The Role of Technology: Partnering With Your Digital Native Students

August 19, 2009
Rancho Cucamonga, CA
Bringing Together Three Threads

1. Changing Students
2. Changing Instruction
3. Changing Technology

Guiding Questions

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1. Who are today’s students?

2. How should we teach them?

3. What is the role of the teacher?

4. What is the role of technology?
1. Who are today's students — are they different?
Are people shaped by their environment?
Only partly, of course but certainly!
The environment for our kids is that...
Change IS ACCELERATING!
The world, especially the world of young people, is going to evolve much faster than most people think.
You have probably already radically the way you do

Work
Banking
Communicating
Paying
Travelling
Buying/Selling
Obtaining Information
Reading
Health-related things
Going to the...
For many, change is happening so fast it’s SCARY
And this fear often leads people to rush to protect what they know and value, rather than seek the good in the changes.
Sent any emails today?
“Email is for old people”

– A student

– A headline in The Chronicle of Higher Education
In their lifetimes, our kids will see technology become ONE TRILLION times more powerful
1,000,000,000,000 TIMES 
(2^{40})

1960’s main-frame \times 1B = \text{Today’s Cell phone} \times 1T = ???
...and today we are already working at the atomic level
Individual Xenon atoms

1989
Human hair

Nanomachine
Today, NEW TOOLS COME FAST...

- Sped-up video
- Picture Search
- IM/texting
- Blogs
- Wikis
- Wikipedia
- Podcasting
- Phone polling
- My Space
- Handhelds

- P2P
- Complex Games/Sims
- Web 2.0
- Web 3.0
- Augmented Reality
- Phone cameras
- Phone videos
- GPS
- You Tube
- MoSoSo

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AND GO FAST...

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2015 OUTDATED
BUT DON’T WORRY!
I am your...
“Early Warning System”

Taken by Sky, Age 3½
To help you deal with it...
...and still stay sane!
Where do I get my information?
Is it “research-based”? © 2009 Marc Prensky
It most certainly is:
I TALK TO STUDENTS!
Our students have changed
Why?

DIGITAL TECHNOLOGY

by age 21, on average:

- 5-10,000 hours Video Games
- 250,000 emails & IMs
- 10,000 hours on cell phones
- 20,000 hours TV & You Tube
- 500,000 commercials

- < 5,000 hours book reading

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not

“little us’s”

anymore!
You Tube: Young Kids on Cell Phones at Party

No, I just can't, I'm at a party.
Our job is to prepare these students for an unknown future...
While preparing them for the day they leave us (for a job or more ed)…
and...
While preparing them
to take our courses
In the first place!
Under-prepared?

(Potential)
Speed-Learners!
What are the tools for speed learning?
Example:
Windows Media Player Speed Control
“Most of us prefer to walk backwards into the future...
...a posture which may be uncomfortable...
...but which at least allows us to look at familiar things as long as possible.”

-- Charles Handy
21st CENTURY EDUCATOR
What are the tools for speed learning?
Digital Immigrants

- Relatively Slow Pace
- Step-by-Step
- One thing at a time
- Text Primacy
- Task-Oriented
- Stand-Alone

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Relatively Slow Pace

Step-by-Step

One thing at a time

Text Primacy

Task-Oriented

Stand-Alone

T W I T C H

S P E E D

R A N D O M

A C C E S S

P R O C E S S I N G

F i r s t

c R a p h i c s

P L A Y - O R I E N T E D

C O N N E C T E D

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Sky (b. 2005)
[our kids were] “born to the idea of rapid change”

-- Nicola Griffith in *Slow River* (1995)
“How often should we change our teaching style in order to hold your interest?”

-- teachers

“Every couple of days”

-- students
What makes Sky a Digital Native?
What makes someone a Digital Native?

Knowledge? X
Capabilities? X
Attitude
Comfort Level
Different way of looking at things

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What makes someone a Digital Immigrant?
Those who didn’t grow up with technology often have a “Digital Immigrant Accent”

- Printing out our e-mails
- Not instinctively going to the Internet FIRST
- Not sharing readily
- Assuming “Real Life” happens only offline
- Thinking the way WE learned to do things is the right way (or, worse, the only way)

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What are the tools for speed learning?
Should be the older person outside, with the kids inside taking off.
“There’s so much separation between how students think and how teachers think”

-- a (female) high school junior
# The Top Things to Do To Improve Learning

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 1 computers</td>
<td>1 to 1 computers</td>
</tr>
<tr>
<td>Training</td>
<td>Wi-Fi in classroom</td>
</tr>
<tr>
<td>Smaller Classes</td>
<td>No filtering</td>
</tr>
<tr>
<td>Support</td>
<td>Notes/texts online</td>
</tr>
<tr>
<td></td>
<td>Teach kids who don’t know (peer-to-peer)</td>
</tr>
<tr>
<td></td>
<td>Teach yourself</td>
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</tbody>
</table>

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Digital Immigrants

Teach by

- Delivering content
- Presenting & Telling
- Linear Stories
- One Thing at a Time
- One size fits all
- Face-to-face
- Little change in method

Digital Natives

Learn from

- Being Engaged
- Doing & Gameplay
- Random Access & Exploring Options
- Multi-tasking
- Lots of Choices
- Going Online
- Latest tools

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A.D.D.?...
It’s not attention deficit –
I’m just not listening!
...or E.O.E.
“ENGAGE ME or ENRAGE ME”

– Dr. Kip Leland  ex LAUSD
It’s not that engagement was never a teacher’s job.
The problem is that engagement is changing
10 Things Today's Students Want
10 Things Today’s Students Want

1. They want to be respected, and have their opinions valued and count
10 Things
Today’s Students Want

2. They want to follow their own interests and passions
3. They want to create
10 Things Today’s Students Want

4. They DO NOT want to be lectured to
5. They want to work with their peers on group work and projects (with ways to prevent slackers from getting a free ride)
10 Things
Today’s Students Want

6. They want to express and share their opinions
10 Things
Today’s Students Want

7.
They want to make decisions and share control
8. They want to connect with their peers, both in class and around the world.
10 Things Today’s Students Want

9. They want to cooperate and compete with each other
10. They want an education that is not just relevant, but REAL
Perhaps most importantly, for Digital Natives
“Learning [and certainly engagement] comes from passion, not discipline”

—Nicholas Negroponte
What are the tools for speed learning?
“Passion-based Learning”
Here’s another way to think about Technology Engagement, and Change
Another way to think of technology: Verbs vs. Nouns

Verbs (Skills)
- Presenting
- Communicating
- Learning

Nouns (Tools)
- Flash
- Twitter
- Change rapidly
- Stay the same

Another way to think of technology: Verbs vs. Nouns
VERBS

Stay the same

• Thinking critically
• Presenting logically
• Communicating
• Decision Making
• Being rigorous
• Understanding Context
• Persuading
NOUNS

Change

- Books → Videos
- Blackboards → Electronic Boards
- Overheads → PPT
- PPT → Flash
- Laptops → Netbooks
- Cell Phones → iPhones
- FaceBook → Twitter?
Ideally, students should be using the best, most up-to-date nouns (tools) for each verb (skill).
Ask yourself:

“Am I using the appropriate / best / latest “nouns” for the “verbs” I am doing?”
Students need the latest/best way:

To network
To communicate
To present
To calculate
TO LEARN
...and just because our government is falling down...
...doesn’t mean we should!
BUT
Do digital tools lead automatically to engagement? or wisdom?
Do digital tools lead automatically to learning?
NO!
and that’s where teachers come in
Some say just adding technology is the answer to getting engagement...and learning...and wisdom
But you can add all the digital technology in the world
And it won’t help much...
If it’s not well-integrated with the learning and teaching
Technology is NOT the "magic bullet"...
This is!
2. How should we teach today’s students?
“A lot of teachers think they make a PowerPoint and they’re so awesome!”

-- a (female) high school junior
How should we teach?

Consensus on the goal

Still struggling with how to get there
Old Way
Students being taught

BOREDOM

Better Way
Students teaching themselves (with our coaching and guidance)

ENGAGEMENT
Outside of school, on their own, the kids have discovered that they can teach themselves, but often need guidance.
Outside of school, on their own, the kids have re-discovered this better way to learn
I call it PARTNERING
But it goes by many names
You can call it:

Partnering
Problem-Based Learning (PBL)
Project-Based learning
Case-Based Learning (CBL)
Inquiry-Based Learning (IBL)
Student-Centered Learning
Learning by Doing
Co-constructing
Challenge-Based Learning
Process-Oriented Guided Inquiry Lng

it’s basically the same!
Those are all *brand names* for the same thing
Whatever you call it:
(PBL, CBL, IBL, POGIL)
for Immigrants and Natives
to work together effectively,
They need to PARTNER with each other In a New Way
“I never try to teach my students anything. I only try to create an atmosphere in which they can learn.”

– Albert Einstein
Wait a Minute!
Students learning by themselves?
What About TEACHERS?
3. What is the role of the teacher?
21st Century Pedagogy = a move from:

Lecturer Controller to Guide Partner Coach
Analogy: Farming

The plants grow by themselves
The Farmer provides the right conditions

“Cultivation”
A New Metaphor
Our students are ROCKETS!
Our students are ROCKETS!

• They go at high speed
• They are headed to places unknown
• They are highly volatile
• They can’t be controlled precisely
  • They need good programming
    and a good payload
• They may require mid-course corrections

They have an enormous potential payoff!
And that makes us ROCKETS!

SCIENTISTS!

(who knew!)
4. What is the role of technology?
Technology’s role is to support the partnering pedagogy (i.e., students teaching themselves with their teachers’ coaching and guidance)
Technology **DOES NOT** and **CANNOT** SUPPORT the pedagogy of lecturing and telling except in the most minimal of ways: i.e. pictures and videos
In fact, until teaching moves from the “lecture” pedagogy to the “kids teaching themselves with our guidance” pedagogy...
...adding technology to a classroom actually *HINDERS* engagement and learning!
Different perspectives...

“My students use technology as the new spitball”

“Technologically, my teachers are illiterate”
So there is a key PREREQUISITE to adding and using technology:
BEFORE technology can really help learning...
Teachers must change their pedagogy...
To
PARTNERING
21st Century Pedagogy =
a move from:

Lecturer
Controller

to

Guide
Partner
Coach
& Rocket
Scientist

0 1 2 3 4 5
Yes, teachers need to be using the latest tools...
NEW TOOLS

- Sped-up video
- Picture Search
- IM/texting
- Blogs
- Wikis
- Wikipedia
- Podcasting
- Phone polling
- Social Nets
- Handhelds

- P2P
- You Tube
- Web 2.0 (Participatory)
- Web 3.0 (Semantic)
- Augmented Reality
- Phone cameras
- Phone videos
- GPS
- Games & Simulations
- MoSoSo
But only in the right context

i.e. in support of the Partnering Pedagogy
Step 1: Change to the Partnering Pedagogy

Step 2: Let students use the technology to take off!
HOW SHOULD teachers use technology tools?
HIGH!

Set the bar
“THE PRENSKY APOSTACY”
(The stress-reducing bit)
It’s important that teachers **DON’T WASTE THEIR TIME** Learning to Create With New Tools, *(unless they want to)*
because...
The students can do that! (and they want to)
“Don’t try to keep up with the technology -- you can’t”

– A 15 year old girl
“You’ll only look stupid.”

– A 15 year old girl

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RULE #1

Teachers should *never* use the technology *FOR* their students!
How our students see things when teachers use technology
We’d better get started, because...
“Video is the new Text”
--Mark Anderson

YouTube
Broadcast Yourself™

Teacher Tube

Big Think

TED Talks
You can learn about ... from ...

Biology: James Watson
Physics: Murray Gell-Mann
Creativity: Amy Tan
Fashion: Isaac Mizrahi
Politics: Ted Kennedy
Acting: Harrison Ford
Supreme Court: Stephen Breyer
Animals: Jane Goodall
The Universe: Steven Hawking
Design: Phillipe Starck
Spelling: Dan Quayle
“Phones are the new Textbook”

--Marc Prensky

Teachers need to start evaluating students with their tools!
Question
“Open Phone”
Tests!!
What is Steganography?

Give an ancient example

Give a modern example

Why is it important?
“Most of our tests ARE open phone tests – you guys just don’t know it!”

– A Student
“Games are the new Worksheet”

--Marc Prensky
Today’s Games: Complexity Matters

“Mini”
5 min-2hours
TRIVIAL

Or, at best,
One-Noted

“Complex”
8-100 hours
NOT TRIVIAL

Complex Games take the same amount of time as a course does (30-100 hours)
What Players 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

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Gamer Attitudes

From Beck and Wade: *Got Game*

- Don’t be Afraid to Fail – Take risks to get rewards
- Winning Matters
- Work in Teams
- Take Responsibility
- Add Value
- Be a Hero
- Immerse Yourself in Data
- Make the Tough Calls
- Take different perspectives
- Make Things Better
BUT
Changing is SCARY
But we can
“Feel the fear – and do it anyway!”

-- Elizabeth Moon in *The Speed of Dark* (2003)
Which is the definition of COURAGE
our job is to encourage each other to change
Education is NO LONGER something we can do TO students
Today, we have to engage students in order to educate them.
The emerging ONLINE LIFE of the Digital Native
The Digital Natives

Communicating
IM, chat, texting

Sharing
Blogs, MySpace, Facebook

Buying & Selling
ebay, craigslist

Exchanging
peer-to-peer

Learning
Wikipedia, You Tube, search

Meeting
Virtual Worlds

Gaming
Online, MMORPGs, Cell Phones

Coordinating
Projects, workgroups, MMORPGs

Evaluating
Reputation systems—Epinions, Amazon, Slashdot

Collecting
Mp3s videos, sensor data

Creating
Sites, avatars, mods

Evolving
Peripheral, emergent behaviors

Searching
Info, connections, people

Analyzing
SETI, drug molecules

Reporting
Moblogs, photos

Programming
Open systems, mods search

Socializing
Learning social behavior, influence

Growing Up
Exploring, transgressing

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3 last things...
Ensuring EQUITY
Yes, some have more/less than others,

but teachers have the responsibility to reduce the digital divide!
We must become “Digital Multipliers”
By

allowing greater access

and

encouraging sharing
Achieving MUTUAL RESPECT
“My students have the attention span of a gnat”
We are all teachers
We are all learners
And, finally...
Sharing our Sharing Successes
Today’s Young Learners

love to

Share...
...but today’s adults don’t!
The more you share, 

The faster you learn
Have a great teaching idea
reach hundreds of students
Write a good text
reach thousands
of students
Share a great teaching idea via YouTube
reach millions of students
Bottom Line:
Change will go much farther and faster than we think. 
In the lifetimes of our kids.

Machines more powerful than the human brain.

Technology 1 trillion times more powerful.

Implanted /Wearable
Real-time environments.

Mobile phone wallets.

Control of machines directly with our minds.

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WE HAVE AN ENORMOUS OPPORTUNITY
TO HELP OUR STUDENTS
PREPARE FOR CHANGE
AND FOR THEIR 21st CENTURY LIVES
To do that, they need to learn

The skills of the future and The tools of the future
Our Students and Teachers (and Communities) must become PARTNERS in a new way.
SHARING THE WORK

Let Students do what they do well
- Use technology
- Find content
- Create

Let Teachers do what they do well
- Ask questions
- Add quality & rigor
- Put into context
And helping each student find the PASSION
That will motivate them to ENGAGE and learn
the SKILLS they need
to succeed & thrive in the twenty-first century

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And to do *that*...
we have to learn how to
ENGAGE WITH STUDENTS about their learning...
and truly

LISTEN

to what they say
The Five Stages of Teachers and Technology
1. Hiding
2. Panic
3. Acceptance
4. Comfort
Thank You -
For supporting education!
Get the slides!

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