Rethinking the Big Hairy Technology Problems of K-12

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Mission

Serving K-12 technology leaders who through their strategic use of technology, improve teaching and learning.

Core Value
The primary challenge we face in using technology effectively is human, not technical.

Audience
School System Technology and education Leaders

For that reason, CoSN focuses on Leadership and Policy.
Big, Hairy Problem: Ubiquity & Access Gaps

The Bigger, Even More Hairy Problem: Human Capacity
NMC Horizon K-12 2012

One Year or Less
Mobiles & Apps
Tablet Computing

Two to Three Years
Game-Based Learning
Personalized Learning Environments

Four to Five Years
Augmented Reality
Natural User Interfaces

Report & Toolkit
www.nmc.org/horizon-project
www.cosn.org/horizon
What has been impact?

Technology & Innovation is happening in K-12 education but often in isolation and too slow...

One-off solutions vs. Ecosystems.
Education ranks 55th out of 55 industries for IT Intensiveness

-U.S. Department of Commerce Digital Economy, 2003
Why Hasn’t Tech “Transformed” Education?

Lack of Ubiquity
Only 13% of classrooms in US have a ubiquitous tech environment.

Layered
Mostly layered on top of what they’re already doing.

Time
Technology takes time to understand how to use in transformative ways.
Historical Concerns About “Technology” in Schools

“Students today can’t prepare bark to calculate their problems. They depend upon their slates, which are more expensive. What will they do when their slate is dropped and it breaks? They will be unable to write!”
(Teachers Conference, 1703)

“Students today depend upon paper too much. They don’t know how to write on slate without chalk dust all over themselves. They can’t clean a slate properly. What will they do when they run out of paper?”
(Principal’s Association, 1815)
<table>
<thead>
<tr>
<th>Year</th>
<th>Quote</th>
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<tbody>
<tr>
<td>1900</td>
<td>“Students today depend too much upon ink. They don’t know how to use a pen knife to sharpen a pencil. Pen and ink will never replace the pencil.” (National Association of Teachers, 1907)</td>
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<td>1950</td>
<td>“Ballpoint pens will be the ruin of education in our country. Students use these devices and then throw them away. The American virtues of thrift and frugality are being discarded. Business and banks will never allow such expensive luxuries.” (Federal Teacher, 1950)</td>
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Wrong Question
» Should we invest in technology in education?
Better Question

What should learning look like today that prepares students for today and tomorrow, making them college, career and life ready?
Big, hairy K-12 technology problem...
Ubiquity & Access
Ubiquitous Access Lacking

Only 13% of Classrooms report one-to-one technology environments.

Exception to Rule: Mooresville Graded School District, North Carolina
5 years later:

• Academic composite on state high stakes tests has improved from 68% to 89%, 2\textsuperscript{nd} highest in state.
• 4-year cohort graduation rate improved from 68% to 90%, 3\textsuperscript{rd} highest in the state.
• 100th out of 115 NC districts in dollars spent per student — $7,415.89 a year
Even wealthier districts say they cannot afford the ongoing cost of a ubiquitous technology environment....
Speak Up 2012 National Findings
From Chalkboards to Tablets

The BYOD/BYOT trend –
what a difference a year makes!

<table>
<thead>
<tr>
<th>Policy/Position</th>
<th>Admin 2011</th>
<th>Admin 2012</th>
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<tbody>
<tr>
<td>Do not allow</td>
<td>52%</td>
<td>37%</td>
</tr>
<tr>
<td>Discretion of building principal</td>
<td>16%</td>
<td>21%</td>
</tr>
<tr>
<td>Discretion of teacher</td>
<td>21%</td>
<td>32%</td>
</tr>
<tr>
<td>We provide devices</td>
<td>13%</td>
<td>18%</td>
</tr>
<tr>
<td>Evaluating BYOD/T</td>
<td>19%</td>
<td>28%</td>
</tr>
<tr>
<td>BYOD/T in place</td>
<td>17%</td>
<td>30%</td>
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What is the Status of BYOD/BYOT?

- Implemented: 41%
- Considering/ planning implementation: 27%
- In the process of implementing: 23%
- No BYOD: 9%
99% of districts need additional Internet bandwidth and connectivity in the next 36 months.

43% of the school districts indicated than none of their schools can meet the SETDA goal of 100Mbps of internet access per 1,000 students today.

Only one quarter of districts report that 100% of their schools meet the goal.

*CoSN E-rate & Broadband Survey, Oct 2013*
20% of districts identified geography as a barrier to increasing connectivity in their schools

10.5% say their Internet providers were either at capacity or could not expand capacity.

*CoSN E-rate & Broadband Survey, Oct 2013*
Can’t support broadband because of problems with internal connections/wiring, backbone in the school LAN and wireless networks

57% of districts do not believe their school’s wireless networks have the capacity to currently handle a 1:1 deployment

CoSN E-rate & Broadband Survey, Oct 2013
Half of school buildings have in part older, slower wiring (Cat5 and Cat3) that will not carry data at broadband speeds.

26% of districts are using slower copper or 2.3% wireless backbones in their school LAN

CoSN E-rate & Broadband Survey, Oct 2013
Only 57% of elementary schools and 64% of secondary schools...

have all classrooms fully equipped with wireless Internet connectivity.

*CoSN E-rate & Broadband Survey, Oct 2013*
Home Broadband Adoption by Family Income

- under $30,000
- $30,000-49,999
- $50,000-74,999
- $75,000+
Uruguay Plan Ceibal

» 450,000 devices for students in grades 1-9
» Hotspots throughout the country

Report and blog
www.cosn.org/southamericadelegation
Social Inclusion & Equity

Not simply an education ICT program.

Driving ed transformation
US Home Access Effort

Bridging the home/school access gap

» New effort to help low income families with children get home broadband

» $9.95 per month

» Low-cost computers

» digital literacy
The BIGGER, hairy problem... US!
New Skills Needed

Educational Leaders **must** understand their role in making shift from print to digital

Empowering the 21st Century Superintendent

www.cosn.org/superintendents
US Superintendents priorities:

<table>
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<tr>
<th>21st century skills</th>
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<tr>
<td>Transforming classrooms to compelling learning environments</td>
</tr>
<tr>
<td>Changing professional development to communities of practice 24/7</td>
</tr>
<tr>
<td>Using data to inform practice</td>
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<tr>
<td>Balanced assessments – more formative data to learner/teacher</td>
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Especially for Technology Leaders

CoSN’s Framework of Essential Skills of the K-12 CTO

Leadership & Vision
- Strategic Planning
- Ethics & Policies

Understanding Educational Environment
- Instructional Focus
- Professional Development
- Team Building & Staffing
- Stakeholder Focus

Managing Technology & Support Resources
- Information Technology
- Communication Systems
- Business
- Data

Core Values & Skills
- Communicator
- Exhibits Courage
- Flexible & Adaptable
- Results-oriented
- Innovative

www.cosn.org/framework
www.cosn.org/certification
» More student-centered (they are the ultimate customer)

» More Feedback to the learner and the teacher
Quest to Learn, NYC
Game Based School

kids become designers
Bridging Formal & Informal

Chicago Public Library and Digital Youth Network
Chicago, Illinois

» Hybrid digital literacy program that creates opportunities for youth to engage in learning environments that span both in-school and out-of-school contexts.

» Exploring themes found in traditional literature through development of multimedia projects.
New Resource Allocation

» Less on textbooks
» More on digital content
» More on broadband
New Policies

Rethinking State and School District Policies Concerning Mobile Technologies and Social Media

www.cosn.org/AUPGuide

www.cosn.org/MakingProgress
Making Progress Recommendations

» Banning not the answer

» Educate students on responsible use

» Emphasize professional development on safe and effective use

» Rethink and revise acceptable use policies (AUP)
Are We Ready?

Thomas L. Friedman
Michael Mandelbaum

That Used to Be Us
How America Fell Behind in the World It Invented and How We Can Come Back
Be not afraid
If we teach today's students as we did yesterday's, we are robbing them of tomorrow.

John Dewey
American education reformer
1859-1952