

## New Learning Environments for the 21<sup>st</sup> Century



Exploring the edge



ah, imagining  
new possibilities.

Work with, not  
against, change.



## Some challenges we all face

- ◇ today's digitally experienced students learn differently and have new vernaculars.
- ◇ education is more important and costly than ever yet the public is less willing to pay for it
- ◇ students need to be able to think systemically, learn how to learn and think career trajectories.
- ◇ institutions of higher learning need to become learning institutions, learning from each other creating their own innovation ecology.

And, on top of that, the world is becoming flat

## The terrifying Imbalance between Asia & USA

Last year China and India graduated 500k engineers

We graduated 90k engineers BUT 40k of those returned to Asia.

yr/yr imbalance of 500k engineers/yr.



And now consider their passion to get ahead – “we have been blocked from participating for 50 years, this is now our chance.”

## The architecture studio-- the atelier form of learning a powerful social learning environment



where work  
in progress  
is made public.

learning as  
enculturation  
into a practice.



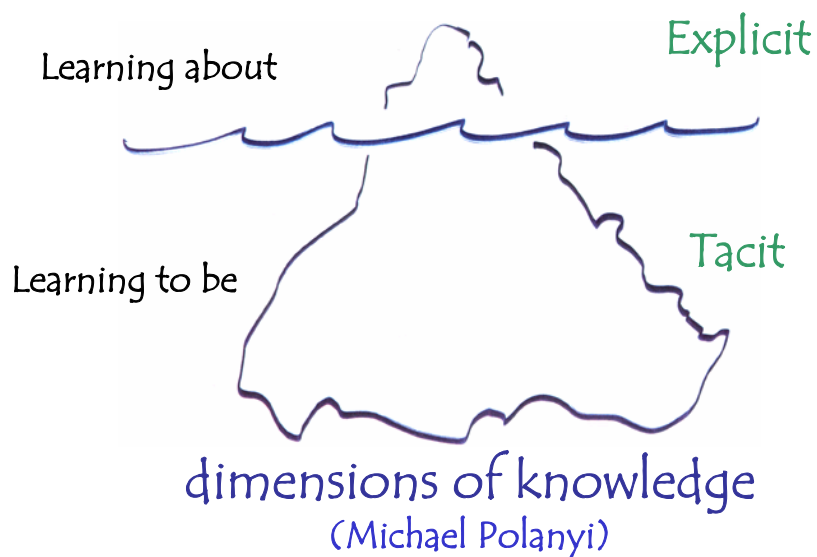
Does this generalize or scale?

MIT's studio for 8.02 electricity and magnetism --  
technology enabled active learning (teal)  
following RPI's studio physics



moving seamlessly between lecture, experiment & discussion  
and addressing the drop out rate

'Learning to be' sooner rather than later!

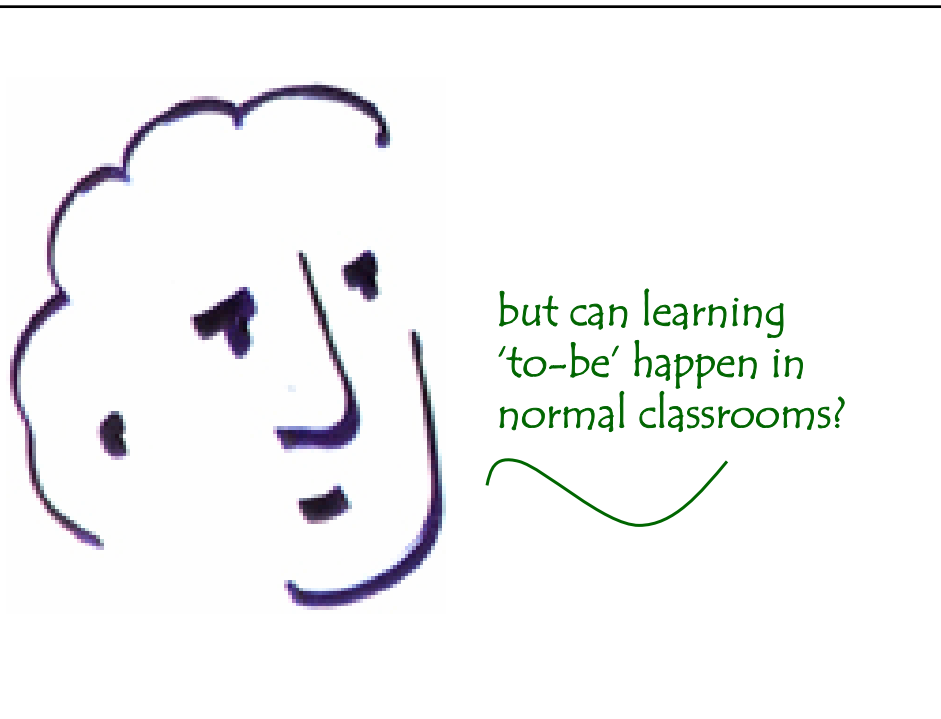


## Learning to be

Enculturating into the practices of a field often via legitimate peripheral participation - apprenticeship

- a way of seeing
- a way of knowing
- sensing what constitutes an interesting problem
- knowing what constitutes an elegant solution
- being able to engage in productive inquiry

*Productive inquiry is that aspect of any activity where we are deliberately (though not always consciously) seeking what we need, in order to do what we want to do - e.g. leveraging the net.*



but can learning  
'to-be' happen in  
normal classrooms?



## Classrooms with students IMing and Googling etc..

Teacher more of a comedian/entertainer  
(poor idea)

Teacher more of an orchestrator and socratic challenger  
(interesting idea)



Hmmm, getting students to think critically about what they find on the web - an important 21<sup>st</sup> century skill especially for our 21<sup>st</sup> century democracy.

And re-contextualizing the role of the teacher now as mentor to critical thinking.

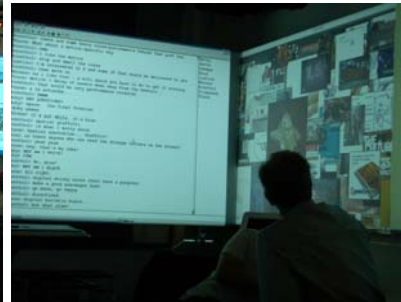
Isn't a simpler version of this 'clickers'

– the Clicker –  
a simple technology that works



Yeah but remember – new teaching practices must be invented and experimented with!!

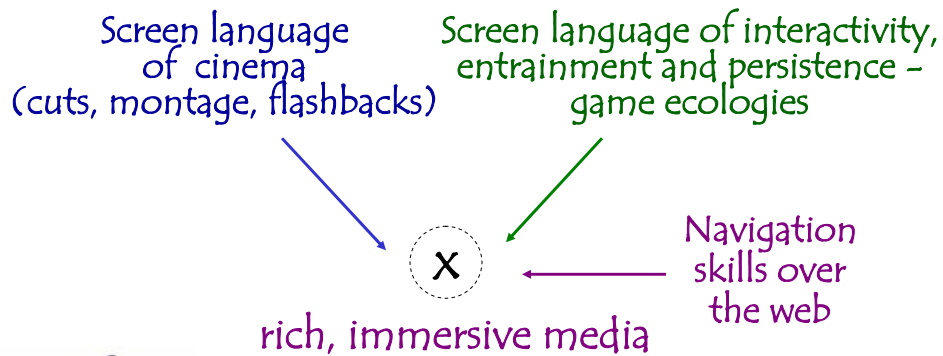
a digitally enhanced collaboratory  
with back channels rendered public.



Pretty weird, jsb. Now the professor or speaker has little or no control. Or does she?

usc – interactive media division

## The Emerging Vernacular of the Digital Age and the challenge of fostering multi-media literacy



Remember  
exposure doesn't mean you can really read and write -  
critical skills for 21<sup>st</sup> democracy & journalism.



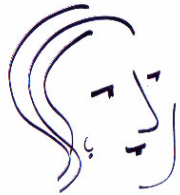
*... I began to realize the potential for multimedia to enhance the learning process was just astronomical ... I'm a big proponent of a new kind of grammar that goes beyond words. To tell a story now means grasping a new kind of language, which includes understanding how graphics, color, lines, music and words combine to convey meaning.*

[Clip](#)

## Evolving forms of literacy – the USC multimedia literacy program

- > the structure of visual arguments
- > the ability to communicate using  
image, text, sound, movement,  
sequence and interactivity in combination

English, philosophy, women's studies, history  
sociology, political science, religion  
and quantum mechanics



are new forms of scholarship  
being enabled?

professorial workshop is critical

A short, reflective video  
on her SAT scores  
(coming to terms with her mother)



### Last Gasp of Air

By  
Isabella Liu

16 year old  
senior

## New forms of scholarship

Publishing as a living document - website

New ways for students to engage in research

New forms of peer review

What will this mean for tenure?

Vectors - a pioneering e-journal (IML-USC)



'Modern' kids from the global world  
growing up with mobile phones and internet

Do We Understand Them?



What creates meaning for them?  
How do they learn and do they like to learn?

# Gameplay!

includes

- ◇ Pattern recognition & sense making galore
- ◇ Continuous decision making
- ◇ Conquering immense complexity
- ◇ Immediate feedback
- ◇ Joy from mastery of skills
- ◇ Bottom line oriented – scores matter! (bragging rights)

No learning -----> No fun



Hmmm, doesn't remind me  
much of life in a 30 student classroom.

## Serious Play – the video/compute game generation

"I don't want to *study* Rome in  
high school. Heck, I *build*  
Rome every day in my online  
game (Caesar III)."

– Colin, Age 16

It's not attention deficit –  
I'm just not listening!

Hmmm, jsb.  
This has some  
downsides as  
well! Yet how  
much do we  
know about this?



## World of Warcraft

Entraining and Emotive  
Meaning creating thru multi authored, narrative.



on a quest

remix, sharing, persistent & accretive unlike interactive TV  
(approximately 4.5 million players and going up)

## The Skills of a Guild Master

- ◇ Creates a vision and a set of values that attracts...
- ◇ Finds, evaluates and then recruits players that have a set of diverse skills and with fit with your norms.
- ◇ Creates a platform for apprenticeship - newbies
- ◇ Orchestrates group strategy and governance
- ◇ Creates, sells and adheres to the governance principles for the guild and adjudicates disputes.



Wow – aren't these the fundamentals  
of leadership.

Massively Multiplayer Online Role Playing Games:  
Constructivist Ecologies –

persistent, accretive, multi authored narrative



Modern Prometheus Project: modeling a portion of Shelley's novel  
for a course in culture, history and ethics

Doug Thomas

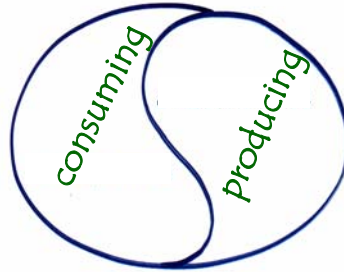


Blurring formal & informal learning  
becomes a way of life and  
identity construction.

But this is just the  
beginning of our story.



## Life in the Digital Age - Tinkering, Learning And Sharing



The Remix Culture:  
all supported by social software –  
IM, blogs, wikis, etc.

## Blogs

- ◇ classroom blogs: writing for/with your peers
- ◇ circumventing the cheating plague
- ◇ power tool for grad students,  
especially cross-disciplinary



Blogs come in many flavors. Stable  
genres have yet to emerge but they will.

## Tinkering, Learning and Sharing Galore

### The Open Source Movements – Linux, ...

- ◇ writing code to be read
- ◇ engagement thru useful additions
- ◇ social capital matters

A form of apprenticeship  
(cognitive apprenticeship)  
apprenticing to a virtual  
community of practice



open code, open system, open community discussion

100k projects, over one million folks engaged

## The Rise of the Pro - Amateur Class

amateur \_\_\_\_\_ professional  
from Latin - amator : lover

Dobsonian 10" f/4.9



+



PC164C  
ccd camera

+

Internet  
Blogs  
BBSs  
Yahoo groups  
Data bases

Niche communities of co-creation, learning and sharing:  
dedicated, disciplined: serious leisure,  
passion-based informal learning

## A Grand Transition ?

(Supply) Push -----> (Demand) Pull

Education:

building stocks of knowledge --> supporting flows of knowledge  
(factory model of education ----> learning ecologies model)

Informal learning:

Revisiting constructivist learning but now in (virtual)  
communities of practice – learning by tinkering, designing,  
creating, remixing and re-searching

Uniting the cognitive and social basis of learning:  
re conceiving Dewey in the digital age and ...

Tapping Abundant Digital Resources  
For Informal Learning –  
learning on demand in amateur communities  
(fostering the social life of learning)

Games and game design – Civilization III, ...

Simulations – Climate models, ...

Remote instrumentations – telescopes, sem, ..

Scholarly websites –

Open source movements

Open courseware – OCW, Connections, ...

Digital story telling – iMovie, ...

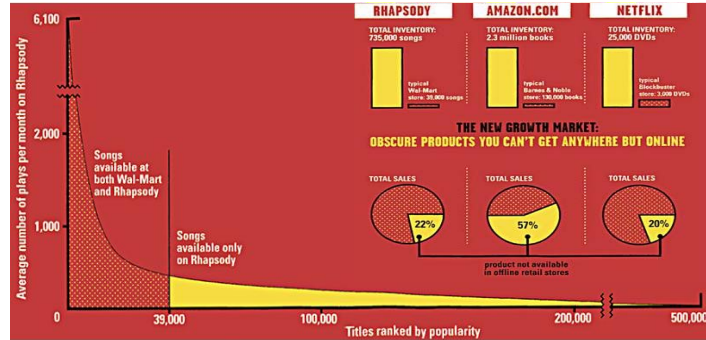
Creating & remixing music – Garage Band, ...

Writing – blogs galore...

Access – Goggle Scholar...

# Catalyzing Creativity by leveraging pro-amateur niche communities of practice (e.g., documentaries) as platforms for learning

The long tail distribution of the networked age



niche markets, niche genres, niche interest groups.

hybrid models:  
passion-based participation in  
niche communities of co creation  
complemented by a  
core curriculum or  
by the academy, itself.



Dewey revisited: productive inquiry  
in communities of co-creation.

A step toward creating a culture of  
peer-based learning and building

Thank You



Let's shoot beyond making replicants of ourselves. Yes, that worked in the 20<sup>th</sup> century but not for the 21<sup>st</sup> century.