

ELIMINATING ED TECH HAVOC: WHY OPEN STANDARDS MATTER

A CoSN Interoperability Update



Interoperability defined

CoSN's *Interoperability Standards for Education*, defined 45 standards across the eight key areas of interoperability:

1. Digital Content
2. Data Connectivity
3. Data Integration
4. Authentication, Authorization, and Identity Management
5. Portals and Portlets
6. File Sharing
7. Network Infrastructure
8. Digital Accessibility

Common across the eight areas— whether a basic template format for organizing information or a technical standard for network infrastructures—is the goal of “seamless sharing” between systems.

“Interoperability—the seamless sharing of data, content and services among systems or applications.”

*Interoperability Standards for Education
CoSN*

Unfortunately, seamless sharing of data is not the norm. The inability to seamlessly share data is an on-going pain point for school system leaders. Lack of interoperability wreaks havoc on districts’ operational efficiency, timely access to data to inform decisions, and the ability to provide best-of-breed instructional resources to students. Because of these challenges, CoSN is committed to providing resources that address the issues presented by interoperability and open standards. CoSN conducted, with the support of the Gates Foundation, two convenings to discuss interoperable systems and how they affect teaching and learning. Below is an overview of the issues identified at the convenings and how CoSN as an organization is committed to moving forward to address them.

Number and Complexity of Standards

The 45 standards defined in the CoSN primer were NOT an exhaustive list. Standards that have had a longer shelf-life have several versions simultaneously in use. Many standards are complimentary or can be aligned, while others directly compete. This complexity of standards and how they work or don’t work together can be difficult to explain without sounding like technobabble to the uninitiated. Understanding standards’ benefits and trade-offs as they relate to a district’s unique needs is a challenge faced by every K-12 IT Leader.

“Hardware manufacturers have been able to come together and define standards to greatly enhance the functionality between products. Why do we not demand the same from software producers? ”

*Vince Humes. CIO
Northwest Tri-County Intermediate Unit 5 (PA)*

Pace of Change in Technology

A key factor in standards complexity is the pace of change in technology. Wi-Fi has replaced hard wiring. Mobile devices are replacing desktop computers. Learning Management Systems (LMSs) are expanding to incorporate analytics, collaboration, and productivity tools. As the technology changes new standards emerge and existing standards are updated. The pace of change from the K-12 institutional perspective is unprecedented. BYOD, for example, did not exist when one of the first organizations to tackle K12 interoperability—School Interoperability Framework Association (SIFA), now known as Access 4 Learning (A4L)—was established in 1997. OneRoster, a standard for exchanging roster information and grades, did not exist when CoSN published *Interoperability Standards for Education*. Keeping on top of the constantly shifting technology landscape is a major challenge technology leaders face. With 65% of district technology leaders in charge of both instructional and administrative technology¹ the breadth of issues they need to understand is quite significant.

“Fifteen years ago, no one even considered interoperability when we discussed our systems. The idea was to get a monolithic system that did everything we wanted. The problem was that the monolithic systems didn't meet our needs very well.”

*Tom Ingram, Director Information Technology
Escambia County School District (FL)*

Standards Adoption

Creating workarounds for proprietary frameworks are necessary in the absence of standards-based products. These workarounds weigh heavily on districts' time and budgets. However, until vendors have a business case for moving to open standards, they won't have a compelling reason to adopt them. Retrofitting legacy products for open standards is costly, and requires significant investment in development and testing. An open standard means plug-and-play with competitors, which is not necessarily something vendors want to

¹ CoSN 2016 K-12 IT Leadership Survey

encourage. Historically, companies have created technology that establishes lock-in—keeping customers within a company’s own ecosystem. A push for standards needs to come from districts if companies are to change their proprietary development strategy

“Individually we may not have the power to influence the education marketplace, but as a group we have an opportunity to do so.”

*Karen G. McGonigle, Director of Technology
Nantucket (MA) Public Schools*

Since CoSN is not a standards body, we have not recommended a specific technical standard set. However, by endorsing key feature sets that are enabled by open standards, CoSN can help create the demand-side pressure needed to make the case for open standards product development. The interoperable systems that open standards enable will ensure that districts can mix and match products and services to meet their unique needs

“At CoSN, we see smart chief technology officers demanding interoperability so that school districts can mix and match solutions that best fit their needs, and allow them to remix and rematch with local content. Openness is a core and growing value.”

*Keith Krueger, Chief Executive Officer
CoSN*

Open Standards to Support Personalized Learning

Operational efficiencies, cost reduction, and increased data quality are all benefits of standards-based systems. But educating students is the ultimate goal of districts. This is a complicated task as “every student can learn, just not on the same day, or the same way.”² The concept of personalized learning is not a new one. In the past, the best a teacher could do was scaffold instruction to general groupings of students—advanced, on level, and struggling. Today educational technology enables the delivery of content aligned to the needs of individual students, identify specific gaps in learning, and offer instruction in modalities tailored to students’ preferences and needs. Students themselves are able to play an active role in personalization and it is with their engagement that learning happens.

² George Evans

“A properly articulated digital environment should support differentiated, personalized, and authentic learning.”

*Beatriz Arnillas, Director IT Education Technology
Houston, ISD (TX)*

Gartner's Top 10 Strategic Technology Trends for 2016 predicts that “by 2025, every industry will be transformed by digital business.” Although many districts are replacing traditional text resources with digital resources, they aren't seeing the transformation that was forecast. Lack of interoperability is a key factor holding this back. “Algorithms provide the 'intelligence' to get the most out of the connections and interplay between people, things, processes and information.” Employment of algorithms requires more data than districts currently have. Without interoperability among learning systems, districts will have a difficult time transforming learning as the business world will be transformed in the next ten years.³ Without the use of standards, delivering on the promise of personalized learning requires districts to jump through time-consuming, inefficient, and costly hoops.

A Call-to-Action

The level of interoperability required varies greatly by districts. Efficient technology ecosystems just don't exist in most districts. Some districts are only using technology for state reporting. Other districts are dealing with content and roster interoperability issues as they transition to digital instructional materials. A district installing badge readers is addressing the implications for its network infrastructure. But *all* districts benefit from interoperable systems. Ultimately the entire technology ecosystem needs to work more efficiently in order to support personalized learning and achieve better student outcomes.

A majority of IT Leaders (58%) report that their staff is stretched too thin to get to the critical area of “integrating technology in the classroom.” Only 7% reported that “staffing is matched to needs” for implementing new technologies.⁴ In a recent CTO Forum, “lack of alignment between the promise of ed tech and the ability to deliver its benefits” was cited as one of the persistent problems CoSN still has to address 25 years after its inception.⁵ Sixteen years into the 21st Century, districts are still sorting out how to seamlessly integrate 21st Century technologies into schools. Interoperability, or rather the absence of it, is a major factor behind the lack of large-scale progress. Without comprehensive interoperability across systems, the K-12 education system will not get beyond talk of aspirational goals and a few exemplars.

³ http://www.gartner.com/technology/research/top-10-technology-trends/?cm_sp=sr- -tp10- -link

⁴ CoSN 2016 K-12 IT Leadership Survey

⁵ CTO Forum Report: Building on the Past to Invent the Future

Failure to make progress on the use of open standards has resulted in years of ed tech havoc. The education community needs to make real progress on this issue. Districts need to require interoperability in their RFP processes and vendors need to develop products using commonly-accepted interoperability standards.

Long-Term

CoSN recognizes that there isn't a flip-a-switch solution to the complex and interconnected problems surrounding interoperable systems. The convening participants acknowledged the enormity of the challenges. However, the participants agreed that district leaders need a single resource that would help them navigate all aspects of the interoperability landscape. Ideally, this resource would create a custom roadmap for each district based on the feature set of self-identified interoperability needs tailored to their respective ecosystem. CoSN hopes to secure funding to further that initiative.

Short-Term

There is also much CoSN can do on its own in the short term that will help move the dial towards greater interoperability and better outcomes for all students. CoSN's Technical & Standards Committee will continue its efforts. As the Committee that produced the *Interoperability Standards for Education*, it is determining how best to build on what has already been done. The Committee is evaluating the development of case studies of successful implementations, a version of the primer for Curriculum staff, and a Listserv for sharing best practices.

In addition, CoSN is reaching out to other education organizations that address interoperability issues. Professional associations such as the Association for Supervision and Curriculum Development (ASCD) and the State Educational Technology Directors Association (SETDA) also address the issue in some way. Vendor organizations, are also struggling to help their membership understand standards. CoSN can be a driver for sharing information and promoting the use of standards across education constituencies and the industries that serve them. Our first such effort will take place on July 26, 2016 at the Education Industry Symposium hosted by the Technology Industry Network (ETIN), the education division of the Software & Information Industry Association trade association (SIIA). A panel of CoSN Certified Education Technology Leaders (CETL) will address interoperability issues in the session "Ed Tech Ecosystems: How Customers make them work."

It's time for the education community—districts and vendors—to unite and move forward on the path toward open standards adoption.

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