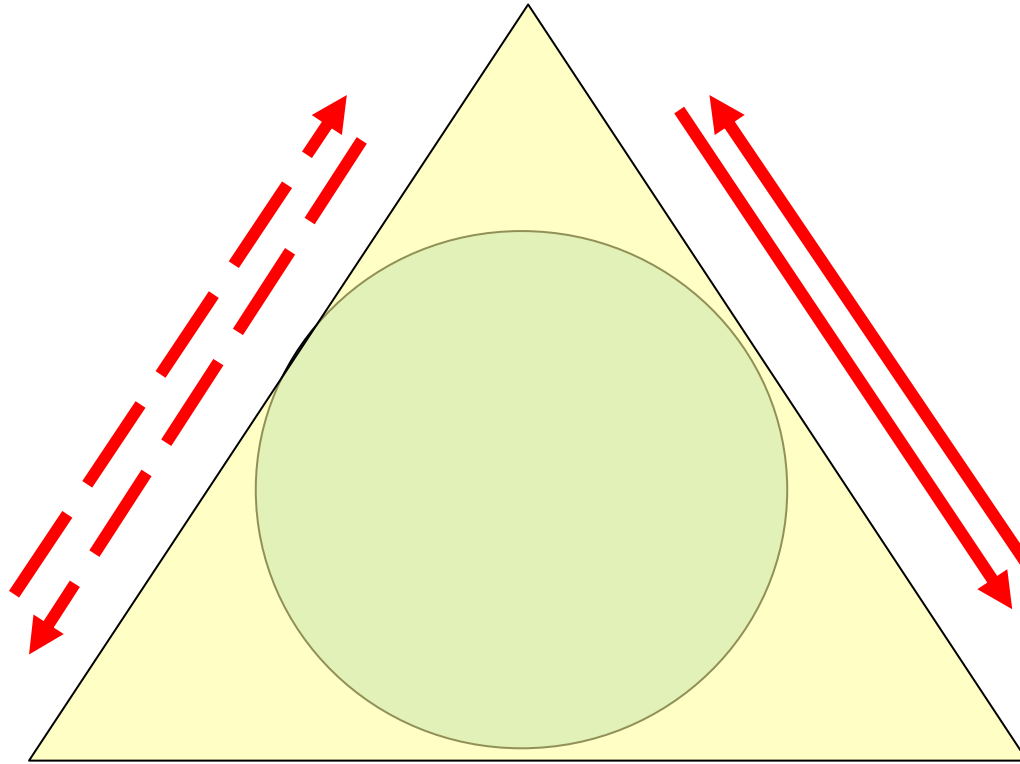


# Teachers, technology, and students: Thinking outside of the triangle

Ron Owston, PhD  
Institute for Research on Learning Technologies  
York University  
Toronto, Canada

# The teaching triangle

Teachers

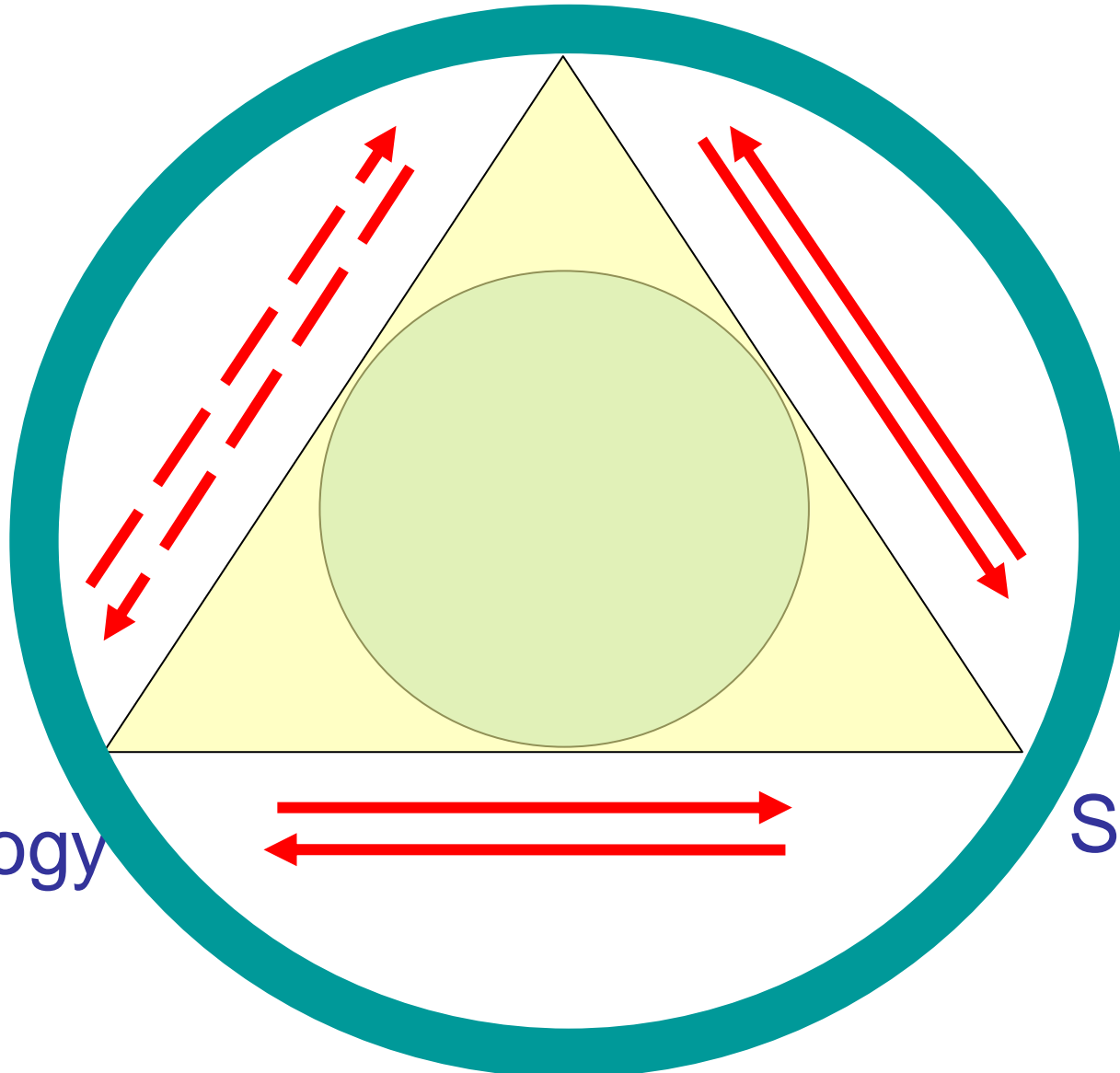


Technology

Students

# Teaching “outside the triangle”

Teachers



Technology

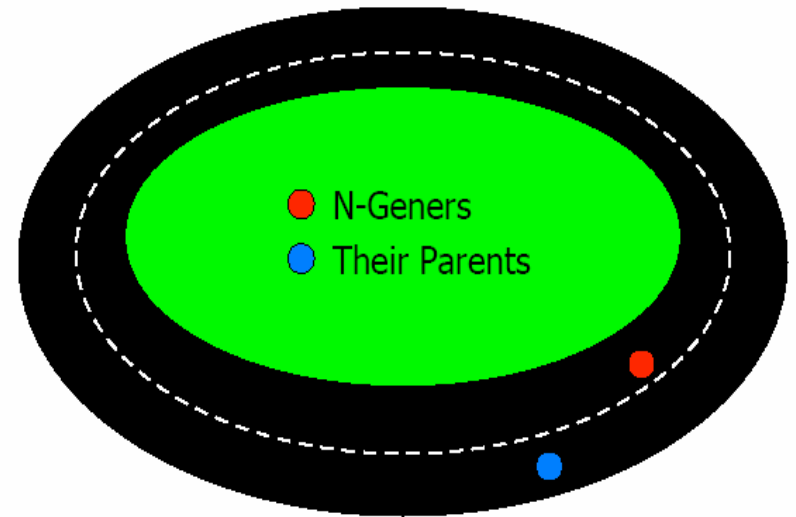
Students

# Students



# The rise of the 'Net Generation'

- Children of “Baby Boomers” and those younger are a unique generation growing up in a digital world (Don Tapscott, 1997)
- The Generation Lap...



# Digital Natives vs. Digital Immigrants

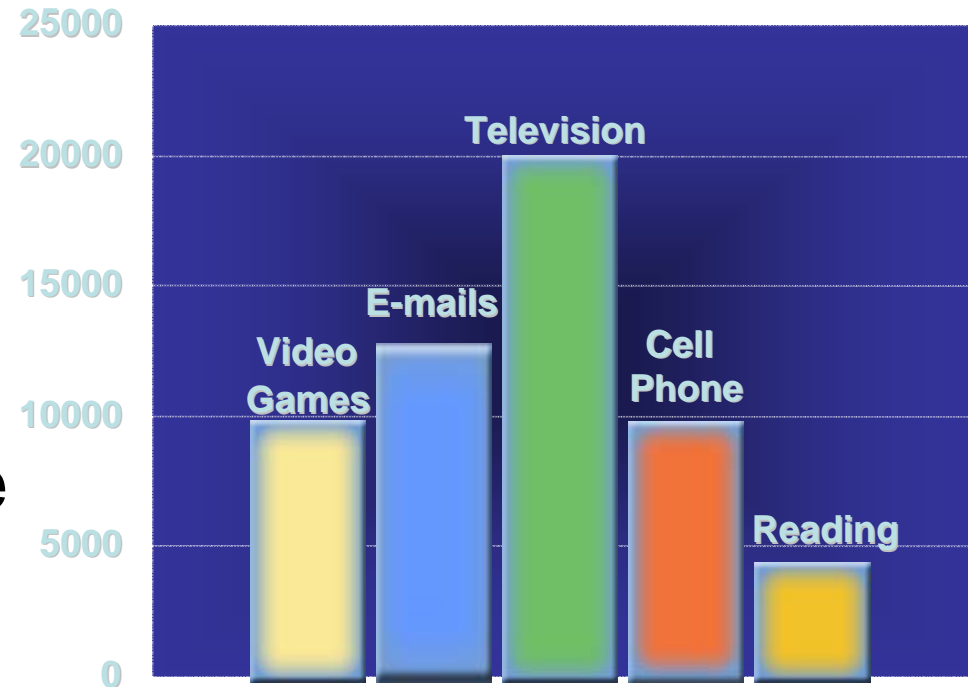
- *Digital Natives* do not know a world without the web and digital technology vs. *Digital Immigrants* (Marc Prensky, 2006)
- Things they do differently: *communicate, share, buy and sell, exchange, create, meet, coordinate, evaluate, play games, learn, evolve, search, analyze, report, program digital devices, socialize, and grow up.*
- They are **connected** and **action-oriented**. But remember—they are still “kids”



# Media exposure

**By age 21, the Digital Natives will have spent:**

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



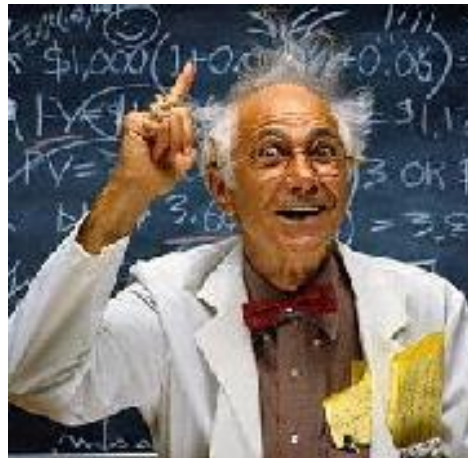
# Digital Natives and learning

- 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
- Changes can occur in as short a time as 5-10 weeks with sharply focused attention (eg 100 min/da, 5 da/wk)
- Therefore...



# Need for re-thinking teaching and learning

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



Teachers/  
Curriculum Designers  
(Digital Immigrants)

are used to

- Content First
- Presentation
- Few Decisions
- One Thing at a Time
- In Person
- Once-and-done

Students  
(Digital Natives)

prefer

- Engagement First
- Gameplay
- Frequent Decisions
- Multiple Data Streams
- Online
- Iterative

*ENGAGEMENT*

*"ENGAGE ME*

*or*

*ENRAGE ME"*

# Technology



# Web 2.0

(Social, Read/write, Participatory Web)

## Technologies

- Blogs
- Wikis
- Podcasts

## Websites

- [Flickr](#): photo sharing
- [YouTube](#), [Metacafe](#): video sharing
- [MySpace](#), [Facebook](#): social community
- [del.icio.us](#): bookmark sharing
- [Wikipedia](#): public domain encyclopedia
- (Google Docs and Spreadsheets)



# Blogs

## Mrs. Bierbaum's Class Blog

News from Our First Graders

### We are thankful!

wednesday, november 15, 2006 at 10:50:15 AM



I am thankful that I am a nice girl to all my friends. Emily C.

I am thankful for my mom and my dad and my dog and my brother. Cassidy

I am thankful for my family and my friends, and all of the people who fought in a war. Logan

I am thankful for my mom and dad and kittens! Lincoln

I am thankful for my dog and God. Mason

I am thankful for having best friends. Malachi

I am thankful for my mom, dad, sisters, dogs, and house. Sophie

I am thankful for my friends and family. Araphat


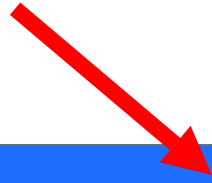
### Archives:

[november 2006](#)  
[october 2006](#)  
[september 2006](#)  
[august 2006](#)  
[november 2005](#)  
[august 2005](#)

### Links:

[WillowWeb](#)  
[Home](#)

# Wikis



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About Our School **page** discussion history notify me

Arbor Heights is an elementary school (k-5) in the [Seattle Public School District](#). We have approximately 300 students. Arbor Heights is located in an area of Seattle called West Seattle - just a short distance away from beautiful Puget Sound. [Edit This Page](#)

Arbor Heights has several staff trained as bilingual teachers who serve our diverse ethnic population, offering service to Spanish-speaking and Asian students.

At our school there is a full-time Speech-Language Pathologist (Speech Therapist). She serves children who show a variety of oral communication difficulties in articulation (speech production), language understanding and expression, language-related social skills, voice and/or stuttering (fluency). Some students are worked with in the "speech room" while others are seen in their classrooms. She welcomes any questions parents may have about their childrens' oral communication skills.

Our school is also a partner with the Macy's - the retail store. Pen pal exchanges with employees encourage writing skills and promote positive relationships with caring adults from our community. Macy's also helped finance the expansion of our computer network.

In June each student at Arbor Heights publishes a book and shares this with other students and adults in an event called the [Young Authors' Conference](#) . We also have our own student newspaper published each month, [available online](#) at this web site. Mr. Ahlness also encourages his class to blog and podcast.

The parents at our school are a very active and integral part of the education process at Arbor Heights. The [PTSA](#) is a well organized group which benefits the school with proceeds from numerous fund-raisers. Parent volunteers are plentiful, and their contributions include tutoring, fund raising, driving on field trips, grounds maintenance/beautification projects, and more.

Join this Space  
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**School**  
- about  
- upcoming events  
- staff  
- 5th grade camp  
- WASL  
- Family Math  
**PTSA**

# Podcasts

**File Edit Controls Visualizer Advanced Help** **iTunes**  Search Music Store

Source:  **Stanford** > Faculty Lectures - Audio Account:

**Library**  
Podcasts  
Videos  
Party Shuffle  
Radio  
**Music Store**  
90's Music  
My Top Rated  
Recently Added  
Recently Played  
Top 25 Most Played  
Adam Curry iPodder ...  
CMEC Forum 2005  
Stanford

**Faculty Lectures**  
Lectures, seminars and panel discussions featuring renowned Stanford faculty from across the disciplines.  
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Tracks in Audio: 64

**Links**  
Stanford University  
Stanford Alumni Associ...  
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Freeman Spogli Institute  
Center for Comparative...  
Reunion Homecoming  
Philosophy Talk  
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**Audio** | Best of Philosophy Talk | Entitled Opinions | Video | Microdocumentaries | Travel/Study

	Name	Time	Artist	Album	Price	
23	Whitehead's Account of the Six...	2:56:59	Isabelle Stengers,...	Stanford Humaniti...		<input type="button" value="GET SONG"/>
24	Documentary Film: Behind the ...	56:59	Jan Krawitz	Stanford Day In H...		<input type="button" value="GET SONG"/>
25	Introductory Remarks: Internat...	52:07	John Hennessy, C...	Freeman Spogli I...		<input type="button" value="GET SONG"/>
26	Media, Nation, Performance	44:47	Ju-Yon Kim, Kare...	Asian American Fi...		<input type="button" value="GET SONG"/>
27	History, Nation, Masculinity	1:20:40	Karen Kuo, Steve...	Asian American Fi...		<input type="button" value="GET SONG"/>
28	Charter Schools	1:13:43	Larry Cuban, Heat...	Ethics in Society		<input type="button" value="GET SONG"/>
29	Squandered Victory: The Amer...	1:34:16	Larry Diamond, '7...	Regional Speaker...		<input type="button" value="GET SONG"/>
30	Looking Ahead: Governance an...	1:24:09	Larry Diamond, Jo...	Freeman Spogli I...		<input type="button" value="GET SONG"/>
31	Popular Constitutionalism and J...	1:15:13	Larry Kramer	Regional Speaker...		<input type="button" value="GET SONG"/>
32	Aging and the Perception of Ti...	50:49	Laura Carstensen	Stanford Day In LA		<input type="button" value="GET SONG"/>
33	Inside the American Couple	1:25:43	Laura Carstensen...	Reunion Homeco...		<input type="button" value="GET SONG"/>
34	The Economics and Politics of ...	58:10	Lawrence H. Goul...	Stanford Day In LA		<input type="button" value="GET SONG"/>
35	International Policy and Security	50:29	Mariano-Florentin...	Stanford Day In H...		<input type="button" value="GET SONG"/>

**Now Playing**  
**Nothing Playing**

64 songs

# Tower

ALL SIZES



Uploaded on [July 15, 2005](#)  
by [kathy yamashita](#)

## kathy yamashita's photostream



22 photos  
[View as slideshow](#)

◀ more | browse | more ▶

This photo also belongs to:

## Playing with Images Samples (Set)



8 photos  
[View as slideshow](#)

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## Tags

- media
- arts

## Additional Information

© All rights reserved

- Taken on [June 24, 2005](#)
- See [different sizes](#)
- Viewed 52 times

## Comments



[Alyssa Lake](#) says:

i really like this picture. you can tell the creator put alot of time in it because most of the images dont look like they came from the same image and there is much copying and pasting of human bodies. the foreground picture of the girl in the white gives the picture more emotion and depth due to her expression and hand gesture. all and all i really dig the angle of the tower, it gives the picture itself some kind of crookedness that one wouldnt normally get if they just threw themselves into a picture. cudos

Posted 15 months ago. ([permalink](#))

# Google Docs & Spreadsheets



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<input type="checkbox"/>	<a href="#">☆</a> <a href="#">▼</a> <a href="#">This is a test of the docs online.</a>	Me <a href="#">Share now</a> ( <a href="#">blogged</a> )	7 weeks ago by Me

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# Richardson's 10 "Big Shifts"

1. Open content
2. Many teachers
3. Collaborative construction of knowledge
4. Teaching as conversation, not lecture
5. Students need to learn where to find information
6. Readers need to filter information
7. Web becomes a notebook
8. Communication no longer just text
9. Products demonstrate mastery
10. Contribution becomes the ultimate goal

Will Richardson (2006). *Blogs, Wikis, Podcasts and Other Powerful Web Tools for Classrooms*.

# Games and Learning

- Games are about challenge, complexity, and engagement
- “Kids play games NOT because they are games, but because they’re the most engaging intellectual thing they have”  
(Prensky, 2006)
- They are about 21<sup>st</sup> century learning...



# 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!

The screenshot displays the Peacemakers game interface, which is a simulation of the Israel-Palestine conflict. The top-left panel shows a 3D scene of Israeli soldiers in a field. The top-right panel features a 'TIMELINE' window with a vertical axis from 1920 to 2000, highlighting the year 1993 with a photo of the Oslo Accords signing and a text box: "After secret negotiations, Israel and the PLO recognize each other and pledge to work for peace through the Oslo Accords. The Palestinian Authority [PA] under Arafat is created to govern Palestinian territory being evacuated by Israel." The bottom-left panel shows a 'NEWS REPORT' window with a photo of a woman and the headline "18 PALESTINIANS KILLED AND 40 WOUNDED BY ISRAELI TANK FIRE", followed by a brief summary of the event. The bottom-right panel is a 'GIVE A SPEECH TO THE PALESTINIAN PEOPLE' interface with a list of options: "Pro Law and Order", "Pro Reconstruction", "Anti Violent Resistance", and "Pro Violent Resistance". The game's status bar at the bottom shows the player's role as "Palestinian President" and various approval metrics (National and World Approval) and icons for different groups and leaders.

# Virtual Worlds: Second Life



# What People Learn from Games

*complex*



**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**

# The Challenge...

- How to make classroom learning as engaging and motivating as games?

“Whenever I go to school I have to ‘power down’”

– a high school student

“A lot of teachers think they make a PowerPoint and they’re so awesome!”

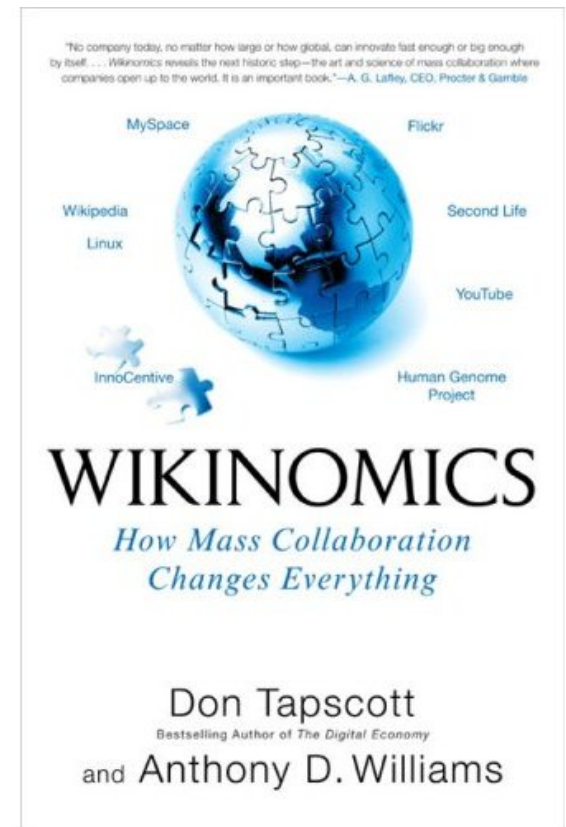
-- a (female) high school junior

“I don’t want to *study* Rome in high school. ... I *build* Rome every day in my online game (Caesar III).”

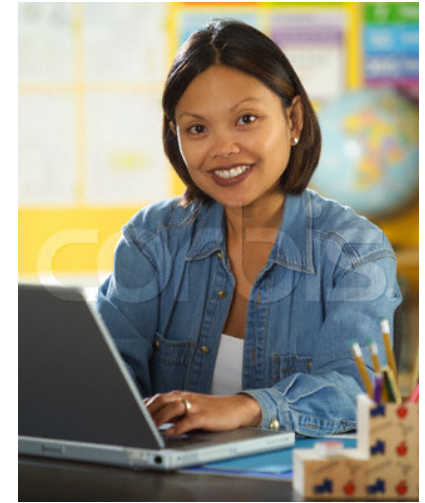
– Colin, Age 16

# What Digital Natives are doing online for entertainment is happening now in business

- Four principles—*openness, peering, sharing, and acting globally*—increasingly define how 21<sup>st</sup> century corporations compete
- Companies such as Boeing, BMW, and Procter & Gamble are leading the way

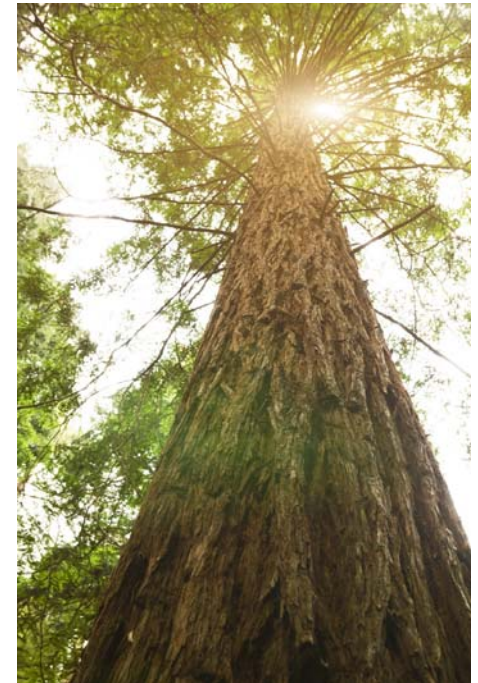


# Teachers



# “Teaching outside the triangle” will occur through teacher professional development, if done right!

- **First wave (largely ineffective):** beginning in 1960s
  - the focus was on generic teaching skills e.g. grouping, providing clear classroom demonstrations
  - One shot workshops
- **Second wave (more effective):** beginning in 1990s
  - research began to show that PD can affect classroom practices and lead to improved student achievement when structured in certain ways
  - On the job over extended time



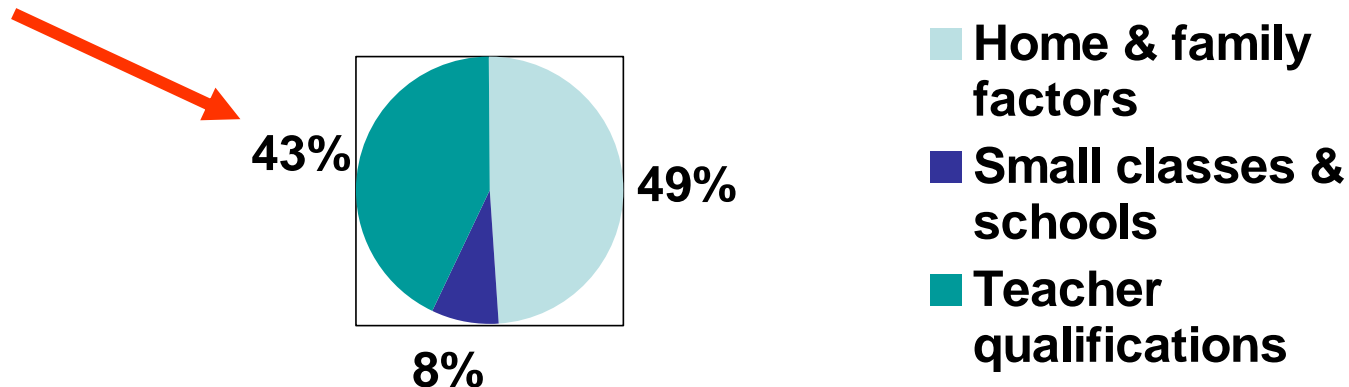
# What is “Teacher Professional Development”?



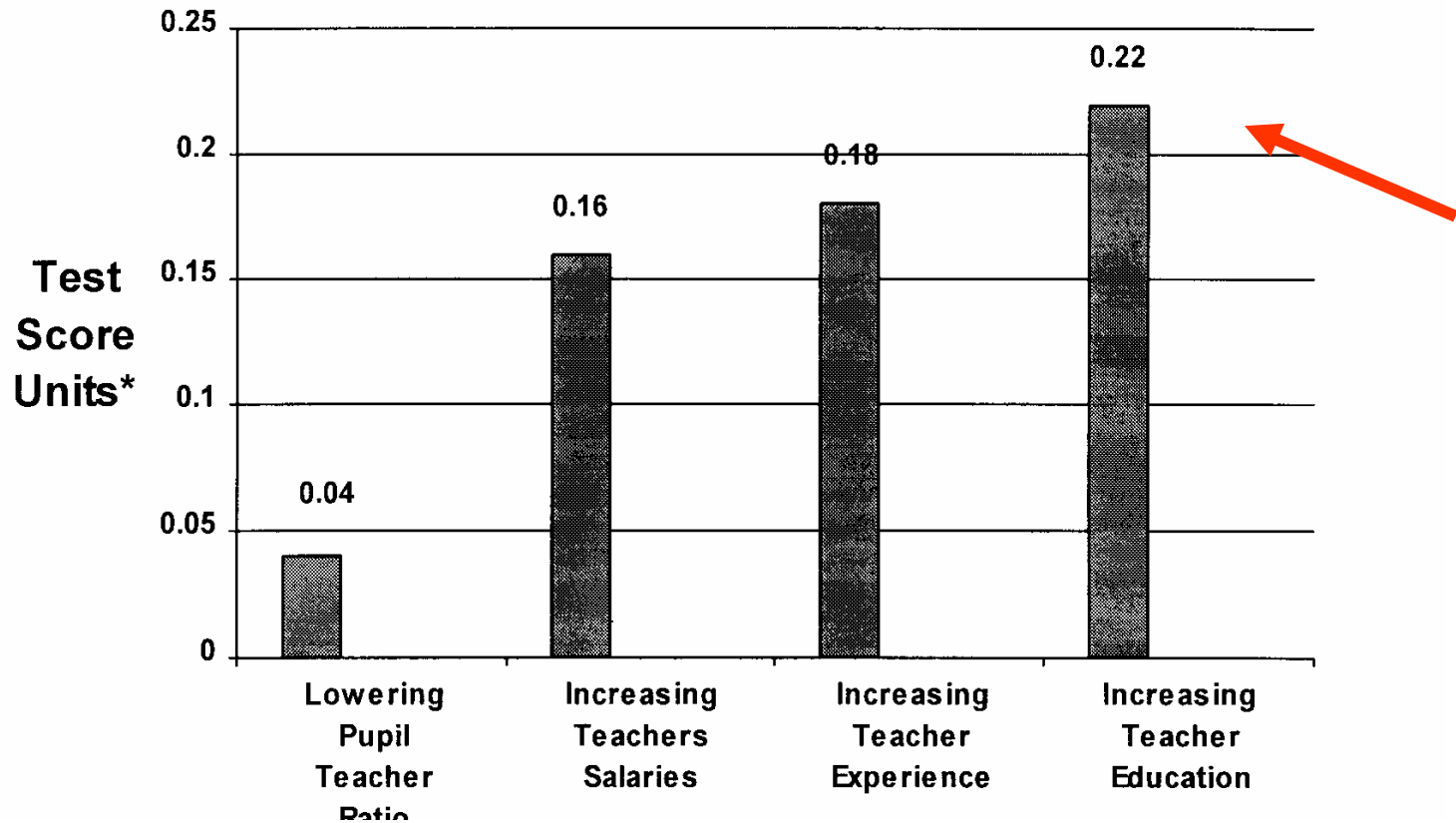
- Those processes and activities designed to enhance the professional knowledge, skills, and attitudes of teachers, *so that they can improve student learning*

# Importance of Teacher Qualifications

## Influence of Teacher Qualifications & Student Achievement



# Improvement in achievement for every \$500 spent



source Darling-Hammond, 1998

# Principles for the Design of PD Experiences for Teachers



# 1. Make sure that PD focuses on the subject matter teachers will be teaching

- General information about instructional strategies (e.g. cooperative learning) or unrelated content enrichment is not effective
- Focus on content students need to learn and problems they might encounter



## 2. Should be driven by analysis of gap between student goals and performance

- This analysis defines what teachers need to learn
- Teachers can use the analyses to explore usefulness of different teaching strategies
- Makes PD more accountable



# 3. Involve teachers in decisions about their PD

- Consistent with principles of adult learning
- Increase teacher motivation and commitment to learn
- Decreases cynicism and detachment



# 4. PD should be “job-embedded”

- Should be part of teacher’s everyday job
- Most powerful learning opportunities are those linked to authentic and immediate problems in the classroom
- Increases teacher motivation and engagement
- Does not deny out-of-school learning too



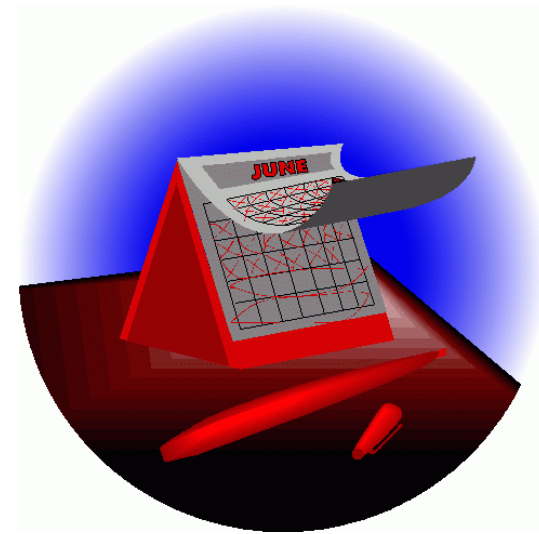
# 5. Should relate to individual needs but involve collaboration with other teachers

- Teachers should not be asked to change without support
- Collaborative cultures facilitate school improvement
- Problem solving teams can break down isolation, and create a shared understanding of good practice



## 6. PD should be continuous and ongoing

- Not something done just 3 or 4 times a year
- Significant reform of schools takes time: 3 yrs for primary; 6+ yrs secondary
- Ongoing support is needed for improvements to take hold



# 7. PD should be evaluated

- Use multiple sources of information
- Must be non-threatening
- Ideally changes in teaching and student learning should be assessed
- Provides feedback on design of future PD



# Two York University PD Projects built on these principles

**@bel** broadband enabled learning  
ADVANCED BROADBAND ENABLED LEARNING

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## ABEL SUMMER INSTITUTE

The theme for this year's **Summer Institute** is "Intersections: Where Learner, Literacy and Technology Meet." This Summer Institute offers a range of informative presentations and hands-on workshops to meet the diverse professional needs of ABEL members and Summer Institute delegates. Currently, the ABEL Program committee is inviting you to present at this year's Institute!

## INTERSECTIONS: WHERE LEARNER, LITERACY TECHNOLOGY MEET

### What's New

- **ABEL Summer Institute 2007 - Call for papers and more info!**  
[Click here for more details.](#)
- **March 7: Rainbow Eagle: An interactive presentation of Native American teachings.**  
[Click here for more details.](#)
- **Orange Revolution ABEL Curricular Activity**  
[Click here for more details.](#)
- **Connecting with Science: Collaborative opportunities for**

**Abelearn.ca**

**Learningconnections.on.ca**

Learning Connections  
Liens d'apprentissage

LITERACY AND NUMERACY  
LITTÉRATIE ET NUMÉRATIE

Welcome: Guest Login

Current Community: Guest Information

### Registration

To register for Learning Connections read the materials in the module to the right and if you are eligible and wish to join Learning Connections, click on the Community Registration button below.

**Community Registration**

### Program and Registration

#### Learning Connections Program Registration

Learning Connections is a job embedded professional learning community open to junior division teachers, principals, vice principals, curriculum staff and supervisory officers in the nine Ontario District School Boards listed below. Its goal is to improve student achievement in literacy and numeracy.

**Need more information about the program? Want to join Learning Connections? click on [Welcome to Learning Connections.](#)**

### Contact Information

# Conclusions/Challenges

In order to “teach outside the triangle”, teachers need to:

- Understand today’s net savvy students and their preferred ways of learning
- Be comfortable using the new tools of the Web as they evolve
- Be continuous learners and integrate the new tools into the curriculum

# Contact Info

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<http://www.yorku.ca/irlt>
- Homepage:  
<http://www.edu.yorku.ca/~rowston>

