Serious training in a game environment
Current Projects

K-12:
- Chemistry Game (MeCHeM)
- FL, LA Virtual Schools Courses
- Algebra Game (The Algebots)
- Cell Phone Games
- Reading Teacher

Business:
- Insurance Game
- Pharmaceutical Game
- Cell Phone Game

Military:
- Stability Operations: Winning the Peace
- Battle of the Brains

Higher Ed:
- History Game (Dinner Party with History)

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I’ll be going at

TWITCH SPEED

(slides will be available)
Three Games:

1. Spot the “ums”
2. Count the slides
3. Find what’s wrong
Don’t Bother Me Mom—I’m Learning!

Marc Prensky

with a foreword and contributions by
James Paul Gee, Ph.D.
Tashia Morgridge Professor of Reading
University of Wisconsin-Madison
My New Book:

How Computer and Video Games Are Preparing Your Kids For 21st Century Success—and How You Can Help!

“Don’t Bother Me Mom—I’m Learning!”

Marc Prensky

with a foreword and contributions by
James Paul Gee, Ph.D.
Tashia Monridge Professor of Reading
University of Wisconsin-Madison

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How Computer and Video Games Are Preparing Your Kids For 21st Century Success—and How You Can Help!
Preparing Students

for 21st Century

Success
Or...
Giving Our Students
What They Need
To Succeed!

© 2005 Marc Prensky
in a

21\textsuperscript{st} century

world...
...BEFORE the end of the 21st century!
Sky Takemura-Sora Prensky
b. April 26, 2005
What if we don’t?
But that’s not a 21st century problem!
Here’s
the 21st century problem:
Change
Exponential Change
IT power is **doubling** every year
Question!

By the year 2040, how many times more powerful will IT be than it is today?
**How many times more powerful?**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10,000</td>
</tr>
<tr>
<td>B</td>
<td>100,000</td>
</tr>
<tr>
<td>C</td>
<td>1,000,000</td>
</tr>
<tr>
<td>D</td>
<td>1,000,000,000</td>
</tr>
</tbody>
</table>
By 2040, technology will be 1 billion times more powerful than today!
Our Lives

Change: Singularity: Digital Technology

We are here

Time

© 2005 Marc Prensky
Our Students’ Lives

CHANGE

TIME

© 2005 Marc Prensky
He will be working with technology that is 1 billion times more powerful than today!
What Does That Mean

????????????
We will all be living in a future of Exponential Change
Tool switching is instantaneous

Yahoo  ->  Google

CD  ->  mp3

Walkman  ->  iPod

Email  ->  IM

© 2005 Marc Prensky
Pre - 21st Century

Solving problems with the tools we have

21st Century

Inventing new tools to solve problems

© 2005 Marc Prensky
There’s no Destination!
(Only a fast train)
NOBODY gets this
Except
The Students
We’ll be dead...
But the students we are educating today will be very much alive
So we’d better prepare them!
The real keys to 21st century training:
Key #1. Understanding and Dealing With Change
Examples

- Email
- Search
- IM
- Blogs
- Wikis
- Wikipedia
- Podcasting
- Polling Devices

- P2P
- Games
- Networking
- Speed Enhancers
- Cell Phones
- Cameras
- GPS
- Augmented Reality
SPEED ENHANCERS
Almost EVERY student already has a powerful computer... ... in their pocket!
We should be USING them!

© 2005 Marc Prensky
Mobile Phones Are

Powerful Computers
Inexpensive
Always in their pocket
Optimized for Communication
Full of Useful Add-ons
  e.g. Cameras, GPS, internet
Easy to download to
Attachable to External input/output

Missing? :  Imagination!

© 2005 Marc Prensky
We Can Use Cell Phones for Almost Anything in Education

<table>
<thead>
<tr>
<th>Subjects</th>
<th>Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Languages</td>
<td>Surveys</td>
</tr>
<tr>
<td>Poetry</td>
<td>Polls</td>
</tr>
<tr>
<td>Literature</td>
<td>Match-ups</td>
</tr>
<tr>
<td>Public Speaking</td>
<td>Testing</td>
</tr>
<tr>
<td>Writing</td>
<td>Communication</td>
</tr>
<tr>
<td>Storytelling</td>
<td>Memory aids</td>
</tr>
<tr>
<td>History</td>
<td>Blogging</td>
</tr>
<tr>
<td></td>
<td>Assessment</td>
</tr>
</tbody>
</table>
Tools Will COME FAST...

• Blogs
• Wikis
• Wikipedia
• Podcasting
• Polling Devices
• Speed Enhancers
• Cell Phones
• Games

...and GO FAST

• Clickers

© 2005 Marc Prensky
As a Teacher...
DON’T WASTE TIME Learning to Use Them
(the kids can do that)
Learn ABOUT Them!
TEACH ABOUT THEM
e.g.

The Wikipedia:

“SEARCH vs. RESEARCH”
Key # 2
Understanding that Learning CAN’T BE PUSH

It has to be PULL!
People have to WANT to do it
We can no longer just TELL students stuff
We have to ASK, COLLABORATE, and generate...
ENGAGEMENT
ENGAGEMENT

(= motivation, passion)
“Without motivation there is no learning”

– James Paul Gee
“If a learner is motivated, there’s no stopping him [or her]”

– Will Wright
“Learning comes from passion, not discipline”

– Nicholas Negroponte
Question 2

What percent of the world’s population is under 25?
Percentage Under Age 25?

A  20 percent
B  30 percent
C  40 percent
D  50 percent

© 2005 Marc Prensky
% Under 25?

50%
Question 3

What percentage of our teachers are under 25?
Question 4

What percentage of people in this room are under 25?
Why educators are having problems:

1. The world is changing
2. Students are changing
3. Engagement is Changing
Today’s younger learners are *NOT* the ones our systems (and teachers) were designed and trained to teach!
Today’s Students are different
Why?

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

•< 5,000 hours book reading
Digital Natives

- 2 billion ring tones per year
- 2 billion songs per month
- 6 billion text messages per day

© 2005 Marc Prensky
“Brains like ours alter profoundly to fit the technologies and practices that surround them.”

-Andy Clark

Director, Cognitive Sciences Program. Indiana University
Conventional Speed  ➔  TWITCH SPEED
Step-by-Step  ➔  RANDOM ACCESS
Linear Processing  ➔  PARALLEL PROCESSING
Text First  ➔  eGraphics
Stand-Alone  ➔  CONNECTED

© 2005 Marc Prassky
“Students are not just using technology differently today, but are approaching their life and their daily activities differently because of the technology.”

--Net Day “Speak-up Day” Summary
The Digital Natives e-Life

**Communicating**
IM, chat

**Sharing**
Blogs, webcams

**Buying & Selling**
ebay

**Exchanging**
p2p

**Creating**
sites, avatars, mods

**Meeting**
3D chat rooms, dating

**Collecting**
mp3, video, sensor data

**Coordinating**
Projects, workgroups, MMORPGs

**Evaluating**
Reputation systems, Epinions, Amazon, Slashdot

**Analyzing**
SETI, drug molecules

**Reporting**
Moblogs, photos

**Programming**
Open systems, mods search

**Socializing**
Learning social behavior, influence

**Growing Up**
Exploring, transgressing

**Searching**
Info, connections, people

**Learning**
About stuff that interests them

**Evolving**
Peripheral, emergent behaviors

© 2005 Marc Prensky
The Digital Natives e-Life

**Communicating**
- IM, chat

**Sharing**
- Blogs, webcams

**Buying & Selling**
- ebay

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**Collecting**
- mp3, video, sensor data

**Coordinating**
- Projects, workgroups, MMORPGs

**Evaluating**
- Reputation systems–Epinions, Amazon, Slashdot

**Gaming**
- Solo, 1-on-1, small & large groups

**Learning**
- About stuff that interests them

**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

© 2005 Marc Prensky
Digital Natives

Digital Immigrants

© 2005 Marc Prensky
We have a

“Digital Immigrant Accent”

- Printing out our e-mails
- E-mailing at all!
- No instant messaging
- Not Going to the Internet First
- Thinking “Real Life” happens only off-line
- Learning as Work
“Learning Takes Work”
Yes? / No?

© 2005 Marc Prensky
Yes, Learning takes Effort, but
Effort for learning can FEEL LIKE WORK

OR

Effort for learning can FEEL LIKE PLAY

© 2005 Marc Prensky
Learning feels like play when you have

**ENGAGEMENT**

= Motivation, passion

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Today’s students

UNDERSTAND ENGAGEMENT

© 2005 Marc Prensky
When I was a student

IT WAS BORING
In my youth, this book was famous:

Where did you go?

“OUT”

What did you do?

“NOTHING”
Today’s kids

GO ONLINE
“I could have nothing to do and I can always find something on the Internet.”

– A High School Student

© 2005 Marc Prensky
“On the Internet you can play games, you can check your mail, you can talk to your friends, you can buy things, and you can look up things that you really like.”

– A High School Student
The Digital Natives e-Life

Communicating
IM, chat

Sharing
Blogs, webcams

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eBay

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Single, small & large groups

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SETI, drug molecules

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Moblogs, photos

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Open systems, mods search

Socializing
Learning social behavior, influence

Growing Up
Exploring, transgressing

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REFERENCE
Today’s kids

KNOW WHAT ENGAGEMENT FEELS LIKE

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They want to feel engaged all the time
Especially

When they are learning!
But much of our education is SO BORING...
...that it feels like we’re putting *depressants* in their food!
“Whenever I go to school I have to ‘power down’”

– a high school kid
“When you talk to teachers you definitely have to slow down a bit.”

– a high school student
“30 percent of college students admitted playing games during class.”

– Pew study
For today’s students to learn, ENGAGEMENT is MORE IMPORTANT than Content
Why?
Content won’t help students continue to learn, but ENGAGEMENT WILL!
Outside of formal learning...
Today’s Young Learners are Empowered
“Kids want to put their own mark on the site.”

– Deborah Schwartz, MOMA
“What people put into the Internet is much more important to them than what they take out of it.”

– Tim Berners-Lee
Today’s Young Learners have *Tools*
What’s different about the new technology is that it is *programmable*.

– Alan Kay
Today’s Young Learners

Embrace Complexity
“[They are] living in dataspace, begging to handle more simultaneous data streams than their parents ever imagined.”

-- Beck and Wade: *Got Game*
Today’s Young Learners are Hands-On
“Players are producing as much as they are consuming – perhaps more.”

– JC Herz
Today’s Young Learners want things to be Fun
“Fun is the act of mastering a problem mentally.”

-- Rafe Kotter: A Theory of Fun
Today’s students are NOT “ADD” but rather “EOE”
“ENGAGE ME or ENRAGE ME”
It’s not attention deficit –
I’m just not listening!
“The cookies on my daughter’s computer know more about her interests than her teachers do.”

– Henry Kelly, President, FAS
Our #1 Job as Teachers: To Get to Know Our Students
Pre - 21st Century

Solving problems
with the tools we have

21st Century

Inventing new tools
to solve problems
Our #2 Job as Teachers:

To Help Students Define Problems, and Build New Tools To Solve Them

© 2005 Marc Prensky
Through, e.g. ...

Programming
Knowledge filtering
Using their connectivity
Maximizing their hardware
...using 21st century tools that are...

Powerful
Portable
Customizable
1 : 1
...and that we can’t fully master!
E.G.
GAMES

The ENGAGING educational system

© 2005 Marc Prensky
If you only listened to the Press...
...you might think Computer and Video games...
... were the worst things in the world for kids.
But the TRUTH
Is that
Games produce LEARNING WITH ENGAGEMENT
“I love getting level-ups – knowing I’m getting better. I started at level one and now I’m on 40. Now I can do more things. I can keep going and it’s really fun.”

– Tyler, Age 10
Students want games NOT because they are games, but because they’re the most engaging intellectual thing they have...
...Learning is the big secret reason they play! (Shhh!)
and the

Game System

is a big part of the
learning process
Today’s Games: Complexity Matters

“Mini”
5 min-2 hours
TRIVIAL

Or, at best, One-Noted

“Complex”
8-100 hours
NOT TRIVIAL

Complex Games take the same amount of time as a course (30-100 hours)
Dark Age of Camelot

Caer Sidi Raid - Nimue
Part 1
by Jhana
Games
and
Instruction
“I don’t want to study Rome in high school. Hell, I build Rome every day in my online game (Caesar III).”

– Colin, Age 16
Using Games in Instruction

1. Use Commercial Games

2. Use Custom Games

3. Talk About Games in Class

4. Use Complex Game Design Principles to create Engaging instruction
1. Use Commercial Games for instruction
History

“Civilization”
History

“Europa Universalis”
History

Cleopatra,
Pharaoh,
Caesar III,
Viking Invasion,
Medieval Total War,
Rampage Across Britain,
Stronghold Crusader,
Age of Kings,
The New World,
Age of Empires,
Austerlitz,
Gettysburg,
Waterloo,
Antietam,
Rise of Nations,
Qin.
Planning

“Sim City 4”
Business

“Tycoon” Games

Airline, Airport, Casino, Circus, Cruise Ship, Big Biz, Lemonade Stand, Health Fitness Club, Mall, Restaurant, Roller Coaster, Sea World, School, Space Colony, Tabloid, Theme Park, Trailer Park, Zoo
Keyboarding

“The Typing of the Dead”

In Stores
3. Use Custom Educational Games for instruction
Physics

“SuperCharged”
Immunology

“Imune Attack” (NSF)
Environmental Science

“Environmental Detectives”

Available From MIT

http://cms.mit.edu/games/education/Handheld/Intro.htm

© 2005 Marc Prensky
Persuasion

“America’s Army”

“Under Siege”
European History

“Making History”

Discern information about your country at a glance.

www.muzzylane.com

© 2005 Marc Prensky
European History

“Surviving the Spanish Inquisition”
Asian History

“Eyewitness” (Nanking)
Latin American History

“Tropical America”

Available Online
http://www.tropicalamerica.com/

© 2005 Marc Prensky
U.S. History

“Revolution”

From The Education Arcade at MIT

http://www.educationarcade.org/modules.php?op=modload&name=Sections&file=index&req=viewarticle&artid=9&page=1

© 2005 Marc Prensky
Communication

“The ESP Game”

From Carnegie-Mellon
http://www.espgame.org/cgi-bin/login

© 2004 Carnegie-Mellon

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Business: Management

“Virtual Leader”
(Interpersonal Relationships)

For Sale at
http://www.simulearn.net/SimuLearn/simulearn_home_page.htm

© 2004 Marc Prensky
Business: Ethics

“Better Business Game”

Dear Marc,

I’m so glad you are interested in a relationship between our companies. We are involved in a number of areas complementary to yours. Our tax return software would make you much more efficient and our gaming and gaming products could be dust-branded on your internet portal. Shall we begin drawing up a memorandum of understanding between our companies?

Susan Ding
CEO
Bank Pic

What should we do?
1. Let’s call it a barrier - don’t want to be involved in a splintering company
2. Initiate a relationship, but not with their gaming products
3. Draw up the memorandum and start with brand issues later

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Engineering: Mechanical Design

“The Monkey Wrench Conspiracy”

GAME
3 levels, save station

TASKS
30 graded, w/self-evals

Demo Copy Available

© 2004 Marc Prensky
Algebra

“The Algebots”

"Beat the Game...
...Pass the Course"

Coming Soon to a Desktop Near You!!!

Coming, from Games2train.com and DigitalMultiplier.org
http://www.games2train.com/games/algebots/thealgebots.html

© 2005 Marc Prensky
Algebra

“DimenXion”
# Ethnography

"Real Lives"

Online at http://educationalsimulations.com/

---

## Alma's Family

<table>
<thead>
<tr>
<th>The Bernal household</th>
<th>Age</th>
<th>Health</th>
<th>Resistance</th>
<th>Health Problems</th>
<th>Profession</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignacio (father)</td>
<td>46</td>
<td>66</td>
<td>1</td>
<td>alcoholism, diabetes mellitus</td>
<td>scientist</td>
</tr>
<tr>
<td>Esperanza (mother)</td>
<td>43</td>
<td>83</td>
<td>62</td>
<td></td>
<td>domestic chores</td>
</tr>
<tr>
<td>Francisco (brother)</td>
<td>43</td>
<td>100</td>
<td>100</td>
<td></td>
<td>temporary odd jobs</td>
</tr>
<tr>
<td>Juanita (sister)</td>
<td>17</td>
<td>100</td>
<td>94</td>
<td></td>
<td>student</td>
</tr>
<tr>
<td>Abel (brother)</td>
<td>13</td>
<td>91</td>
<td>100</td>
<td></td>
<td>student</td>
</tr>
<tr>
<td>Alredo (brother)</td>
<td>11</td>
<td>100</td>
<td>100</td>
<td></td>
<td>student</td>
</tr>
<tr>
<td>Dolores (sister)</td>
<td>10</td>
<td>95</td>
<td>77</td>
<td></td>
<td>student</td>
</tr>
<tr>
<td>Alma (self · female)</td>
<td>0</td>
<td>53</td>
<td>37</td>
<td></td>
<td>student</td>
</tr>
</tbody>
</table>

Household
Political Science: Terrorism

“September 12”
Political Science: NGOs

“Food Force”

free download
http://www.food-force.com
Issue:

Classrooms Not Designed For Electronic Games!

=> Need to Invent
One Solution:

STUDENTS
Play Outside Class

TEACHER
reinforces & critiques
learning in class
“I don’t want to study Rome in high school. Hell, I build Rome every day in my online game (Caesar III).”

– Colin, Age 16
3. Talk About Games in the classroom
“All I have to do is mention the name of a game in class and I get great credibility.”

-- A Teacher
You don’t even need to know the names of the games
– only to ask questions!
• Who plays a game that relates to what we are discussing?

• Can you think of an example of this in your games?

• How would we design a game about this?
4. Use Complex Games’ Design Principles to create engaging instruction
Game designers use effective, pragmatic, engaging pedagogy -- *INSTINCTIVELY*
Six Key Things To Take From Complex Game Design:

1. Focus on the user’s engagement
2. Have frequent, important decisions
3. “Level up” toward clear, important goals
4. Adapt to each player individually
5. Work by iteration & playing, not theory
6. Emphasize Gameplay, not Eye Candy!
Gameplay!

includes

- Continuous decision making
- Level Ups
- Good pacing
- Complexity
- Important choices
- Immediate feedback
- Adapting to the player’s skills
Teachers (Digital Immigrants) are used to

- Presentation
- Linear Stories
- One Thing at a Time
- One size fits all

Students (Digital Natives) prefer

- Gameplay
- Random Access & Branching Options
- Multiple Data Streams
- Adapted to them

ENGAGEMENT

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Curriculum Design

Focus
- Content

Mode
- Presentation

Design
- Fixed

Decisions
- Relatively Rare

Game Design

Focus
- Engagement

Mode
- Gameplay

Design
- Iterative

Decisions
- Frequent and important

ENGAGEMENT
Engaging today’s learners involves some **UNLEARNING**
E.g. #1
Instructional Design
“Whenever you add an instructional designer, they suck the fun out”

– A Game Designer

© 2005 Marc Prensky
For all of history, people have learned from:

- Comparing
- Deciding
- Estimating
- Imitating
- Listening
- Observing
- Practicing
- Predicting
- Questioning
- Reflecting
- Trying
- Verifying
Game designers use effective, pragmatic, engaging pedagogy --

INSTINCTIVELY
E.g. #2

Complexity
Engagement

Comes not from simplifying
But from Complexity

-- Done Right

• Focus
• Decisions
• Goals
• Leveling Up
• Adaptivity
• Iteration

+  

• Multi-player
• Creative
• Collaborative
• Challenging
• Competitive
Bottom Line: What Can I Do?
1. Help Instructors Adopt New Attitudes and Behaviors

**ATTITUDES**
- Put Engagement First—ABOVE content!
- Laugh at our Accents
- Study students’ Emerging differences
- Value what they do & Honor what they know
- Think 21st century!

**BEHAVIORS**
- Ask, Don’t Tell
- Create frequent decisions!
- Involve your students in Tool/lesson creation!!
- Don’t master technology, Educate with it!

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2. Find and Implement the Biggest Bangs for the Buck

Grading?

Cameras in Classrooms?
3. **Make Sure All Instructors Can And Do Share Their Successes!**

Teachers are doing Great Things!
SO MUCH IS GOING TO WASTE

from being used by only

One Teacher,
In One Classroom

© 2005 Marc Prensky
If we could just capture, access and re-use work already done,

we would be **HALFWAY THERE**
How?
Use the most powerful tool we have
Put it on the Web!

- Listserves
- Forums, BBs
- Group Blogs
- Wikis

- Give Teachers a way to just put up an HTML page!
  (with metatags if possible)
Do all instructors have an easy way to put up an HTML page (+a Wiki and a Blog)?

If not, make it happen now!
4. Use Emerging Tools...

E.g.. How can you use:

- Email
- Search
- IM
- Blogs
- Wikis
- Wikipedia
- Podcasting
- Polling Devices
- P2P
- Games
- Networking
- Speed Enhancers
- Cell Phones
- Cameras
- GPS

In YOUR courses?

...but be prepared to change
5. Get Students to Create New Tools...

What Don’t We Have?

- Automated Research
- Better Speed up tools
- Better Assessments
- Text search tools
- Self-Assessments

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4. Make sure everybody asks themselves daily and continually "The Hard Questions":

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Does everything I do have great engagement and gameplay?

Metric: Would learners spend their own money for it?

Does everything I do empower my students?

Metric: Would learners do it in their leisure time?

Does everything I do change my students’ behavior, beliefs & attitudes for the better?

Metric: Would they make their friends do it?
Would my students be here
If they didn’t have to?...

Metrics: Are we collaborating?
Are they engaged

© 2005 Marc Prensky
...or would they be better off taking this course online somewhere?
WE CAN ENGAGE OUR STUDENTS...
Or, even better,

Allow our students to

Engage Themselves!
What might Student-designed Engagement look like?

Large-scale gaming events
No one says it’s EASY,
But that’s why they’ll 
**Thank Us**

*When we succeed*
and

We’ll Be Happier
too!
They’re our students
We owe them the best!
so...
Let's Go Do It!
Thank You!
Number of Slides
(not counting this or next):

221
email:
marc@games2train.com

web sites:

www.marcprensky.com

www.socialimpactgames.com

www.gamesparentsteachers.com

www.games2train.com