



Jacobsen (2010) Teaching in a Participatory Digital World. *Education Canada, V50(3), 13-17.*



**GOOGLE:** jacobsen engaging teaching article

Jacobsen & Friesen (2011) Hands On vs. Hands Up: Technology-Enabled Knowledge Building in High School. *Education Canada*, V51(1), Web Exclusive.



**GOOGLE:** jacobsen friesen knowledge building high school article



# iPads in Classroom Boosts Literacy Scores



February 22, 2012

<http://techland.time.com/2012/02/22/new-study-finds-ipads-in-the-classroom-boost-test-scores/>



# iPads help Autistic children to communicate



<http://newswise.com/articles/ipads-to-help-autistic-children-communicate>

# Teaching Without Distraction



The only apples and blackberries used at this small private school are baked into pies that are cut into pieces as part of a lesson on fractions.

<http://www.ottawacitizen.com/life/Teaching+without+distraction+with+video/6463460/story.html#ixzz1szspbHpy>

# Intellectual Engagement & Inquiry

*Knowledge building is the most important 21st century competency*

Teachers can design GREAT TASKS & INQUIRIES that engage learners in meaningful, challenging and authentic knowledge building work

Sponsoring intellectual engagement involves engaged teaching, robust task design, effective use of technology and ongoing assessment for continual improvement

Scardamalia and Bereiter (2010), Herrington, et al. (2007)



# Knowledge Building & Technology



If we really want our children to face the challenges of the twenty-first century with confidence and skill, we must teach them not only that they **can** acquire current knowledge, but also that they have voices that can shape what ***their*** society comes to accept as knowledge.

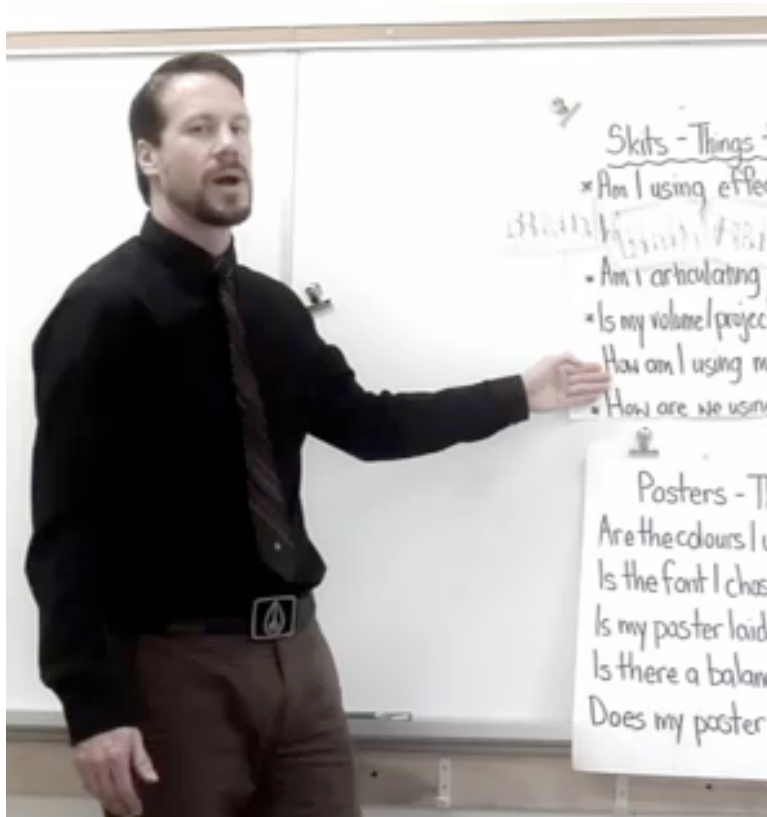
(Clifford & Friesen, 1993)

# Changing Mindsets about knowledge, teaching, learning and technology in the 21st Century

*Broadcast / Synchronous / Individual / Tests*



# Student fdbk on broadcast teaching K-12...



*Blah,  
Blah,  
Blah*

**TEST**

*Blah,  
Blah,  
Blah*

**TEST**





# Student fdbk on campus teaching ...

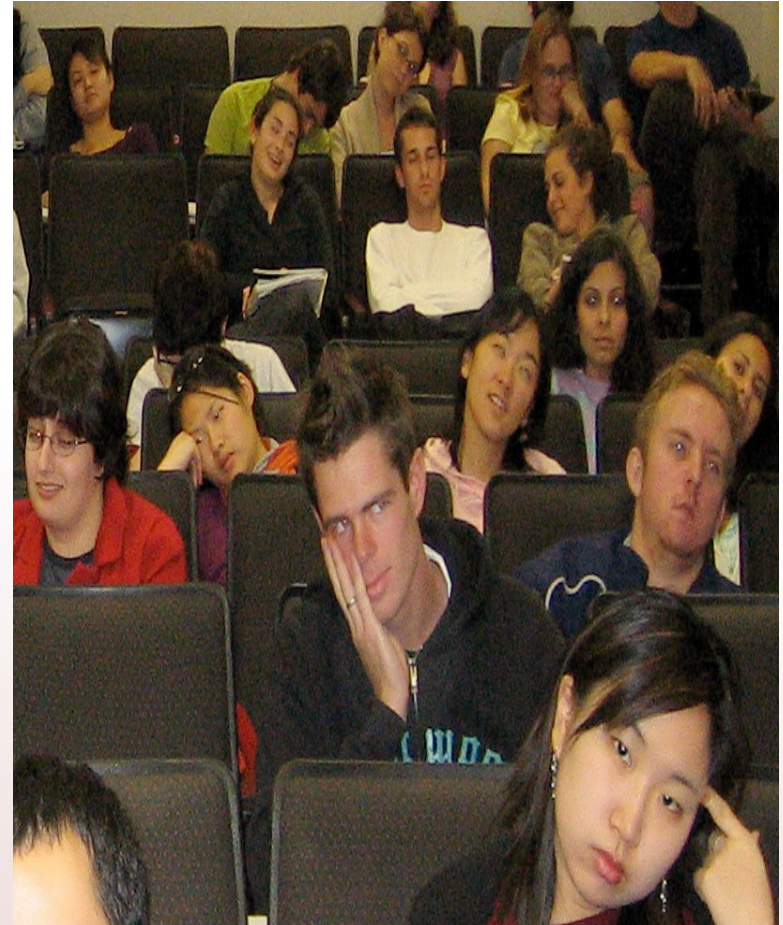


*Blah,  
Blah,  
Blah*

**TEST**

*Blah,  
Blah,  
Blah*

**TEST**



# Learning Changes The Brain

**MINDS**

Are not  
containers  
OR  
Filing cabinets  
To  
Store  
Knowledge  
"Just In Case"



# Design Based Research in the Learning Sciences



“cognition is not a thing located within the individual thinker but is...distributed across the knower, the environment...and the activity in which the learner participates”



Intelligent Action

(Barab & Squire, 2004, Gresalfi, Barab &

- Sommerfeld, 2012).







# Blended Inter-Active Social Performance



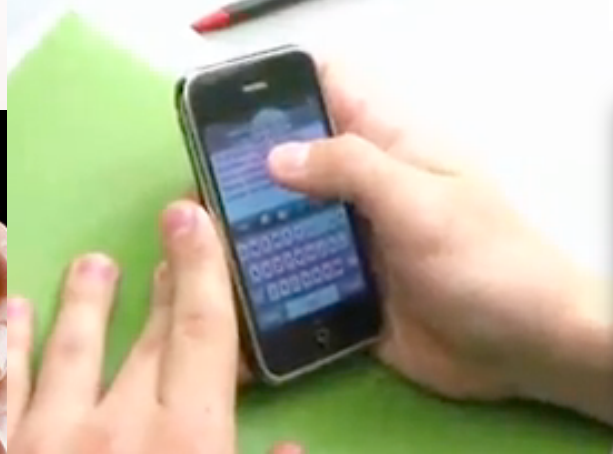
The experimental classroom at Holtzendorff Hall.



(Means, et al, 2010)

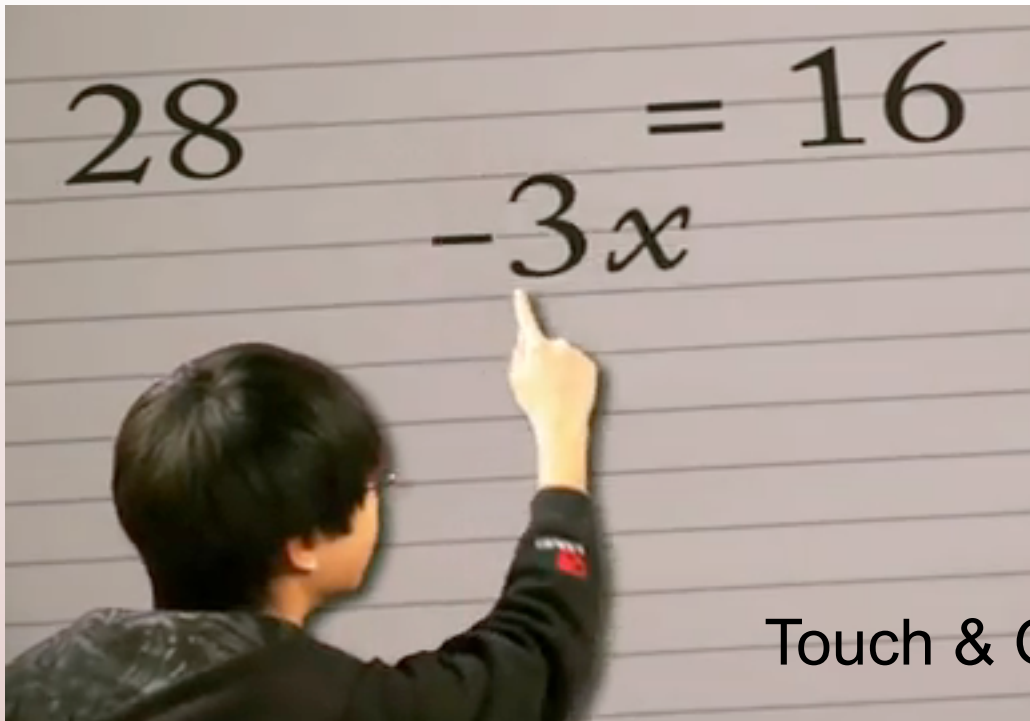


# Mobile Participatory Collective Networked Dynamic





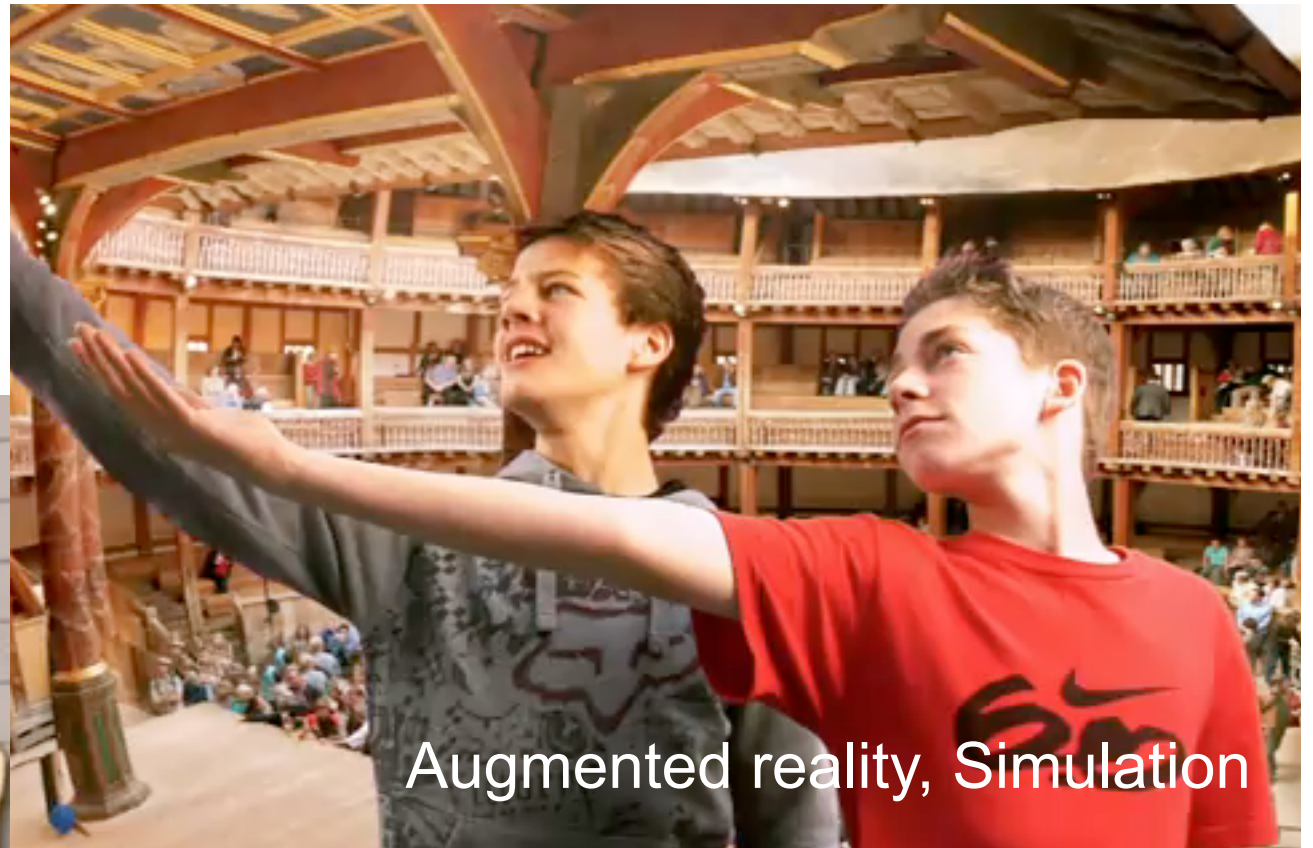
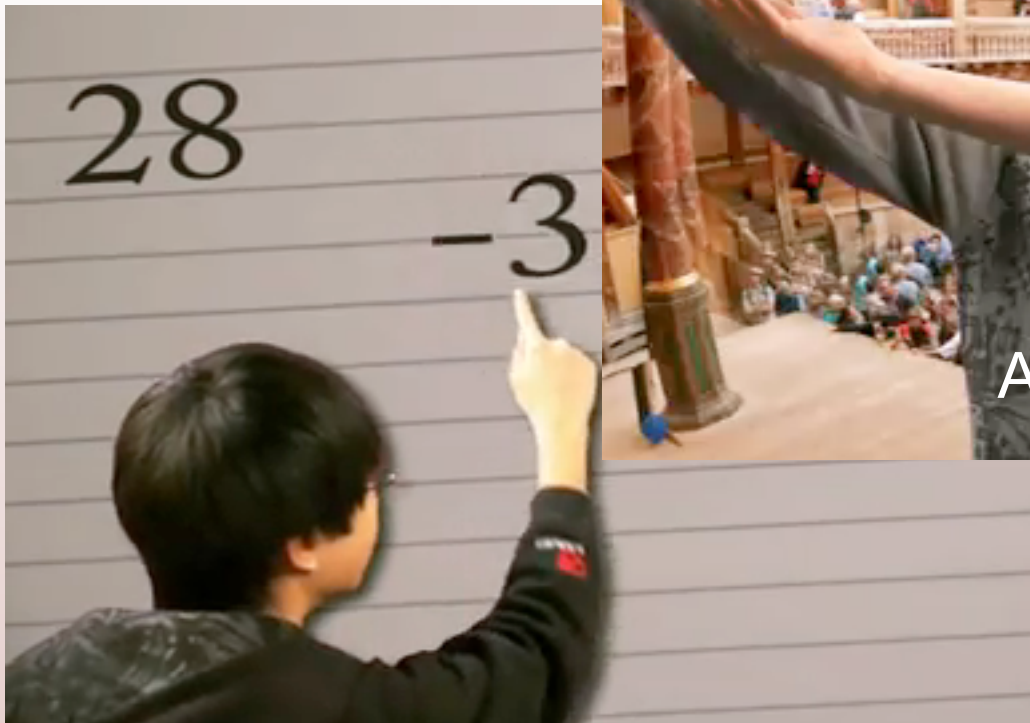
# 21C Students want to be Engaged



Touch & Gesture-based tech

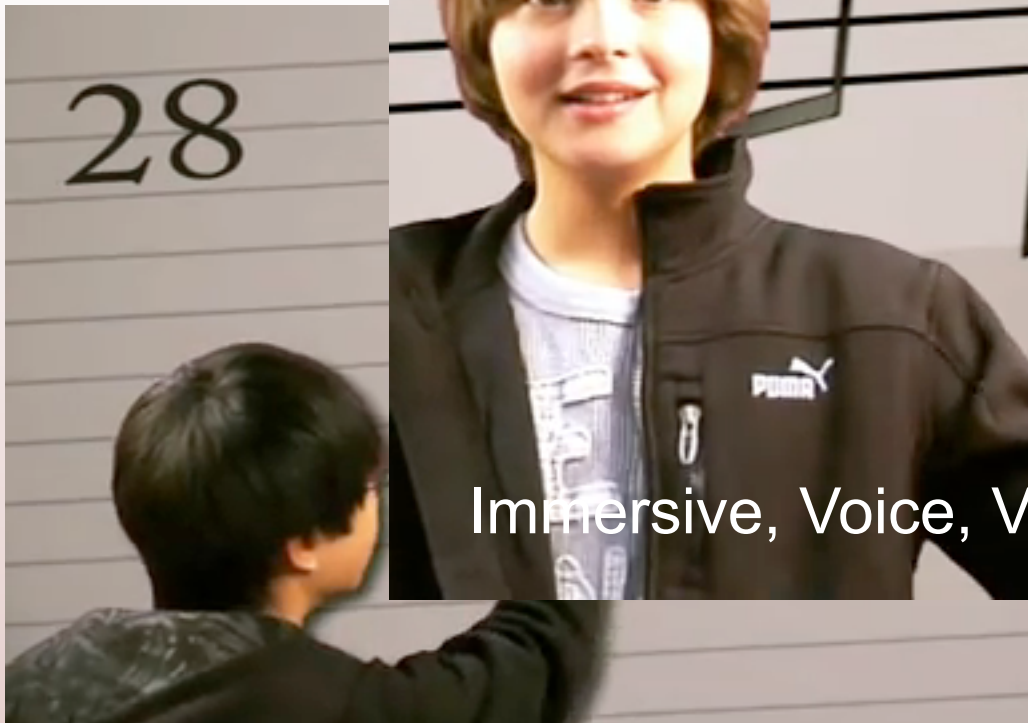
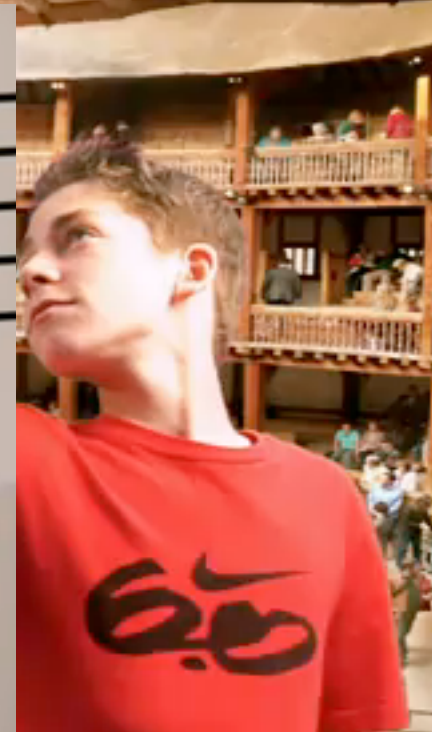
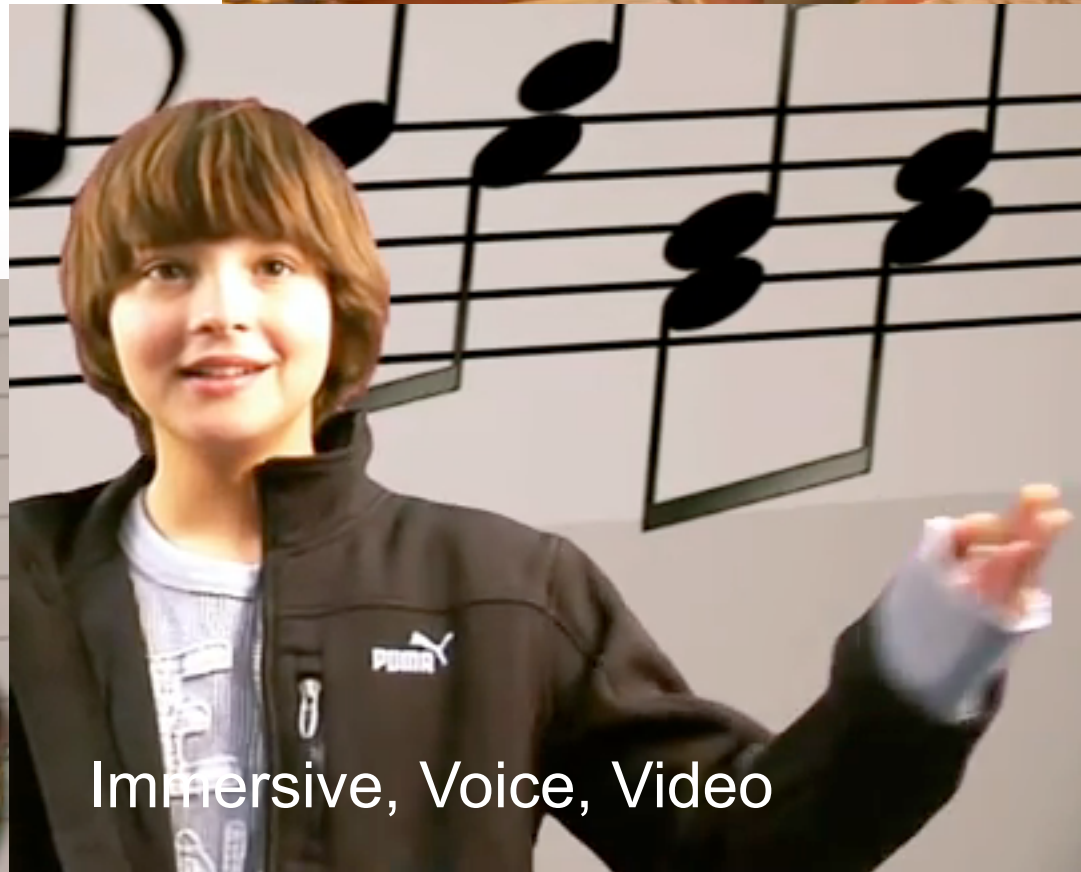


# 21C Students want to be Engaged, Challenged



Augmented reality, Simulation

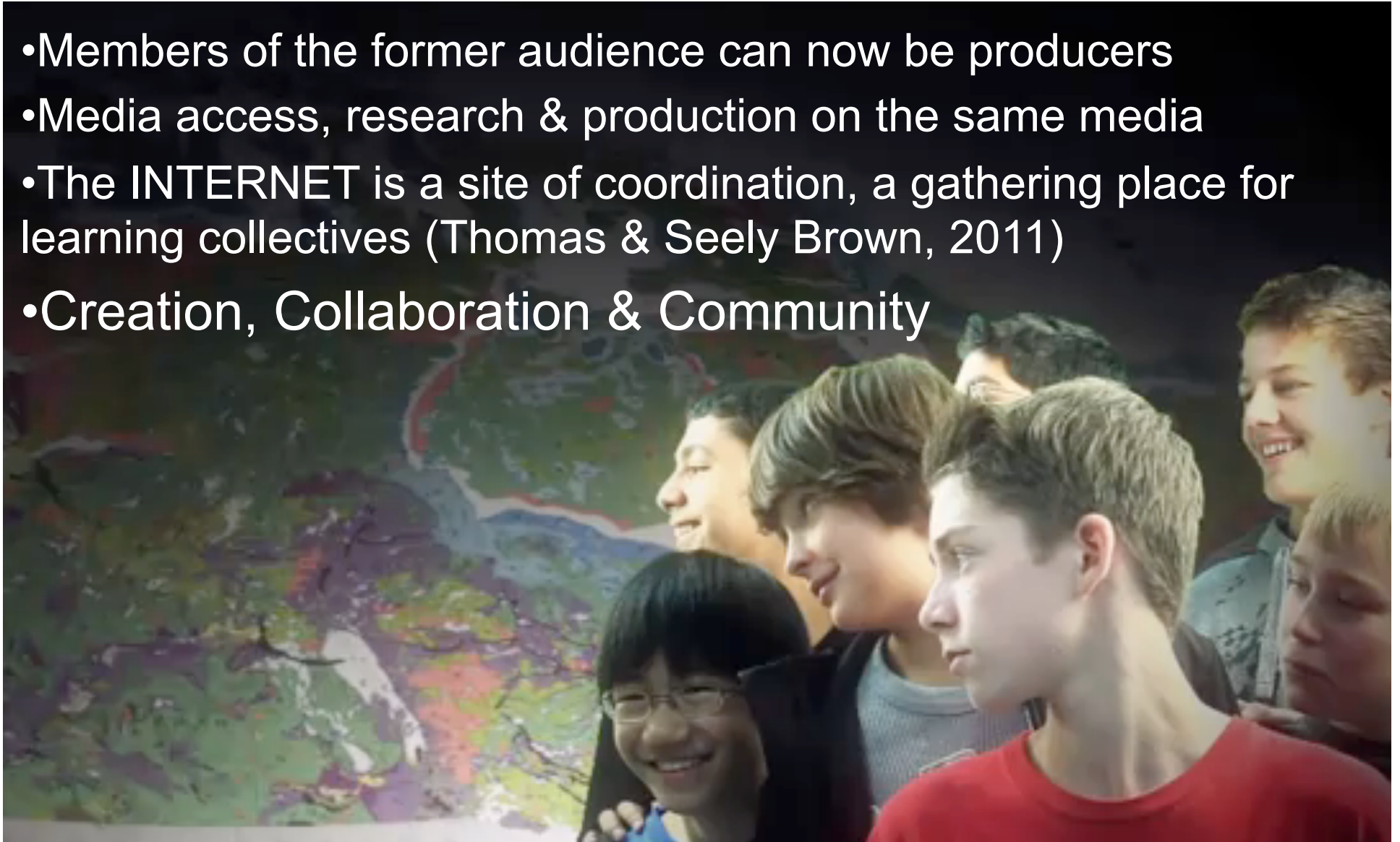
# 21C Students want to be Engaged, Challenged and Inspired



Immersive, Voice, Video

# Experiencing the largest increase in connective and expressive capability in human history

- Members of the former audience can now be producers
- Media access, research & production on the same media
- The INTERNET is a site of coordination, a gathering place for learning collectives (Thomas & Seely Brown, 2011)
- Creation, Collaboration & Community





Mobile Learning

Webkinz

GoogleEarth

Augmented Reality

Social Networking

iTunes

eReaders

Vimeo, YouTube, Flickr, Frogr

Grassroots video

iPods, iPhones, iPads

Remix Mashups Media Culture

Facebook, Ning, Googledocs, Twitter

iMovie, Garageband

CLoud computing

VOIP, Skype

Digital Games DS, DSi, Wii, PS3, Xbox, Kinect

Gesture Based tech



# Participatory Cultures & Pedagogies

- There are opportunities for **expression** and **engagement**
- A **culture of inquiry** supports idea creation and the sharing of creations
- **Expertise** and **teaching is distributed** so the most experienced can mentor new members
- **Collaboration** and **knowledge sharing** is expected, and learners believe their **contributions matter**
- Learners are **socially connected** with one another
- Group memory and knowledge building is a **collective** responsibility and endeavor

Bereiter & Scardamalia, 2010; Clifford & Friesen, 1993; Davis, 2011; Hattie, 2009; Jacobsen, 2010; Jacobsen & Friesen, 2011; Jenkins, et al, 2006; Sawyer, 2007; Thomas & Seely Brown, 2011

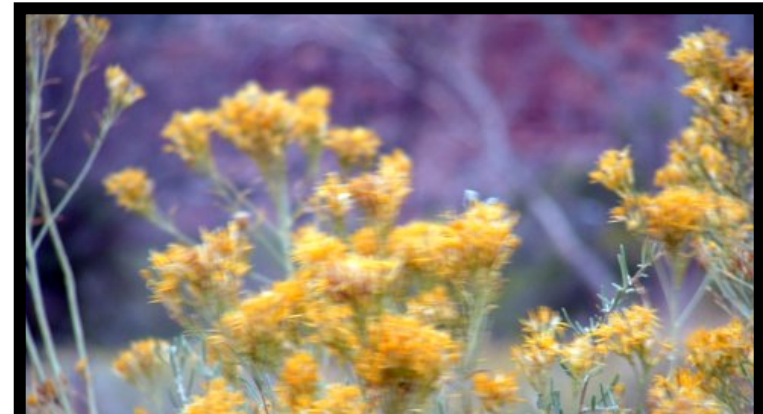


# Can Children Really Create Knowledge?

Bereiter and Scardamalia (2010)

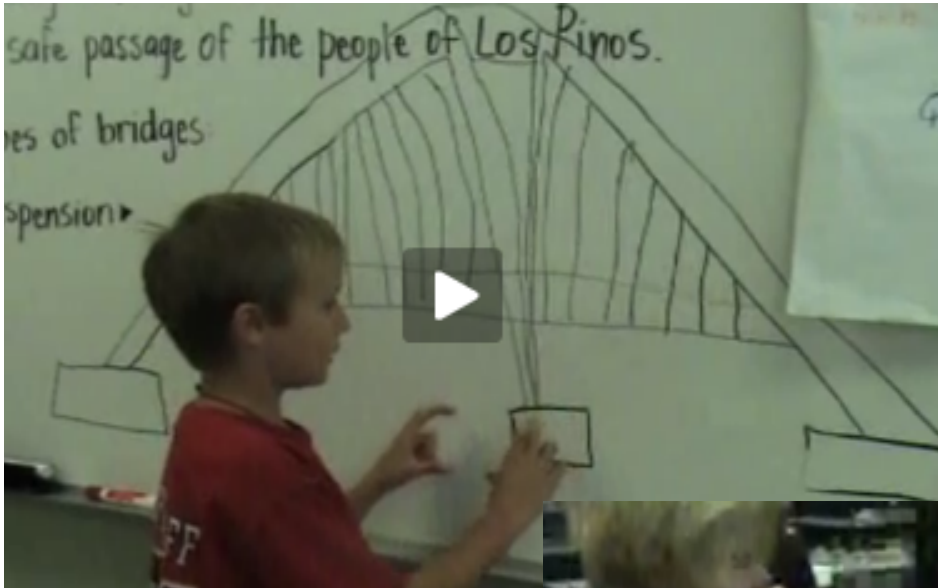
Botanists Preserving Knowledge  
*Kanai Plants and Culture*  
*Galileo.org*

One important outcome of knowledge creation is concepts and tools that enable further knowledge creation. This is the kind of knowledge creation of greatest value in childhood education. Elementary knowledge building classrooms, demonstrate both the attainability and the authenticity of knowledge creation to enable knowledge creation. It is mainly achieved through students' theory building, and it is a powerful way of converting declarative knowledge to productive knowledge.



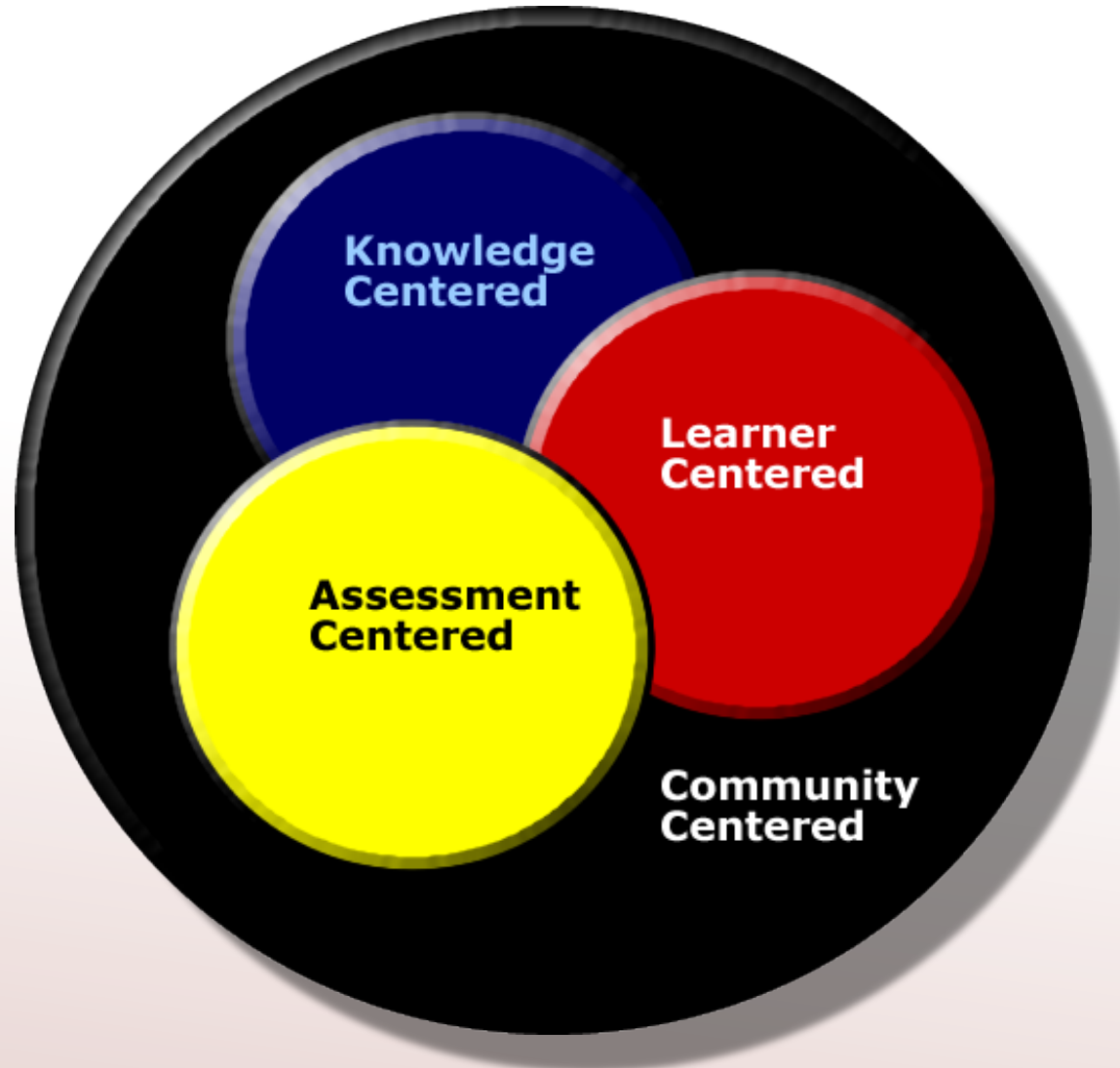


“It takes a lot of people and good thinking to build a good bridge”



Gr 3  
Building Bridges

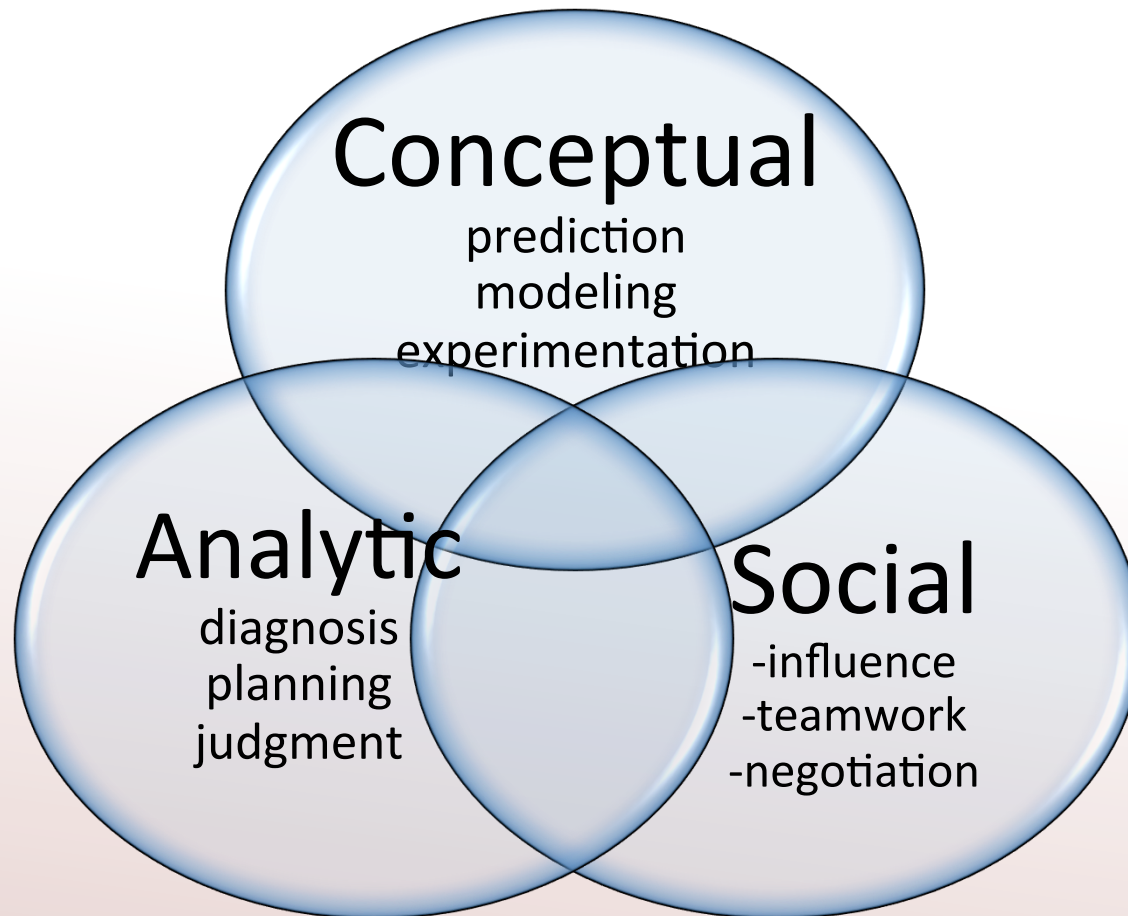
# Learning Sciences Research



Bransford, Brown & Cocking, 2000; Sawyer, 2007; Scardamalia and Bereiter, 2010

# Teaching Minds

Schank (2011)





# CEA Effective Teaching Principles

**Design  
Learning**

**Worthwhile  
Work**

**Assessment  
for Learning**

**Learning  
Relationships**

**Professional  
Community**

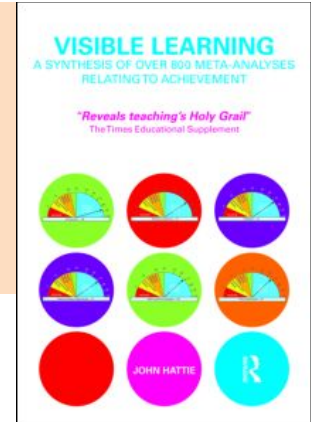
# Social Interaction / Media Creation



- Brennan, K., Valverde, A., Prempeh, J., Roque, R. & Chung, M. (2011).



# Visible Learning



- Technology integration is most effective when...

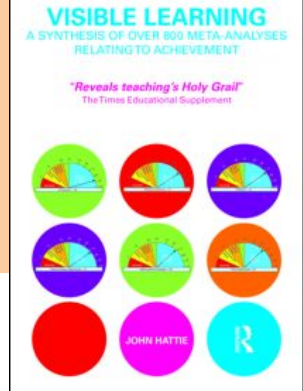
Hattie (2009)

- A diversity of teaching strategies are used
- There is teacher pre-training in the use and design of technology for teaching and learning
- Multiple opportunities are provided for learner engagement, expression and representation
- Learners have agency, choice and voice in their learning
- Peer learning is optimised
- Ongoing formative feedback is optimised





# Visible Teaching



- **COLLABORATIVE DESIGN:**
  - Teachers design & support meaningful, authentic and engaging learning experiences in teams and communities
- **TRANSPARENCY & PEER REVIEW:**
  - Work is public & Clear Expectations, standards for all design work
- **CONTINUAL IMPROVEMENT:**
  - Students share works in progress with each other, with teachers, with external experts, at home
  - Teachers engage in professional dialogue about practice
- **PARTICIPATORY:** Learners are socially connected with each other
  - Expectation that knowledge building & sharing is a collective responsibility and endeavour

# Technology is effective when...

(NAEYC & F. Rogers Center - 2012)

- It is used for active, hands-on, engaging and empowering learning
- It develops student agency and gives children control
- It provides adaptive scaffolds to help children progress
- It's used as one of many options to support children's learning



# Technology extends learning

- Assistive technologies improve ability to learn, move, communicate and create
- Enhances communication with families (class blogs, digital portfolios, audio recording reading)
- Document learning (digital photo of work progressing, video speech)
- Enable the development of professional quality work (publish books, brochures, podcasts, rehearse audio)

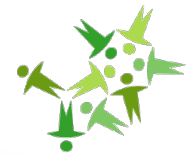


(NAEYC & F. Rogers Center - 2012)



# ***Knowledge building is the most important 21st century competency***

Sponsoring intellectual engagement involves engaged teaching, robust task design, effective use of technology and ongoing assessment for continual improvement



galileo.org  
educational network

Exemplary Practices – [www.galileo.org](http://www.galileo.org)

Fall 2012 – Spring 2014:

- **Early Learning Research:  
Using Technology to Support  
Kindergarten to Grade Four Learners**

Dr. Michele Jacobsen, dmjacobs@ucalgary.ca

