

# **Technology, Education and Civilization**

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**The Boston Pledge  
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# Is Education Different Now?

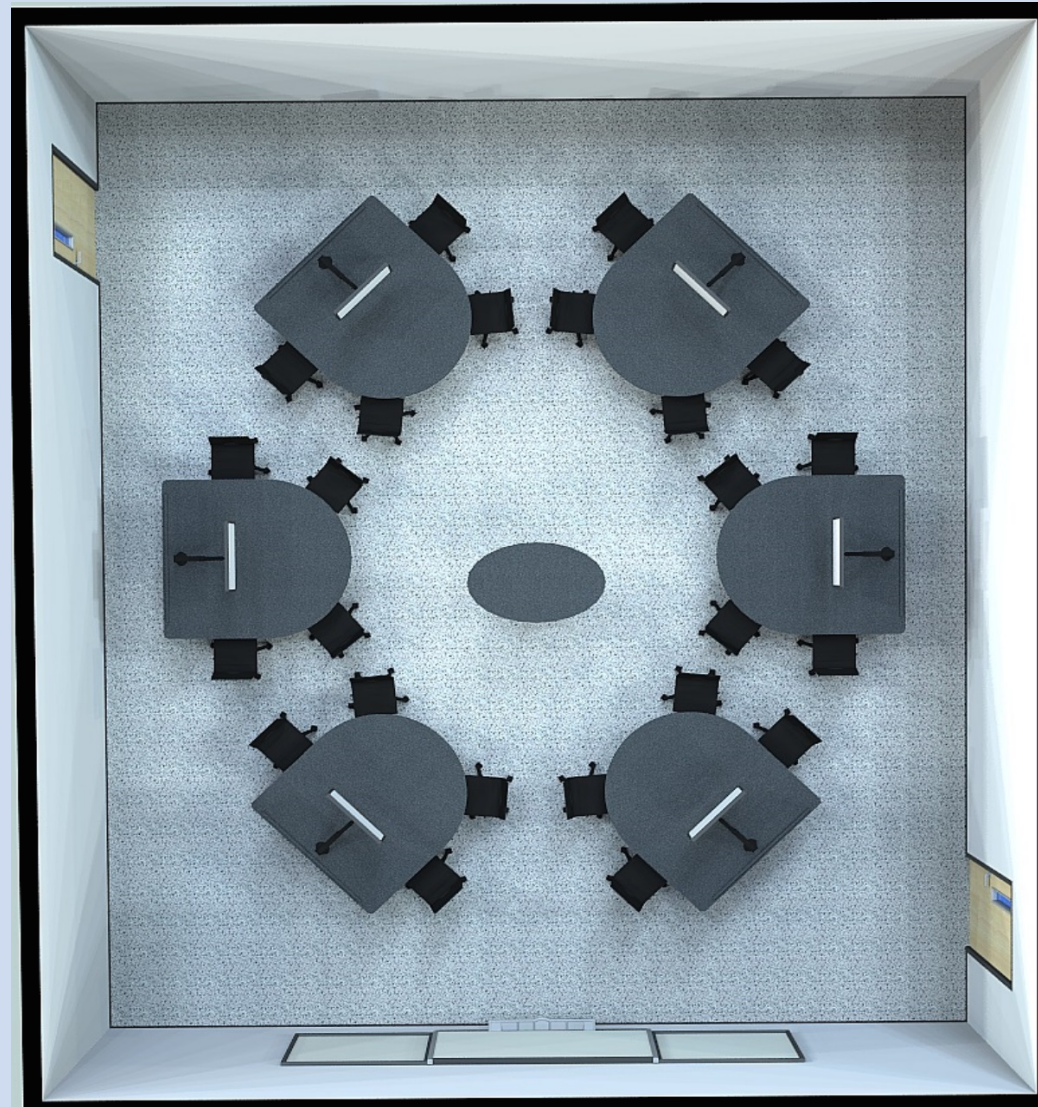
- Have the goals changed?
- Learning spaces aren't what they used to be.\* Are they better?
- Has Google “replaced” the library?
- Is HW no longer necessary?

# The latest in furnishings.1





# The latest in furnishings.2





# Have the goals changed?

- Instruction for maximum learning for all
  - Knowledge and skills
- Developing integrated thinking, problem solving
- Developing personal relationships
  - *Friends, teammates*
- Building constructive values
- Ethical & equitable decision-making
- Preparing students for their future (work)

# But work has changed

- Teams
- Digital/mobile/online not in office
- The machines are smarter (*than we are?*) and constantly evolving
- Global handoffs

# **And the view has also...**

- **Education in the US has been & continues to be state centric**
- **But now we must be on the global stage**



# **Historic Predictions: are we there yet?**

- **In the 70's Chris Dede...The Library of Congress in a shoe box**
- **No more book bags, no more backpacks 2010**

# Remembering other dreaming...

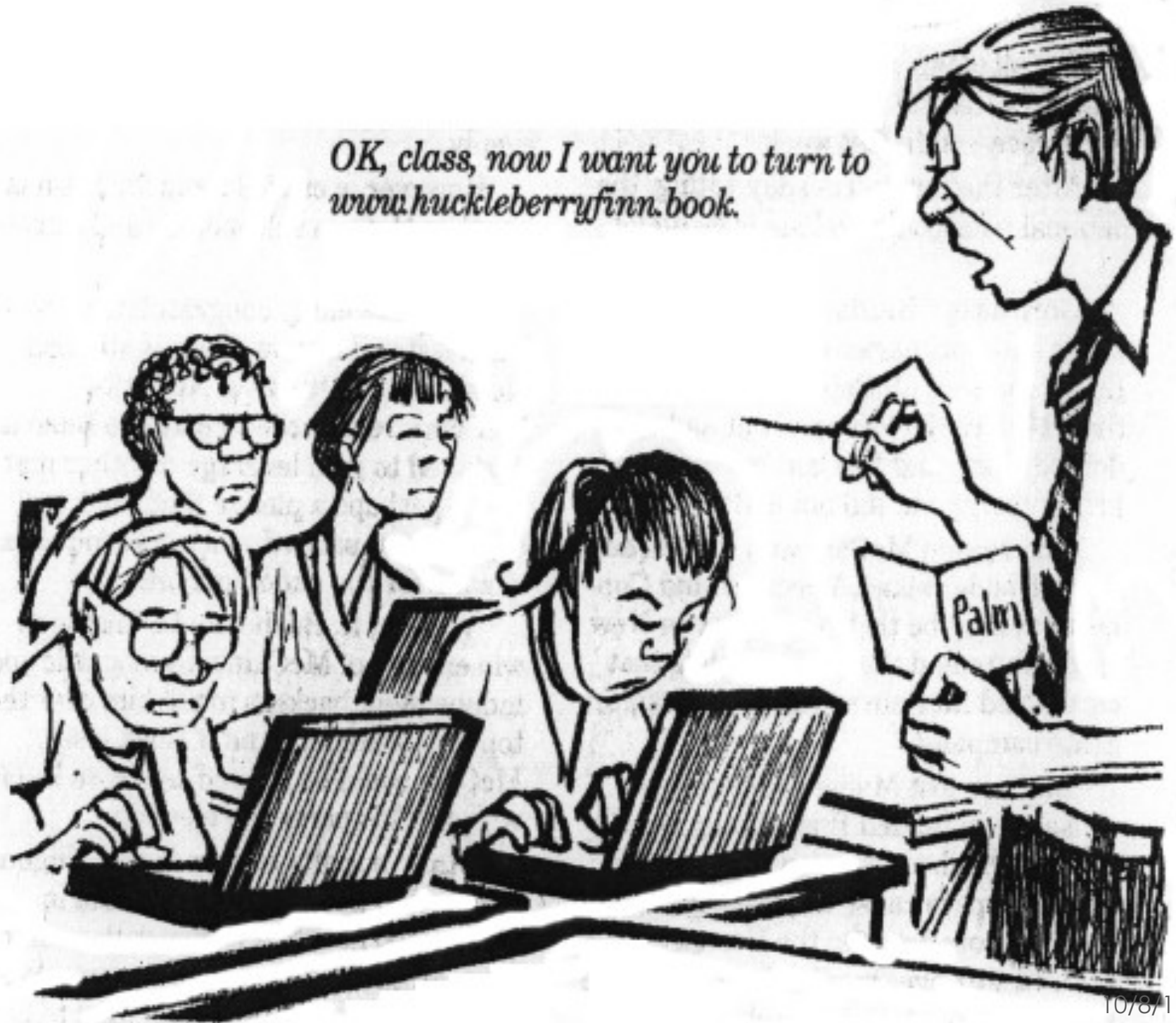
- The radio dial, Lisbon, 1945
- Individualized packets, Newton, 1965
- Alligator scenario, Hamilton 1980
- Holography, Philadelphia, 1985
- Colleen Boxton, Acton 1994

# A few recent milestones

- **Nicholas Negroponte, 1994**
  - One laptop per child
- **Seymour Papert (1928-2016) Logo**
- **2001 MIT created Open CourseWare.**
- **2012 Ed Ex Harvard & MIT online learning destination & MOOC provider**



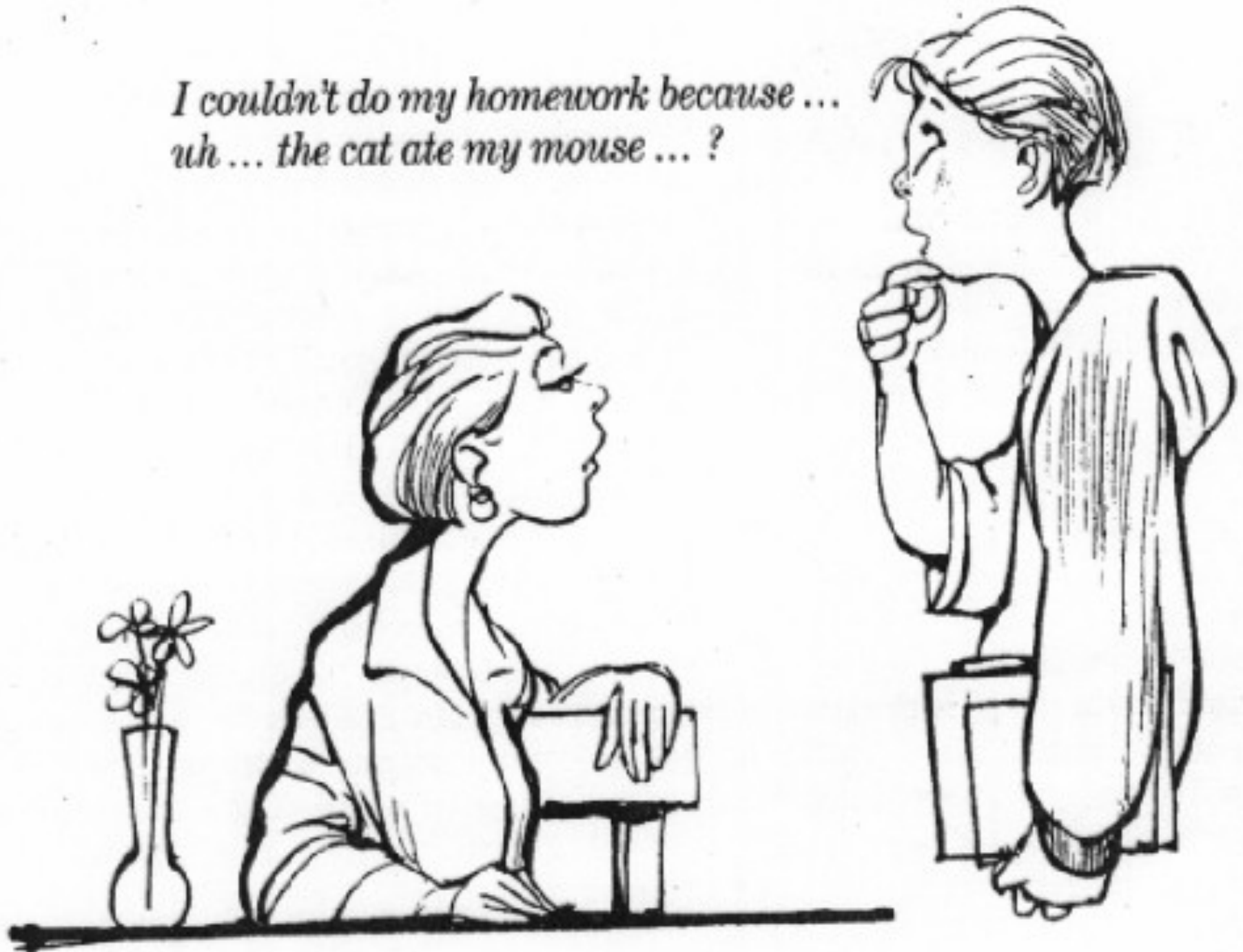
*OK, class, now I want you to turn to  
[www.huckleberryfinn.book](http://www.huckleberryfinn.book).*



*OK... let's check my father's stocks ...*



*I couldn't do my homework because ...  
uh ... the cat ate my mouse ... ?*





# What is the role of the school in the 21<sup>st</sup> century?

- Content provider
- Skills developer (*online* & offline reading...)
- 'Relationships' builder
- Civics teacher
- Treatment Center (med, psych)
- Meeting place/Community server

# What to preserve/develop

- Teaching
- “Reading, writing, ‘rithmetic” & 21c Skills...*reading online early*
- Cooperation, collaboration, problem solving
- Hands-on learning experiences
- Community element in learning

# A significant challenge

- Pace of technology change today
  - vs
- Pace of change of institutions

# *Maximum Impact 1.0*

**Lessons which are  
transformed with  
the use of  
technology**

## *Maximum Impact 2.0*

**Opportunities/experiences  
otherwise inaccessible**

- **Cannot get there from here!**
- **Need gloves?**





# Page 1 of Washington's Inaugural Address.

Feb 30 1789

Fellow Citizens of the Senate  
and  
of the House of Representatives

Among the vicissitudes incident to life, no event could have filled me with greater anxieties than that of which the notification was transmitted by your order, and received <sup>on the 14<sup>th</sup> day of the present month</sup>. On the one hand, I was summoned by my Country, whose voice I can never hear but with veneration and love, from a retreat which I had chosen with the fondest predilection, and, in my flattering hopes, with an immutable decision, as the asylum of my declining years: <sup>a retreat</sup> which was rendered every day more necessary as well as more dear to me, by the addition of habit to inclination, and of frequent interruptions in my health to the gradual waste committed on it by time. On the other

# How to preserve

- Preparing educators properly
- Encouraging parents as teachers
- Setting the stage & proposing the expectations as a society
- Technology as a “controlled” driver

# How to check for learning

- **Assessment tests**
- **Performances**
- **Products**

# What do we know about kids today? 1.0

- They are more fearless,
  - have low frustration levels,
  - are better at technology,
  - are inventive
  - are programmed for 'edutainment'
- They know how- not what & what the consequences are



# What do we know about kids today? 2.0

- **Trying to balance**
  - Doing well with peers
  - Doing well with learning
- **Need to be both College & Career ready**
- **Need to connect their music, family culture w. curriculum**
- **Looking for possible futures, selves**

# More advice

- **School is necessary but not sufficient (Paul Reville)**
- **We need to balance/align with needs of the workforce & the promises of civilization**
- **We need respond to what is changing to avoid Kodakville**

# What are kids doing today?

- **Students in some schools are using virtual & augmented reality to learn about subjects such as art, science, geography & social studies.**

# And

- **The average student today owns 2-3 mobile devices & routinely moves between/among them.\***

**\*Citrix**

# **What technology allows schools to do today that was almost impossible before:**

- **Data collection, analysis, evaluation**
- **Model, develop simulations, test vs. data**
- **Manipulate intangibles (computer as sandbox)**
- **Make rote procedures comprehensible**
- **Shift balance bet. appreciation & production**
- **Virtual experiences (e.g the frog in the bio lab)**



## Some challenges:

- Hyperlinks (labyrinthian links)\*
- Viewing on the screen\* (online reading)
- Small chunks\*
- Reading for depth\*
- Searching skills\*
- *And, knowing what not to do and what to trust!*

*\*Judah Schwartz*

# Other necessary skills

- Using personal productivity, presentation tools
- Being able to design & publish websites
- Knowing how to Network
- Understanding operating systems
- Using video
- Using communications/social media

# Teaching Skills e.g.

- Curriculum design & development & planning with new technologies
- “Personalizing” learning
- Differentiated instruction for varied learning styles
- Classroom technology management

# And Leadership Skills, e.g.

- ‘Visioning’ & planning
- Enabling professional learning
- Encouraging/modeling responsible life-long learning
- Dealing with issues of ethics, diversity, equity & legality

# Not working 1.0

- **Respect for the need for technology**
  - **Understanding of how to use technology suitably**
  - **Flexibility to “experiment”**

# Not working 2.0

- Integrated, appropriate, maximized use of the technology
- School technology capacity (tools & bandwidth)
- Sufficient financial support for the two issues above (e-rate)



# TRENDS 1.0

## SHORT-TERM

- **Coding as a Literacy**
- **Students as Creators**

## MID-TERM

- **Collaborative Learning**
- **Deeper Learning Approaches**

## LONG-TERM

- **Redesigning Learning Spaces**
- **Rethinking How Schools Work**

# **TRENDS 2.0 2016 2017 NEAR-TERM**

**Makerspaces (3D printing)**

**Online Learning**

**Authentic Learning Experiences**

**Rethinking the Roles of Teachers**

**Advancing Digital Equity**

**Scaling Teaching Innovations**

# TRENDS 3.0

- 2018 2019 MID-TERM

Robotics

Virtual Reality

- 2020 FAR-TERM

Artificial Intelligence

Wearable Technology (embedded in clothing)

# Persistent Challenges

## Achievement Gap(s) *Paul Reville*

*A student's learning capacity should not  
be determined by his/her zip code*

## Personalizing Learning *Defined properly*

## **From the Boston Globe**

**“Somerville’s innovative new school plan  
garners a \$10 million grant**

**A local nonprofit working with the  
Somerville PS came up with a year-round  
high school that feels more like a research  
and design studio where students pursue  
long-term projects in areas of interest to  
them.”**

# **Ideas which have floated**

- **Small Highs Schools of Choice**
- **Expeditionary Learning**
- **Competency-based Education**



# **But before that were...**

- **Meadowbrook Junior High School**
- **New Technology High Schools**
- **Small (inside) High Schools of Choice**

# Turning to teacher preparation:

- Solid general education before teacher preparation
- Technology literacy
- Knowledge of school practices
- Instructional skills
  - Assessment & evaluation procedures for students/program
  - Integration of technology

# Predicting the future

- Will physical schools really change?
- Will space in physical schools change?
- Will hybrid learning become more desirable?
- Can/should technology replace f2f interaction?

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