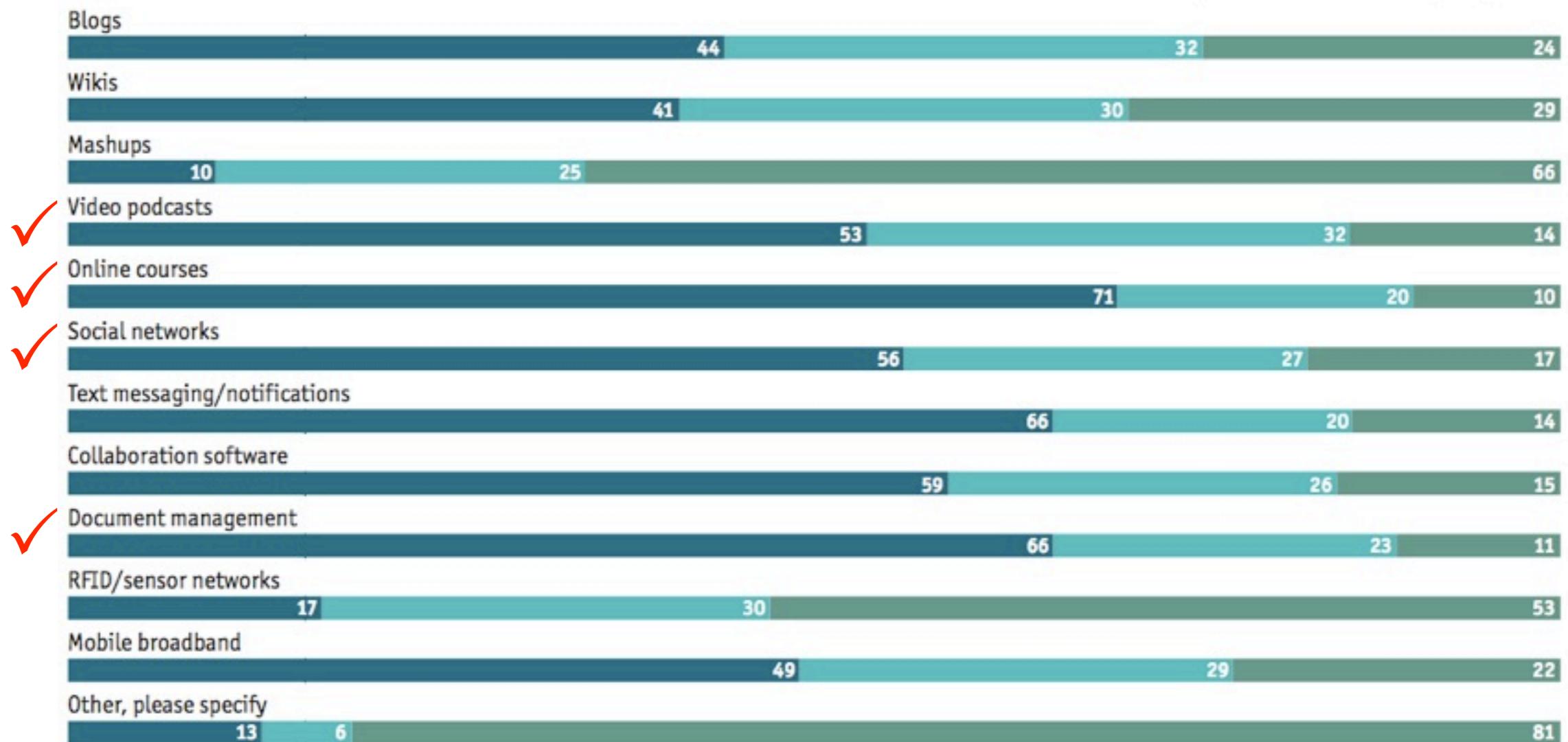
Legend: Use now | Within five years | Don't know/Not applicable

Tool	Use now	Within five years	Don't know/Not applicable
Blogs	44	32	24
Wikis	41	30	29
Mashups	10	25	66
✓ Video podcasts	53	32	14
✓ Online courses	71	20	10
✓ Social networks	56	27	17
Text messaging/notifications	66	20	14
Collaboration software	59	26	15
✓ Document management	66	23	11
RFID/sensor networks	17	30	53
Mobile broadband	49	29	22
Other, please specify	13	6	81

New Challenges

- Quality and reliability of information and resources

- Responsibility and awareness of security and privacy issues

- Ethical questions, e.g. http://www.ratemyprofessors.com/, and cyberbullying

- Need for new skills both for learners and teachers

Final Remarks

- New availability of resources for learning

- New learner empowerment and networks

- New participation in learning processes

Final Remarks

- New availability of resources for learning

  - Easy access to free information resources (dictionaries, encyclopeadia)

  - Easy access to free software resources (wikis, blogs, etc.)

  - New variety of sources and resources

  - Education providers pressured to open up their resources to show their quality

Final Remarks

- ● New learner empowerment and networks

  - ● New empowerment in choosing the learning provider

  - ● New means to express and show one's skills

  - ● Collaborative communities, new support for informal learning

Final Remarks

- New participation in learning processes

  - Learners expect to use participative approaches

  - Learning tool developers are already integrating and developing participative tools to their products

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King · Baeza-Yates (Eds.)

Weaving Services and People on the World Wide Web

Weaving Services and People on the World Wide Web

King · Baeza-Yates (Eds.)

Weaving Services and People on the World Wide Web

Ever since its inception, the Web has changed the landscape of human experiences on how we interact with one another and data through service infrastructures via various computing devices. This interweaving environment is now becoming ever more embedded into devices and systems that integrate seamlessly on how we live, both in our working or leisure time.

For this volume, King and Baeza-Yates selected some pioneering and cutting-edge research work that is pointing to the future of the Web. Based on the Workshop Track of the 17th International World Wide Web Conference (WWW2008) in Beijing, they selected the top contributions and asked the authors to resubmit their work with a minimum of one third of additional material from their original workshop manuscripts to be considered for this volume. After a second-round of reviews and selection, 16 contributions were finally accepted.

The work within this volume represents the tip of an iceberg of the many exciting advancements on the WWW. It covers topics like semantic web services, location-based and mobile applications, personalized and context-dependent user interfaces, social networks, and folksonomies. The presentations aim at researchers in academia and industry by showcasing latest research findings. Overall they deliver an excellent picture of the current state-of-the-art, and will also serve as the basis for ongoing research discussions and point to new directions.

Springer

Social Computing and Its Influence in Education
Irwin King, 2009 Pacific Neighborhood Consortium (PNC) Annual Conference, Taipei, Taiwan, October 8, 2009

http://groups.google.com/group/WSCE2009

Call for Papers

Workshop on Social Computing in Education (WSCE2009)
in conjunction with SocialComp-09, August 29-31, 2009, Vancouver, Canada

Welcome to the workshop on Social Computing in Education (SCE2009). The workshop is held in conjunction with the SocialComp-09, Vancouver, Canada from August 29-31, 2009.

With the advent of Web 2.0 and related technologies, Social Computing has become a new paradigm in ways we communicate, learn, and educate. Social platforms such as wikis, blogs, twitters, forums, groups, podcasts, mashups, virtual worlds, and sites for social networking, recommender systems, social bookmarking, social news, knowledge sharing, etc. are generating novel ways we acquire, access, manipulate, process, retrieve, present, and visualize information in the teaching and learning space. The social media for education has become dynamic, ubiquitous, distributed, real-time, collaborative, bottom-up, many-to-many, value-based, and personalized. This workshop solicits contributions on using Social Computing and related technologies for education, the emerging applications of Web 2.0 as an educational platform, as well as privacy, risk, security, and policy issues associated in Social Computing for Education 2.0.

Social Computing and Its Influence in Education
Irwin King, 2009 Pacific Neighborhood Consortium (PNC) Annual Conference, Taipei, Taiwan, October 8, 2009

Economist Intelligent Unit 2008

In what ways do new technologies pose the greatest challenges and risks to colleges and universities? Select up to three.
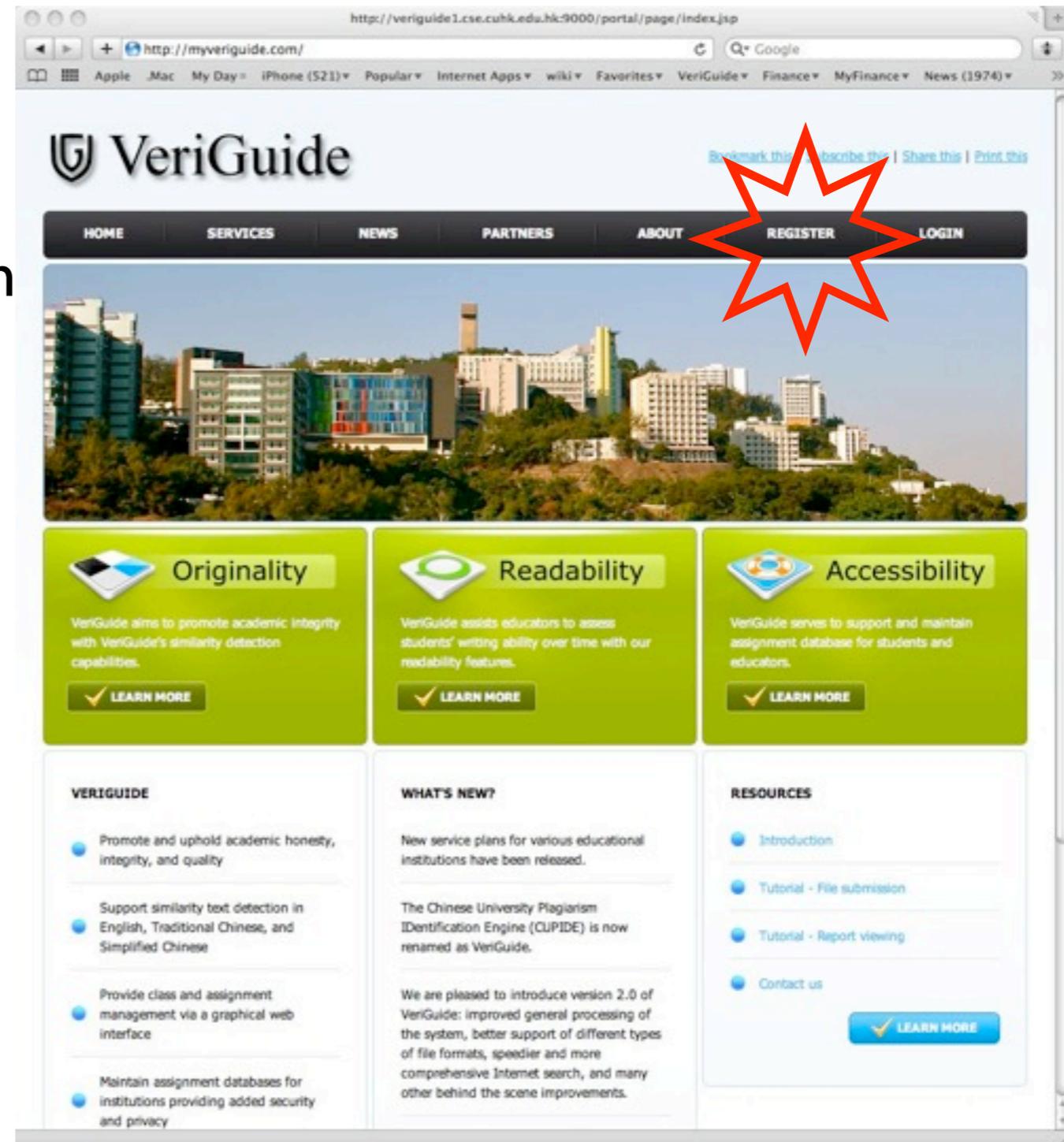(% of respondents)

Potential increase in student plagiarism

51

Potential increase in student plagiarism

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Social Computing in Higher Learning Environments: How Media, Tools, and Platforms Change Learners' Behavior

Editors

Irwin King, Department of Computer Science and Engineering, The Chinese University of Hong Kong, Hong Kong

Bebo White, SLAC National Accelerator Laboratory, Menlo Park, CA, USA

You are invited to propose chapters for a book on Social Computing in Education. The book is planned to be published by Springer, Heidelberg, Germany in 2010.

Important Dates (tentative)

Dates	Description
May 15, 2010	Deadline for Extended Abstract
June 1, 2010	Notification of Decision
August 1, 2010	First Complete Submission
October 1, 2010	First Review Feedback
December 1, 2010	Final Camera-ready Submission
March 2011	Booking Published

http://wiki.cse.cuhk.edu.hk/irwin.king/projs/springer2009

Topics

- Web 2.0 techniques and Social Computing for learning (media sharing, media manipulation, conversational arenas, online games, virtual worlds/spaces, social networking, blogging, micro-blogging, podcasts, social bookmarking, recommender systems, collaborative editing, Wikis, RSS, mash-ups, etc.)

- Theory and modeling of Social Computing in education

- Technology and software of Social Computing for education

- Social educational system design and architectures

- Case studies, best practices, and demonstrations of social media in education

- Assessment and evaluation of Social Computing in education

- Benchmarks and experiments on Social Computing in education

- Quality and reliability of information and resources in social media

- Software for social learning and collaborative learning

- Mobile learning applications for Social Computing

- Semantic Web applications for d-learning, e-learning, and m-learning

- Virtual worlds/spaces for learning communities

- Ubiquitous, mobile, distributed, and collaborative learning

- Integration of social learning spaces

- Social gaming/human computation for education

- Privacy, risk, security, and policy issues in education using social media

Q & A