Digital Thinking, Digital Learning: Twenty-First Century Skills as a Requisite for Life in a Flatter Learning World

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The Learning World has become Flat!

The Ten Forces that Flattened the Learning World

1. Tools for Searching/Finding Media and Information Resources
2. Availability of Quality Online and Blended Learning Environments
3. Free and Open Source Software for Learning
4. Open CourseWare (free content)
5. Online Learning Object Repositories and Portals (shared content)
6. Virtual Collaboration Software (synchronous and asynchronous)
7. Online Massive Gaming, Simulations, and Virtual Worlds (e.g., Second Life)
8. Learning Mobility and Portability (low-cost mobile devices + wireless communication)
9. Personalized Learning Tools (Blogs, Podcasts, MySpace, Flickr, and RSS)
10. Open Information Communities (Wikipedia, Slashdot, Digg)

Singapore and Taipei (Intel Press Release, 2006)

- Singapore, the island city-state in Southeast Asia, is about to complete a major new public/private project that will see large chunks of the 270 square mile city provided with Wi-Fi access by the end of 2006. The entire city, indoors and out, is due to be covered by 2015.
- In the coldest capital in Canada, the city residents of Iqaluit (pop. 6,000) enjoy free wireless from one free hotspot (with two more due soon to cover the suburbs), while Taipei, Taiwan (pop. 2.6 million) has a few more—over 4,000 hotspots that provide coverage for 90 percent of the city.

Who is the world flattening for?
Telegraph: Flattening the world in 1860

Eighth-grade students Tayler Bernholtz, left, Amy Lostroh and Kelsey Cardiff check out a weblog discussion related to the Civil War historical-fiction book 'Guerrilla Season' At South Valley Junior High School in Liberty, Mo. (Blogging now begins young USA Today, By Ashley Selmes, USA TODAY, November 15, 2006, 12D). http://www.usatoday.com/life/2006-11-14-blogs-education_x.htm

Schools, Teachers, and Students of the 1880s

Many Innovative Technologies in by people in this audience
Technology of the 1980s

Radio Shack TRS-80 Model III

- Introduced: July 1980
- Processor: 8K RAM
- Battery: 9V battery
- Dimensions: 11.75 x 7.5 x 3.5 inches
- Weight: 9 pounds
- Operating System: MS-DOS

Connecting the Digital Dots: Literacy of the 21st Century
Barbara R. Jones-Kavallier and Suzanne L. Flansigas
Educational Quarterly (2006), 29(2)

"These days, new media literacy technical skills catapult traditional learning methods into orbit—traditional chalkboards and overheads with pens do not occupy the same realm as current capabilities. As an example, now teachers can do a PowerPoint presentation with streaming video, instant Internet access, and real-time audio-video interaction, and they can do it with relative speed and ease.”

Technologies of the 2000’s

Students click on learning
New school laptops help Jonas Salk pupils up their grades
By Chelsea Fair - Bee Staff Writer
Published 12:00 am PDT Thursday, April 5, 2007
Story appeared in ARDEN CARMICHAEL section, Page G1.

Poll #1:
Should kids be allowed to bring mobile phones, MP3 players (iPods) to school?

MiamiHerald.com
Monday April 30, 2007, USA Today
Top 25 Things that Shaped the Internet
- 747 Million adults logged on in Jan, 2007
- 97 billion e-mails are sent each day
- Google had 500 million visitors in Dec, 2006
- USA: 1% broadband in 1998; 78% in 2007
- YouTube bought by Google for $1.7 billion
- Adobe’s Flash player on 98% of machines
- There are 75 million blogs!!!
- 19 million people play MMOG!
- 173 million personalized pages in MySpace
Bonk's Addiction Q'er

1. Who has 2 or more cell phones with Internet access?
2. Who has 2 or more laptop computers with wireless connections?
3. Who is on email in the morning? At noon? Who does it at night?
4. Who suffers from nervous tension when you cannot get on email?
5. Who is on the Web right now?

Neomillennial Learning Styles
Planning for Neomillennial Learning Styles: Implications for Investments in Technology and Faculty
Chris Dede, Harvard University, Educause, 2005

- Fluency in multiple media--value all types of communication, activities, experiences, not a single best medium
- Actively seek, collect, and synthesize experiences, rather than absorb a single best source
- Active learning and collective reflection
- Non-linear and associated webs of learning
- Co-design of learning experiences for individual needs and preferences not pre-customized

Simulation: Xer

"The skill to be valued in the twenty-first century is not the length of attention span, but the ability to multitask - to do many things well at once... [and] the ability to process visual information very rapidly.
(Rushkoff, 1996:50)

What Students Need to Know:
21st Century Skills and ICT literacy;
Susan D. Patrick, President and CEO
North American Council for Online Learning

The future will demand people who can express themselves effectively with images, animation, sound, and video, solve real world problems that require processing and analysis of thousands of numbers, evaluate information for accuracy, reliability, and validity; and organize information into valuable knowledge, yet students are not learning these skills in school.

From: The Partnership for 21st Century;
www.21stCenturySkills.org
Report: are they really ready to work (2006),
http://www.21stcenturyskills.org/documents/FINAL_REPORT_PDF
9-29-06.pdf

What Students Need to Know:
21st Century Skills and ICT literacy;
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- Information and communication skills;
- Thinking and problem-solving skills;
- Interpersonal and self-direction skills;
- Global awareness;
- Financial, economic, and business skills; and
- Civic literacy.

From: The Partnership for 21st Century;
www.21stCenturySkills.org
Report: are they really ready to work (2006),
http://www.21stcenturyskills.org/documents/FINAL_REPORT_PDF
9-29-06.pdf

Megabits
(p. 59 May/June 2007, Tech Trends)

"More than 60 percent of educators said that their schools are not putting enough emphasis on media literacy; and 80 percent said that they have to learn media literacy on their own..."

The results of the CIC Educator Survey,
Media Literacy: A Vital and Underserved Need in Schools, can be found online at
The results of the CIC Educator Survey, Media Literacy: A Vital and Underserved Need in Schools

Media literacy is a key 21st Century skill because it provides a framework and method to think critically about the media and technologies students and adults use for information and entertainment. Media literacy means knowing how to access, understand, analyze, evaluate and create media messages on television, the Internet and other outlets. It also means knowing how to use these and other technologies safely, productively and ethically.

What is “ICT Literacy”? (Brown & Dotson, May/June 2007, Tech Trends)

- Define info need
- Collect & manage info from digital envir
- Interpret into using ICT skills for comparison, analysis, & synthesis
- Evaluate info for authority, bias, & timeliness
- Communicate findings through creative use of ICT tools and resources

...using ICT tools, students can:

1. Define: Select approp research topic, frame q, identify approp resources.
2. Access: Locate and retrieve digital primary resources useful for answering the research question.
3. Manage: Organize info, summarize content, report content that answers research question.
4. Integrate: Read and interpret info using synthesis, summarization, critical thinking, perspective taking, comparison & contrast, & read and interpret multiple sources.

...using ICT tools, students can:

5. Evaluate: Make judgments on usability of info, authority of sources, bias, timeliness of the materials.
6. Create: Adapt, apply, and design a report with conclusions to the original question.
7. Communicate: Design report appropriate for audience and is clearly communicated and understood.

Ok, Million Dollar Question: What are 21st Century Skills?

If you had to give a word or phrase to describe “21st Century Skills,” what would that word be?

Locate info, synthesize it, Decision making, Use effectively and ethically, Communicate effectively, Evaluate products, Producers and consumers of visual info, Informed critics, Sensitive to bias and cultural differences, Sets own goals, Willing to make mistakes, Comparison and contrast skills, inferencing skills, Participate in a team, exercise leadership, Manage technology for public good
Digital Literacy  
(Bonk, June 2, 2007)

- Digital literacy is the ability to browse, locate, filter, synthesize across, and eventually use information appearing in multiple formats and in a wide range of sources that can lead to communication of what one discovered as well as the production of still additional information. (Paul Gilster (1997), Digital Literacy.)

21st Century Skills  
(NCREL, Learning Point Associate, 2003)

- College students use technology constantly. They text-message friends, compile playlists for their iPods, and are whizzes at updating their MySpace profiles. But when it comes to one kind of work they are required to do in college — namely, academic research — they can be inept. Too often, college officials say, students rely on Google or Wikipedia as sources, as if oblivious to peer-reviewed scholarship.
10 Technology Trends

Technology

Pedagogy

People, Society, Culture, etc.

Trend #1. Free Digital Resources and Tools

Trend #2: Blogging Blogging Questions

1. Who has a blog? Any for a specific class?
2. Who regularly reads other people’s blogs?
3. Who assigns blogging tasks?
4. Who has created a video blog?
5. Who thinks it is an utter waste of time to blog?

Use of Weblogs (especially English writing class)

1. Instructor or Tutor blog: resources, information, space to chat
2. Learner blog: reflections, sharing links and pics, fosters ownership of learning
3. Partner blog: work on team projects or activities
4. Class blog: international exchanges, projects, PBL
5. Revision: review and explode sentences from previous posts, add details
6. Nutshell: summarize themes or comments across blogs
7. Blog on blog: reflections on feelings, confusions, and experiences with blogs
Vlogging (Video Blogging)  
* e.g., Andy Calvin's Waste of Bandwidth

Trend #3. Wikis

Wiki Questions

How use in teaching
1. Provide space for free writing  
2. Debate course topics and readings  
3. Share resources (websites, conferences, writing, etc.)  
4. Maintain group progress journal  
5. Require group or class essay  
6. Have student revise Wikipedia pages  
7. Write a wikibook

4. Podcast Questions
1. Who has listened to a podcast?  
2. Who listens to a certain podcast on a regular basis?  
3. Who has created a podcast?  
4. Who has created a vodcast?  
5. Who thinks podcasting is simply more talking heads?

Student Podcast  
(in schools—kids have power!)

"Just the word 'podcast' scares a lot of teachers away," Ms. Schrock said. "There are a lot of misconceptions."

"All you need is a computer, access to the Internet and a microphone that you can buy at Toys 'R' Us," Mr. Warlick said. "I listen to podcasts on my computer." (NY Times, Jan 25, 2006)
Language Learning (ChinesePod—learn Mandarin)

Educational Applications of Podcasting (Essex, 2006, Leftwich, 2007)
1. Recordings of lectures (Coursecasting)
2. Supplemental textbook or entire book
3. Student projects
4. Interviews
5. Language lessons
6. Oral reports
7. K-12 classroom interactions
8. Downloadable library of resources
9. Recordings of performances

Trend #5. $100 Laptop
The project aims to build peer-to-peer communications

Trevor, 12, Adrian, 12, and Okeena, 13, listen back to the report they have recorded on an iPod.

Napier says the new laptop is designed to be kid-friendly

OLPC aims to turn the tide of urban poverty

Trend #6: Virtual Worlds/Virtual Reality/MMOG
First Course in a Virtual World (Second Life)

Trend #7. Language Learning

Ian, 12, records his news report.

Amy, 13, writes her news script.

Uryan, 12, and Ivan, 12, research their news story.

Lambeth CLC technician George Ballad edits the students' work.
Trend #8. Digital Books

Trend #9. OpenSource Tools

Trend #10. Participatory Video Repositories

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"The greatest challenge is moving beyond the glitz and pizzazz of the flashy technology to teach true literacy in this new milieu. Using the same skills used for centuries—analysis, synthesis, and evaluation—we must look at digital literacy as another realm within which to apply elements of critical thinking."

Nature AND Nurture: Pedagogy

Technology Pedagogy

People, Society, Culture, etc.

Some Motivational Ideas
TEC-VARIETY Model
Online Motivational
1. Tone/Climate: Psych Safety, Comfort, Belonging
2. Encouragement, Feedback: Responsive, Supports
3. Curiosity: Fun, Fantasy, Control
4. Variety: Novelty, Intrigue, Unknowns
5. Autonomy: Choice: Flexibility, Opportunities
6. Relevance: Meaningful, Authentic, Interesting
7. Interactive: Collaborative, Team-Based, Community
8. Engagement: Effort, Involvement, Excitement
9. Tension: Challenge, Dissonance, Controversy
10. Yields Products: Goal Driven, Products, Success, Ownership

1. Tone/Climate: a. Scavenger Hunt (Find Fellow Students Social Networking Software)

2. Encouragement, Feedback, etc.: A. Critical/Constructive Friends, Email Pals...

4. Variety, Novelty: A. Video Streamed Lectures & Expert Commenting

5. Autonomy, Choice: A. Clickers; Innovation is but one click

5. Autonomy, Choice: A. Multiple Topics
10. Yields Products: Concept Maps, Video Papers, Virtual Timelines, Digital Movies

99 seconds: What have you learned so far?
- Solid and Fuzzy in groups of two to four

Addressing Learning Styles With Technology

1. Auditory or Verbal Learners
- Auditory and verbal learners prefer words, spoken or written explanations.

The R2D2 Method
1. Read (Auditory and Verbal Learners)
2. Reflect (Reflective Learners)
3. Display (Visual Learners)
4. Do (Tactile, Kinesthetic, Exploratory Learners)
2. Reflective and Observational Learners

- Reflective and observational learners prefer to reflect, observe, view, and watch learning; they make careful judgments and view things from different perspectives.

2b. Online Professional Development (E-Reading First Ohio) (reflect, share, and compare)

3. Visual Learners

- Visual learners prefer diagrams, flowcharts, timelines, pictures, films, and demonstrations.
3a. Adventure Blogging = Reality Teaching and Learning (and Virtual Tours)  
(Ben Saunders, Andrew Revkin (NY Times), Mark Fennell)

4. Tactile/Kinesthetic Learners

- Tactile/kinesthetic senses can be engaged in the learning process are role play, dramatization, cooperative games, simulations, creative movement and dance, multi-sensory activities, manipulatives and hands-on projects.

4b. Electronic Cameras and Maps

Next up: The MATRIX!!!!!!!!!

- Mobile
- Auditory
- Thought-stimulating
- Reflective/Real-World
- Visually Interactive
- eXtremely Hands-on

4a. Wikis: Junior Wikibooks (Dinosaurs) and Romantic Poetry
http://en.wikibooks.org/wiki/Main_Page
It is both Nature AND Nurture as well as PEOPLE!!!
Technology is just part of the Equation
Sample papers at: http://www.publicationshare.com/
Archived talks at: http://www.trainingshare.com/

The Learning World Really is Flat

Now for the big questions...!!!
99 Second Reflection!!! Jot down 3 things you learned.

Now for 2 Minutes: Share your ideas with someone next to you and agree on three things maximum per category.

Let's Think Outside the Box!
For 4 minutes share your ideas with another pair and agree on 3 things/category.

Stop and Share for 6 minutes:
Share at your table!

Predictions of Digital Literacy Skills Needed in 21st Century