

## Change forces: Teaching, learning, and technology on the campus of the future

Microsoft Forum for Taiwan University Presidents and CIOs  
December 9, 2008

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York University  
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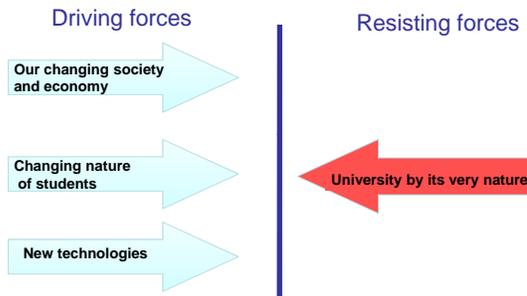


Why do we need a campus of the future? Aren't we doing a good enough job now?

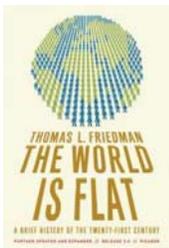
Yes, but...

- The status quo may not be good enough because powerful external forces are driving our institutions to change
- "You'll always get what you've always gotten if you always do what you've always done!!!"

## Forces affecting change



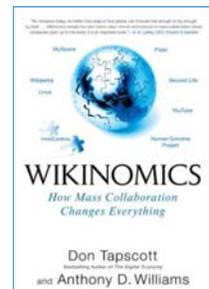
First driving force:  
Our changing society demands  
new job skills



Globalization—fueled by the Internet—has leveled the competitive playing fields between industrial and emerging market countries

How successful companies compete

Mass collaboration is having a profound change in way companies innovate, orchestrate to create value and compete in the marketplace.



**INNOCENTIVE**  
OPEN INNOVATION MARKETPLACE

Products: 25  
Markets: 25  
Subjects: 15  
Workspaces: 15

**Disciplines**  
Business and Entrepreneurship  
Chemistry  
Computer Science and IT  
Engineering and Design  
Food Science  
Life Science  
Mathematics and Statistics  
Physical Sciences  
Research for Entrepreneurship  
**Pavelets**  
Self-Initiation & Technology  
The Rockefeller Foundation  
Clean Tech and Renewable Energy  
Global Health  
Public Policy and Climate in Action

END

206 Project Rooms

Challenge Posted: Nov 10, 2008

**Challenge Release**  
Challenge Reward: \$5,000 USD    Challenge Type: Ideation    INNOCENTIVE 7550166

This challenge is looking for innovative ways of bringing back coffee aroma when making coffee with the help of modern kitchen appliances. This is an ideation challenge with a guaranteed award for at least one submitted solution. [Read More](#)

## Universities are no longer competing locally for the best students ...

- China: 25 million students taking e-learning courses in universities
- USA: 3+ million taking online higher ed courses (1/5 higher ed pop'n). Growing 20% annually compared to 1.5% for higher ed system
- UK: Open University 180,000 worldwide



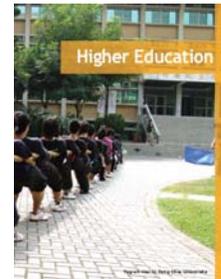
King Abdullah University of Science and Technology KAUST



"KAUST is committed to attracting high-caliber students and to providing them with a stimulating, rewarding and challenging environment in which to live and learn. Students qualified to pre-enroll in KAUST may be eligible for full tuition and scholarship."

## Taiwan MOE on need for reform

**"To survive in this age of globalisation, a small country like Taiwan needs international competitiveness drawn from its educational system and research capabilities."**



Education in Taiwan, 2008

## What skills do students need?



We are preparing students for jobs

that don't exist today  
using technology

that hasn't been invented!

## Skills needed to succeed in knowledge economy (6 C's to Succeed<sup>©</sup>)

1. Creativity
2. Complex problem solving
3. Critical thinking
4. Communicating clearly
5. Collaborating in communities
6. Continuous learning



## In short...

- Our changing society and globalization demand that we re-examine what we are teaching to ensure students have the needed skills

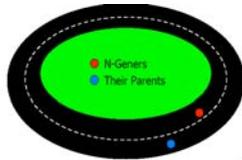


## Second driving force: Our changing students



## The rise of the 'Net Generation'

- Children of "Baby Boomers" and those younger are a unique generation growing up in a digital world
- The Generation Lap...



## Digital Natives vs. Digital Immigrants (Marc Prensky)

- Digital Natives** (Millennials, Gen Y, iGeneration, D-Gen, N-Gen, Dot.Net, M-Gen, Gamer Generation, "homo zappians", Google Generation, etc.) do not know a world without the web and digital technology
- Digital Immigrants** — the rest of us!



## Digital Natives

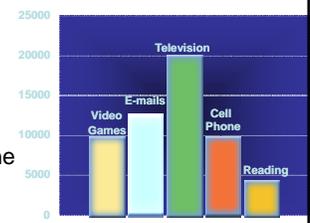
- They live "media saturated lives spending 6.5 hours/day with media" (Kaiser Foundation, 2005)
- Things they do differently: *communicate, share, buy and sell, exchange, create, meet, coordinate, evaluate, play games, learn, evolve, search, analyze, report, program digital devices, socialize, and grow up.*



## Media exposure

By age 21, the Digital Natives will have spent:

- 20,000 hours TV
- 12,000 hours email/IM
- 10,000 hours video games
- 10,000 hours cell phone
- Under 5,000 hours reading



— Prensky in Oblinger

## Not only a North American phenomenon

- “[They]... seem to be a generation-wide phenomenon, growing steadily and already having a universal character in some OECD countries.” (Francesc Pedró, OECD-CERI, 2006)



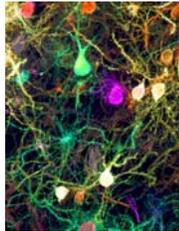
## What are the implications of this?

- Digital natives may actually *think differently* due to **neuroplasticity**
- i.e. the brain changes and “rewires” itself differently based on the inputs it receives throughout life, especially when young
- Changes can occur in as short a time as 5-10 weeks with sharply focused attention (e.g. 100 min/da, 5 da/wk)

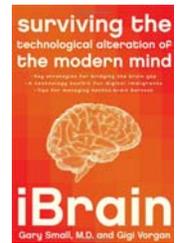


## Some characteristics of digital natives

- They can read and retain info from web pages 5x faster
- They’ve outsourced their memory
- Multi-tasking, shortness of attention span
- Potential weakening of neural circuitry that controls human contact

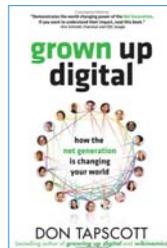
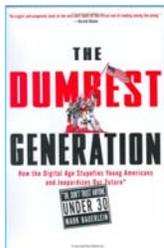


“Perhaps not since early man first discovered how to use a tool has the human brain been affected so quickly and so dramatically [as it has in this generation]”



(Small & Vorgan, 2008)

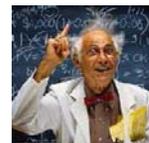
## Are they the dumbest or brightest generation?



In short...

We need to re-think not only what we’re teaching, but how we’re teaching

Today’s students are no longer the people our educational system was designed to teach (Prensky, 2006)



**Third driving force:  
New technologies enabling  
innovative approaches to teaching  
and learning**

- Web 2.0 technologies
- Open content/tools
- M-learning
- Serious games/virtual worlds

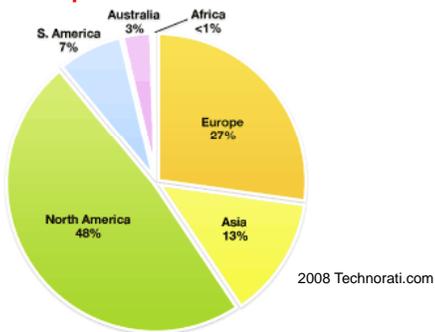


**Web 2.0 technologies**



- Blogs
- Wikis
- Pod/webcasting
- Social networking

**Blogging- a worldwide  
phenomenon**



**Even university presidents blog!**



For University of Guelph President Alastair Summerlee, one of the personal rewards of starting a blog is being able to reflect on his experiences by writing about them.  
Photo: Ross Davidson Pilon

**BLOGGER HIGHLIGHT**

**Asian Bloggers**

13% of blogger respondents  
73% male  
21 languages tracked in June

**Younger generation of bloggers**

- 73% aged 18-34 (vs. 48% Europe, 42% U.S.)
- Single (67% vs. 31% in Europe, 26% in U.S.)
- One in five are students (vs. 10% in Europe, 5% in U.S.)
- More likely to blog about music, less likely to blog about politics

**More concerned about their identity** (44% vs. 35% in Europe and 26% in the U.S.)

**Savvier about monetizing their blog**

- 24% are paid to post product reviews on their site (vs. 5% Europe, 4% US)
- Three times as likely to have paid postings on their blog
- Twice as likely to sell advertising through an online ad network

2008 Technorati.com

**Why blog in courses?**

- Reflection and sharing of thoughts on course content/ideas
- Writing to authentic audiences improves quality of work
- Opportunity for others to comment on your blog
- Consistent with the way Net Generation uses technology



## Why Wikis in higher education?



- Create content “on the fly”
- Easy to use collaborative workspace
- Allows all participants to contribute
- Creates “pride of authorship”
- Permits outside participants to contribute or critique leading to better quality product

## Wikis in my grad course

EDUC5860 Issues in Digital Technology in Education

Topic outline

- News forum
- Course syllabus
- Coffee house
- GS/EDUC 5 5860 3.0 Sec A (Summer 2006-07) Podcast for week 1
- Ethics application
- Assignment 3 ideas-post as a new topic

- Introduction - Ice Breaking Activity
  - Introduction to course
  - To Do
- Tools for elearning
  - Project topic
- eLearning Programs and Projects
  - Web 2.0 articles
- Web 2.0
  - Net Generation readings

## Podcasts at Stanford U

## Webcasting with Youtube

## Live webcasting at Ustream.tv

## University of Wisconsin-Madison evaluation of webcasting

- Benefits cited by students:
  - ✓ Improving test scores (76%)
  - ✓ Making up for a missed class (93%)
  - ✓ Watching lectures on demand for convenience (79%)
  - ✓ Improving retention of class materials (78%)
  - ✓ Reviewing material before class (52%)

April '08 survey of 5000 undergrad students

## Creating community through social networking



Facebook.com

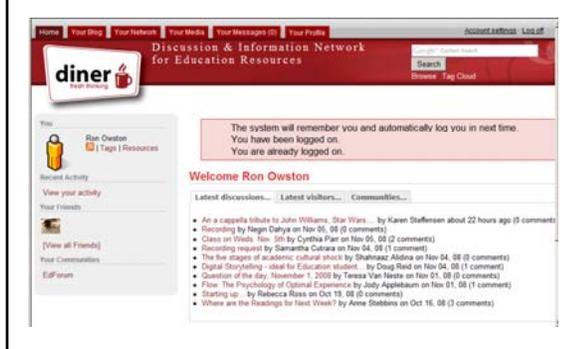


Myspace.com

## Make your own network with Ning.com



## York University "Diner"



## Open content



## Chinese translations of OCW

### Simplified Chinese Translations: China Open Resources for Education

China Open Resources for Education (CORE) is a consortium of leading universities in China that has translated OCW courses into Simplified Chinese. The translated courses have links on their OCW homepages directly to the CORE-translated version in Simplified Chinese.



### Traditional Chinese Translations: Opensource Opencourseware Prototype System

Opensource Opencourseware Prototype System (OOPS) is a volunteer-based organization that has translated OCW courses into Traditional Chinese. The translated courses have links on their OCW homepages directly to the OOPS-translated version in Traditional Chinese.



## Other open content



- Merlot.org (learning objects)



- Wikibooks.org (ebooks)



- ibiblio.org (open collections)



- cnx.org (open publications)

## Open source learning management software



▪ Moodle.org



▪ Sakaiproject.org

## Mobile learning: Oklahoma Christian University students receive laptops and iPhones

Mobile Learning Vision Statement : The project will provide a personalized, technology-enriched "OC experience" with anytime, anywhere access to all university constituents in order to:

- Enhance Student Learning.
- Extend Communications.
- Enable Student Services.
- Encourage Information Literacy.
- Empower Students for the Future.
- Enhance OC's reputation.



## Duke University iPod Benefits

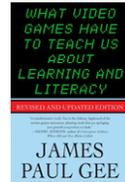
- Convenience for faculty and students of digital course content, reduced dependence on physical materials (i.e., hand outs)
- Flexible, location-independent access to course materials
- Greater student engagement and interest in class discussions
- Also used for classroom recording, field recording, demonstrations, study support, file storage and transfer



Source [http://cit.duke.edu/pdf/ipod\\_initiative\\_04\\_05.pdf](http://cit.duke.edu/pdf/ipod_initiative_04_05.pdf)

## Serious games for learning

"The theory of learning in good video games fits better with the modern, high-technology, global world today's youth live in than do the theories (and practices) of learning that they see in school" (p. 7)



## Game Training For Laparoscopic Surgery



Dr. James Rosser, Beth Israel Hospital NYC

## Video game designed to boost safety on oil rigs



Simulynx

## Teaching about world hunger



United Nations Food Force

## Solve Israel-Palestine Conflict!



Peacemakergame.com

**Selene: A Lunar Science Game**

Would young people learn science better if it were packaged in a videogame?

That's the question at the heart of the Selene project. Originally funded by NASA and now carried on through a four-year grant from the National Science Foundation, Selene studies videogame learning and the ways researchers can assess how effectively that learning takes place.

The Center for Educational Technologies® at Wheeling Jesuit University created the Selene online game to see how organizations like NASA could best use videogames to introduce important science concepts.

<http://selene.cet.edu/>

## What People Learn from Games

To cooperate, collaborate & work in teams, i.e. to work effectively with others

To make effective decisions under stress

To take prudent risks in pursuit of objectives

To make ethical and moral decisions

To employ scientific deduction

To quickly master & apply new skills and information

To think laterally and strategically

To persist and solve difficult problems

To understand and deal with foreign environments and cultures

To manage business and people

from Marc Prensky, 2006

## Virtual Worlds: Second Life



## Second Life + Moodle =



<http://sloodle.org>



## And a bit more technology...

- [Holographic projection is just around the corner](#)
- [Microsoft Surface touchscreen](#)

## Summary: Why should we consider a CoF?



## Alan Kay



- "Don't worry about what anybody else is going to do..."
- **The best way to predict the future is to invent it.**
- Really smart people with reasonable funding can do just about anything that doesn't violate too many of Newton's Laws!" —1971

Time for a break!