Table of Contents

Overview .......................................................................................................................... 3
Introduction .................................................................................................................... 3
Top 10 Findings ............................................................................................................. 4

About the School Systems ............................................................................................. 5
Demographics ............................................................................................................... 5

IT Leader Profiles ......................................................................................................... 6
Education ....................................................................................................................... 6
Professional Background ............................................................................................ 8
Experience ..................................................................................................................... 9
Diversity ......................................................................................................................... 10

Technology Leadership in School Systems .................................................................. 11
Titles .............................................................................................................................. 11
Responsibilities ........................................................................................................... 12
Purchasing involvement ............................................................................................... 13
Salaries .......................................................................................................................... 14

District Initiatives ......................................................................................................... 15
Top Priorities ................................................................................................................ 15
Privacy & Security ......................................................................................................... 16
Bring Your Own Device (BYOD) ................................................................................ 17
Open Educational Resources (OER) ............................................................................ 18
Interoperability ............................................................................................................ 20

About Technology ........................................................................................................ 22

About Budgets ............................................................................................................. 24

About Staffing ............................................................................................................. 27

About Professional Development ................................................................................ 29

In Closing .................................................................................................................... 32
Summary ....................................................................................................................... 32
About CoSN .................................................................................................................. 32
CoSN Resources .......................................................................................................... 33
About Our Partner ....................................................................................................... 34
About Our Sponsor ..................................................................................................... 34
Overview

Introduction

This is the 5th anniversary of the IT Leadership Survey. Since it launched in 2013, CoSN has worked to get a better understanding of those responsible for managing IT in our K-12 institutions. Who are they? What are their priorities? What are their challenges? In order to answer these and other questions, CoSN partners with MDR to deploy the survey to 120,000 U.S. school system technology leaders. This year’s report is based on 495 surveys completed in January and February of 2017 and is produced with support from SchoolDude.

CoSN collected profile data such as backgrounds, job titles, and salaries, gaining insight into how IT Leadership characteristics have changed over the past five years. Since 2015, demographic data about race, ethnicity, and sex has been collected. This additional layer of data continues to shed light on diversity and equity issues otherwise not apparent.

To enable year-over-year comparisons, CoSN tries to ensure consistency in the survey questions. However, in the five-year span of the survey, revisions have been made to reflect changing IT initiatives. There are major differences from the 2013 IT landscape. Questions about the use of Facebook and Twitter, for example, have been replaced by questions on more timely topics such as outsourcing and the use of OER. This year’s survey includes new questions about personal use of online courses, peer-to-peer technology reviews, and interoperability. From the personal to the technical, CoSN seeks to get a fuller picture of K-12 IT Leaders and the world in which they work. With this report, CoSN is able to share the most significant findings.
Top 10 Findings

1. Mobile learning is the top priority for IT Leaders, followed by Mobile & Network Security.

2. Cyber Security and privacy are of increasing concern, with 62% of IT Leaders rating them more important than the prior year.

3. Budget constraints are ranked as the top challenge for the third straight year.

4. Only 13% of IT Leaders report staffing is matched to needs.

5. Districts are signing on for Single-Sign-On (SSO). SSO is the most-implemented interoperability initiative.

6. Over one third of IT Leaders express no interest in BYOD—compared to 20% in 2014.

7. General interest in OER is high—79% of respondents indicated it is part their district’s digital content strategy.

8. IT Leaders are experienced—73% have worked in the K-12 education technology field for more than 10 years.

9. CTOs lack diversity. Lack of racial diversity continues to be an issue. Ninety percent (90%) of IT Leaders identify as white, the same percentage as the prior year.

10. CTOs are smart. Seventy-seven percent (77%) of IT Leaders have some college beyond Bachelor’s and 61% hold Masters degrees.
About the School Systems

Demographics

The overwhelming majority of responses from this year’s survey are from IT Leaders working in the public school system. This has been a consistent result for the five years the survey has been conducted. The percentage of this year’s responses from public schools is 88%, essentially matching last year’s public school percentage of 86%. Also closely matching prior year response rates is Private/Independent Schools with 5% and Religious/Parochial Schools with 4%. Making up the balance were charter schools, educational service agencies (ESAs) and state educational agencies (SEAs), each comprising 1% of the responses.

For consistency with other CoSN surveys, a new enrollment category was included as an answer option to the question about district student enrollments. The new category was added to separate the “under 1,000” from the “under 2,499” group. While the percentage of respondents who have enrollments under 2,499 (38%) remains essentially unchanged from prior year, we now know that almost a quarter (23%) of all respondents work in districts with enrollments under 1,000.

Select the Student Enrollment of your school system:

When segmenting respondents by metropolitan status, suburban districts comprise the largest segment with 47%. Almost a third (32%) are from rural districts and 24% are from urban districts. While this representation is consistent with the demographic survey results from the prior year, it does not align with general public school demographics. Nearly half of all school districts are rural and only 7% are urban. However, urban schools have much higher
enrollments than their rural counterparts. So while urban districts are overrepresented in survey results, these districts comprise much greater numbers of the student body and represent 36% of total U.S. enrollments.

From the list below, select the option that best describes your district:

![Pie chart showing district percentages: 32.00% Rural, 45.00% Suburban, 24.00% Urban]

## IT Leader Profiles

### Education

It would be reasonable to assume that IT Leaders who work in the education sector are themselves well educated. The survey results bear that out. An overwhelming majority (77%) of respondents have some college beyond a Bachelor’s degree, including 61% with Masters degrees and 8% with Doctorates. A Masters of Education represented the highest level of educational achievement for most respondents by far, with 39%. The next-highest category was “Other Masters” with 18% followed by a Bachelor’s degree with 16%.
Beyond their academic credentials, IT Leaders also hold industry-specific certifications. The most common are software-specific certifications such as those offered by Apple and Microsoft, held by more than a third (35%) of all respondents. With 32%, “Other” was the next largest category. Finishing off the top three categories, with 30%, is the Certified Education Technology Leader (CETL). Of the general certification answer options, the CETL credential is by a significant margin the most popular, followed by the CompTIA credential with 20%.

<table>
<thead>
<tr>
<th>Certification</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>NBPTS National Board Certification (from National Board for Professional Teaching Standards)</td>
<td>6%</td>
</tr>
<tr>
<td>CompTIA</td>
<td>20%</td>
</tr>
<tr>
<td>CISSP (Certified Information Systems Security Professional)</td>
<td>3%</td>
</tr>
<tr>
<td>CETL (Certified Education Technology Leader)</td>
<td>30%</td>
</tr>
<tr>
<td>PMP (Project Management Professional)</td>
<td>2%</td>
</tr>
<tr>
<td>A Software Specific Certification (Apple, Microsoft, etc.)</td>
<td>35%</td>
</tr>
<tr>
<td>ITIL (Information Technology Infrastructure Library)</td>
<td>13%</td>
</tr>
<tr>
<td>CCNA (Cisco Certified Network Administrator)</td>
<td>8%</td>
</tr>
<tr>
<td>Other:</td>
<td>32%</td>
</tr>
</tbody>
</table>
Professional Background

When asked to describe their primary professional background, a majority of respondents (52%) identified “Education/Instruction” competencies. This aligns with the responses from the academic achievement question, where a Masters of Education was by far the most common highest degree held. With 38%, “Technology/Technical” is the next largest category, followed by “Business/Management” with 6% and “Other” with 5%.

Which of these competencies best describes your primary professional background:
Experience

A vast majority (73%) of respondents have worked in the K-12 education technology field for more than 10 years. This is an exact match to the rate in 2013, the first year the IT Leadership survey was conducted. This year 13% of respondents indicated they have worked in the field for five years or less, a slight increase from the 11% found in 2013.

How many years have you worked in the K-12 education technology field?

Half of the respondents have been in their current position for less than six years, including 7% who are in their position for less than a year. When looking at five years of survey results, we see that the 1-5 year span is consistently the most common tenure length. There is a clear drop-off in rates in the next span, 6-10 years. In 2017, the drop-off was the steepest with 21% in the 6-10 year range, down from 43% in the 1-5 year range. However, this aligns with general tenure statistics for management and professionals, where the median is 5.5 years.¹

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>2%</td>
<td>7%</td>
<td>9%</td>
<td>10%</td>
<td>7%</td>
</tr>
<tr>
<td>1-5 years</td>
<td>37%</td>
<td>32%</td>
<td>37%</td>
<td>40%</td>
<td>43%</td>
</tr>
<tr>
<td>6-10 years</td>
<td>32%</td>
<td>30%</td>
<td>27%</td>
<td>22%</td>
<td>21%</td>
</tr>
<tr>
<td>11-20 years</td>
<td>29%</td>
<td>27%</td>
<td>20%</td>
<td>24%</td>
<td>23%</td>
</tr>
<tr>
<td>More than 20 years</td>
<td>*</td>
<td>3.5%</td>
<td>7%</td>
<td>4%</td>
<td>6%</td>
</tr>
</tbody>
</table>

* 2013 survey did not include the answer option beyond "more than 10 years"

¹ https://www.bls.gov/news.release/tenure.nr0.htm
Diversity

Although a minority (47%) of the survey respondents are women, it is a relatively large minority. In terms of race and ethnicity, the diversity rates are lower. The overwhelming majority of IT Leaders (90%) are white, with only 4% of survey respondents identifying as black or African American. In terms of ethnicity, only 5% of respondents were of Hispanic or Latino or Spanish origin. This gap between the racial and ethnic profiles of K-12 students and those who serve them is not limited to IT Leaders. This same gap is noted for teachers, principals, and superintendents as well. According to a 2016 Brookings study, the teacher diversity gap between black teachers and black students “will remain essentially the same at least through the year 2060.” The gap will actually increase for Hispanic teachers and Hispanic students over that same period.² The glacial pace of positive change can also be seen when looking at the history of racial profile statistics for superintendents— it took a decade to move the dial from 5% to 6% for superintendents of color.³

Lack of diversity in top senior positions is not limited to our school systems. It persists across all industries. While there appears to be no easy fix, organizations are trying to tackle this problem with a variety of approaches, both for internal employees and with external service providers. For example, the NFL requires teams to interview minority candidates for head coach and general manager positions. Intel offers employees a $4,000 referral bonus for successful minority recruitment. HP has just started a “hold back” initiative with outside law firms whereby HP will hold back a percentage of the law fees if the law firm does not meet HP’s diversity requirement.⁴ The long-term success of any of these approaches is yet to be determined, but they indicate a commitment to solving the problem. School districts will need to develop their own innovative approaches to closing the diversity gap. The problem is not likely to go away on its own.

³ http://www.aasa.org/content.aspx?id=28578  
⁴ http://www.abajournal.com/news/article/hp_general_counsel_tells_law_firms_to_meet_diversity_mandate_or_forfeit_up
Technology Leadership in School Systems

**Titles**

A job title can give an indication of a position’s relative authority within an organization. This year, survey respondents are comprised of a majority (53%) holding senior-level titles (CTO/CIO/District Technology Director). This reflects a marked increased from 43% five years ago and seems to suggest an increased role for IT Leaders within their districts. While the ratio heavily skews male (69% male / 31% female) for the more senior titles, the K-12 statistic is better than the general statistic for women that work in other sectors of technology. According to a recent study from McKinsey & Co., just 19% of women in technology are C-suite executives.5

While the role of the IT Leader may have grown, the number of titles to describe them has increased as well. When the survey was first taken in 2013, only 5% selected “other” rather than one of options provided. This year the “other” category was 18%.

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5 https://womenintheworkplace.com/
Responsibilities

The vast majority of IT Leaders are responsible for both instructional and administrative technology, a consistent pattern over the past five years. The highest response rate was 83% in the first year of the survey, compared with 61% this year. This represents a downward trend, although not in a straight line. Though the numbers remain small, the trend is clearly upwards for IT Leaders to be the “person in charge of instructional technology only,” with 2% in 2013 growing to 11% in 2017. The response rate for “person in charge of administrative technology only” has remained constant at 10% since increasing from its 2013 low of 8%.

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Tech</td>
<td>2%</td>
<td>6%</td>
<td>6%</td>
<td>8%</td>
<td>11%</td>
</tr>
<tr>
<td>Administrative Tech</td>
<td>8%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Both Instructional &amp; Administrative Tech</td>
<td>83%</td>
<td>77%</td>
<td>55%</td>
<td>65%</td>
<td>61%</td>
</tr>
<tr>
<td>Specific Department, Division, or School</td>
<td>2%</td>
<td>2%</td>
<td>13%</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>Other</td>
<td>5%</td>
<td>6%</td>
<td>16%</td>
<td>9%</td>
<td>12%</td>
</tr>
</tbody>
</table>

* 2017 totals more than 100% due to rounding of the nearest whole percent.
Purchasing involvement

The vast majority (75%) of respondents play at least a moderate role—part of an evaluation team—in their district’s decisions to purchase digital content. About a third (31%) of respondents identified themselves as key influencers, nearly the same percentage as the prior year (30%). However, there were twice as many respondents reporting they are “Decision-Makers” (16%) as compared to the prior year (8%). Only 5%, the smallest response rate for any answer option category, were not involved in purchasing digital content. This reflects a slight decrease from 7% the prior year. These shifts towards greater purchasing influence suggest that where digital content is concerned, districts are recognizing the importance technical integration plays in the ability of content to affect student outcomes.
When asked about their involvement in the purchase of specific digital content, there are clear year-over-year increases in every category, with “not involved” decreasing 9% from the prior year. This further supports the notion that IT Leaders are emerging as important stakeholders in content decisions. The two areas with the heaviest involvement, with majorities in both, are the same as the prior year—productivity tools and content creation tools.

<table>
<thead>
<tr>
<th>Digital Content</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Involved</td>
<td>25%</td>
<td>16%</td>
</tr>
<tr>
<td>Core Curriculum</td>
<td>28%</td>
<td>38%</td>
</tr>
<tr>
<td>Supplemental</td>
<td>38%</td>
<td>48%</td>
</tr>
<tr>
<td>Formative Assessments</td>
<td>28%</td>
<td>38%</td>
</tr>
<tr>
<td>Literacy Aids</td>
<td>24%</td>
<td>35%</td>
</tr>
<tr>
<td>Library &amp; Reference Tools</td>
<td>39%</td>
<td>47%</td>
</tr>
<tr>
<td>Teaching Aids</td>
<td>28%</td>
<td>33%</td>
</tr>
<tr>
<td>Productivity Tools</td>
<td>67%</td>
<td>68%</td>
</tr>
<tr>
<td>Content Creation Tools</td>
<td>57%</td>
<td>59%</td>
</tr>
</tbody>
</table>

**Salaries**

Salaries have been fairly stagnant since 2013, with the majority of IT Leaders, 61% this year, consistently earning less than $100,000. There were gains in the $130,000-plus crowd, where the percentage of respondents nearly doubled from 6% to 11% over five years. When comparing salaries of men and women, there’s a persistent gap. Women are over-represented in the lowest salary category (under $70,000). Despite comprising less than half (47%) of all respondents, women account for the majority (66%) in this range. This compares to salaries of $130,000 and above, where women account for only 30%.

<table>
<thead>
<tr>
<th>Salary Range</th>
<th>2013</th>
<th>2014</th>
<th>2015*</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Under $70K</td>
<td>30%</td>
<td>24%</td>
<td>30%</td>
<td>24%</td>
<td>29%</td>
</tr>
<tr>
<td>$70K-99,999</td>
<td>36%</td>
<td>35%</td>
<td>39%</td>
<td>35%</td>
<td>32%</td>
</tr>
<tr>
<td>$100K-129,999</td>
<td>26%</td>
<td>27%</td>
<td>23%</td>
<td>26%</td>
<td>25%</td>
</tr>
<tr>
<td>$130K-159,999</td>
<td>5%</td>
<td>10%</td>
<td>6%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>$160K-200K</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>4%</td>
<td>3%</td>
</tr>
<tr>
<td>More than $200K</td>
<td>Less than 1%</td>
<td>Less than 1%</td>
<td>Less than 1%</td>
<td>Less than 1%</td>
<td>Less than 1%</td>
</tr>
<tr>
<td>Did not provide</td>
<td>2%</td>
<td>3%</td>
<td>2%</td>
<td>3%</td>
<td>2%</td>
</tr>
</tbody>
</table>

* 2015 totals more than 100% due to rounding of the nearest whole percent.
One characteristic that does not appear to align with salary is the level of educational attainment. Despite women being only 47% of the respondents, they comprise 55% of respondents with postgraduate degrees. The lower rates of pay for women can in part be explained by the level and size of organizations in which women IT Leaders work. Only 38% of women respondents work at the district level versus the school level, as opposed to 62% of the male respondents. Women were the majority (63%) of respondents in the districts with the lowest enrollments—under 1,000. As district enrollments increased, the percentage of women IT Leaders decreased. The only exception was with enrollments over 50,000, where the female-to-male ratio was 53% versus 47%. This parity is heartening, but the actual number of women affected is small since large districts comprise only 7% of schools.

<table>
<thead>
<tr>
<th></th>
<th>Under 1,000</th>
<th>1,000 to 2,499</th>
<th>2,500 to 9,999</th>
<th>10,000 to 14,999</th>
<th>15,000 to 49,000</th>
<th>Over 50,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>63%</td>
<td>49%</td>
<td>43%</td>
<td>32%</td>
<td>32%</td>
<td>53%</td>
</tr>
<tr>
<td>Male</td>
<td>37%</td>
<td>51%</td>
<td>57%</td>
<td>68%</td>
<td>68%</td>
<td>47%</td>
</tr>
</tbody>
</table>

**District Initiatives**

**Top Priorities**

Each year IT Leaders have been asked to identify, from a provided list, their “top three technology priorities/initiatives.” A five-year overview of the results provides some insight into how IT issues have changed over time.

- Bring your own device (BYOD) was the number one priority in 2013 but has failed to break into the top three ever since. This year, BYOD was ranked ninth, its lowest ranking ever.
- Over time, Online Assessments has also fallen from its top ranking in 2015 and 2016, to eighth place this year. That drop aligns with reported district readiness for high-stakes assessments. Four years ago, only 18% of respondents felt they were “fully prepared” compared to 61% in this year’s survey.
- Mobile learning has proved to be a consistent priority, ranked in the top three for four of the five years, taking the top spot this year.
• The number two priority is “Broadband & Network Capacity”—an initiative closely tied to mobile learning goals and also frequently listed among the top three priorities.

• Most notable this year is “Cyber Security” which breaks into the top three for the first time, making a fast climb from last year’s number 10 ranking. Previously Cyber Security had only incremental gains from its initial 13th place rank. The rise of the Cyber Security concern is not surprising. Malicious attacks and ransomware are not limited to high-profile companies and government agencies. Educational institutions are also being targeted. A recent study of IT infrastructures across various sectors actually found that “Education has the highest rate of ransomware...three times the rate of ransomware found in Healthcare and more than ten times the rate found in Finance.” Although the report does not separate K-12 from Higher Education statistics, the increasing number of reports about K-12 security breaches and the recent IRS alert about school phishing scams easily explain this year’s rise of Cyber Security in the top ranks of IT Leader priorities.

Privacy & Security

Respondents were asked to “rate privacy and security of student data as a priority as compared to last year.” Based on Cyber Security’s steep rise in priority rankings, it is no surprise that 61% of respondents rated privacy and security as more important than last year, including 30% indicating it was “much more important.” Only 1% indicated it was less important. It is worth noting that while privacy was not one of the top three priorities, it ranked just below Cyber Security, as fourth highest priority this year. This is in stark contrast to its ranking in 2014, the first year it was an answer option on the priority list, where privacy was ranked second to last. (Only Green Computing received a lower rank.)

Priorities 2013 2014 2015 2016 2017
#1 BYOD Assessment Readiness Assessment Readiness Broadband & Network Capacity Mobile Learning
#2 Assessment Readiness Mobile Learning Wireless Access Wireless Access Broadband & Network Capacity
#3 Broadband Access Wireless Access Mobile Learning Mobile Learning Cyber Security

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Respondents were asked to “rate privacy and security of student data as a priority as compared to last year.” Based on Cyber Security’s steep rise in priority rankings, it is no surprise that 61% of respondents rated privacy and security as more important than last year, including 30% indicating it was “much more important.” Only 1% indicated it was less important. It is worth noting that while privacy was not one of the top three priorities, it ranked just below Cyber Security, as fourth highest priority this year. This is in stark contrast to its ranking in 2014, the first year it was an answer option on the priority list, where privacy was ranked second to last. (Only Green Computing received a lower rank.)
Bring Your Own Device (BYOD)

The percentage of districts with “fully implanted BYOD/BYOT” has increased to 24% from 16% the prior year. Correspondingly, the percentages went down in the categories of planning, piloting, and working on large implementation. This indicates that those districts that have embarked on BYOD initiatives are moving steadily toward implementation. However, the category of “no BYOD/BYOT interest” highlights another trend. When this question was first asked in 2014, only 20% of respondents expressed “no interest.” The percentage of responses in this category has increased in every survey since then. This year’s high of 34% indicates that interest in BYOD is waning. New Microsoft Windows-based devices that are priced for the education market and the enhanced functionality of the already-affordable Chromebooks are likely to continue to reduce the need for and interest in BYOD strategies. Other factors that could be contributing to a move away from BYOD include online assessment requirements, interoperability issues, and equity challenges.

<table>
<thead>
<tr>
<th>BYOD/BYOT policy as part of 1:1 initiative</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>No interest</td>
<td>20%</td>
<td>29%</td>
<td>33%</td>
<td>34%</td>
</tr>
<tr>
<td>Discussion/Planning project</td>
<td>24%</td>
<td>59%</td>
<td>22%</td>
<td>18%</td>
</tr>
<tr>
<td>Piloting</td>
<td>23%</td>
<td>16%</td>
<td>17%</td>
<td>13%</td>
</tr>
<tr>
<td>Working on implementation</td>
<td>15%</td>
<td>12%</td>
<td>12%</td>
<td>11%</td>
</tr>
<tr>
<td>Full implementation</td>
<td>17%</td>
<td>13%</td>
<td>16%</td>
<td>24%</td>
</tr>
</tbody>
</table>
When asked about policies regarding students’ use of personal devices in school (outside of a 1:1 initiative for instruction), most respondents (39%) indicated that districts allow their teachers to determine whether students can bring devices to class. That decision is made at the principal level for 18% of respondents. A fifth (20%) of responders indicated that students are allowed to use their devices before, between, or after classes. Roughly equal are district policies that encourage students to bring their own device (11%) versus those than ban students from bringing devices (13%). All response rates for the answer categories to this question are essentially unchanged from the prior year.

If you do not have a district-wide 1:1 initiative, what are the policies regarding students’ use of personal devices in school?

![Chart showing distribution of responses]

Open Educational Resources (OER)

Open educational resources (OER) have received a lot of recent attention, especially since the 2015 federal government #GoOpen initiative, which encourages the use of OER in schools. This is the second year that survey respondents were asked about their use of digital OER. Year-over-year responses were similar regarding the level of importance OER had in districts’ digital content strategy. The overwhelming majority of respondents in 2017 and 2016 (79% and 78% respectively) indicated that OER was part of their districts’ digital content strategy. In both years the rate was the same (11%) for those rating digital OER “extremely important.” About a quarter, 24% this year and 26% in the prior year, rated digital OER as “very important.” “Somewhat important” was the largest category in both years, with 44% this year and 41% in the prior year.
How important are open educational resources (OER) in your district’s digital content strategy? (OER refers to teaching and learning resources that have been licensed for re-purposing and can be used for free or for a fee.)

Year-over-year response rates indicate reduced interest in OER when respondents were asked to what degree they expected digital OER to replace proprietary digital content in their districts over the next three years. There was an uptick in respondents who felt proprietary materials would be primarily or “only” digital, from 31% to 36%. Respondents reporting that OER and proprietary digital materials will be about 50/50 decreased from 46% to 43%. Those who expected a “somewhat substantial change to digital OER” dropped a percentage point from 18% to 17%. A point was also dropped, going from 5% in the prior year to 4% this year, for respondents who expected a “very substantial change to digital OER.” Although slight, all shifts in response went in the direction favoring proprietary materials. Curating and findability issues are major obstacles to district-wide use of digital OER. Common OER content formats, such as PDFs and Word documents, do not address accessibility needs. The availability of professional development for implementing OER is often lacking. Another complication for the use of digital OER is its interoperability with districts’ content delivery platforms and learning management systems (LMSs). However, widespread institutional use of digital OER is still in its early stages. The current trend of open standards-based LMSs, proprietary platform providers working to accommodate OER content, Amazon’s launch of the OER education platform Inspire, and the emergence of sophisticated tools for creating OER all bode well for those districts that want to leverage OER’s benefits.
Interoperability

As districts have increased their use of technology-based solutions, the need for interoperability has also increased. Interoperability—“the seamless sharing of data, content and services, among systems or applications”—enables districts to mix and match solutions according to their unique needs, provide enhanced personalized learning to their students, and increase effectiveness in monitoring and reporting progress.

This year, questions about interoperability were added to the survey. Respondents were asked the degree to which their district has implemented four interoperability initiatives. With the mounting need for students and teachers to log onto multiple systems, it is not surprising that Single Sign-On (SSO) was the most-implemented of the initiatives asked about. The majority (60%) of respondents have partially or fully implemented SSO. When adding the 14% of respondents who are currently “in planning” stages for SSO implementation, the total rises to 74%. Data Interoperability was the next most popular initiative, with 72% indicating they were in planning or implementation stages. Data Dashboards with 69% and Content Interoperability with 66% were not far behind. This high degree of implementation, with a majority of respondents indicating they were at least in the planning stages, speaks to the importance districts place on interoperable systems. However, the “fully implemented” percentages highlight how far districts have to go in achieving the interoperability they desire. Of the four initiatives, SSO had the highest percentage (19%) in the fully implemented category.

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8 Interoperability: Standards for Education © 2015 Consortium for School Networking
Dashboards, the second highest-ranked initiative in the fully implemented category, had roughly half that amount—10%.

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Fully Implemented</th>
<th>Partially Implemented</th>
<th>In Planning</th>
<th>Not at all</th>
<th>Don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single Sign-On (SSO)</td>
<td>19%</td>
<td>41%</td>
<td>14%</td>
<td>17%</td>
<td>8%</td>
</tr>
<tr>
<td>Content Interoperability</td>
<td>5%</td>
<td>44%</td>
<td>17%</td>
<td>15%</td>
<td>19%</td>
</tr>
<tr>
<td>Data Interoperability</td>
<td>8%</td>
<td>48%</td>
<td>16%</td>
<td>10%</td>
<td>18%</td>
</tr>
<tr>
<td>Data Dashboards</td>
<td>10%</td>
<td>38%</td>
<td>21%</td>
<td>14%</td>
<td>17%</td>
</tr>
</tbody>
</table>

* SSO totals less than 100% due to rounding of the nearest whole percent.

In an attempt to delve further into interoperability, respondents were asked about their familiarity with a variety of data and system standards. From a list of 13 standards, respondents were asked to identify the standards they would be “comfortable discussing with vendors.” The total of responses to this question were significantly fewer than the total number of survey respondents. While not every respondent answers every question, the steep decline in the number of total responses left some standards with too few responses to be statistically meaningful. The length of a question with 13 answer options might have caused the vast majority of respondents to skip the question, but there was no drop off in response rate to questions with a similar number of options in other parts of the survey. This includes one question that had 20 answer options as well as questions that followed the interoperability question on the survey form. So the lack of overall responses could indicate a general unfamiliarity with technical standards, rather than survey fatigue. It is also possible that respondents’ interpretation of “comfortable” set a high bar and they erred on the side of caution. In any event, what can be reported from that data is that those who did answer the question were, by far, the most comfortable with SAML. SAML is more than a decade old and is a well-established data format for authentication and authorization. It is also a common
method for enabling SSO and hence aligns with the findings of the previous question that highlighted SSO as the most implemented interoperability initiative.

IT Leaders are not expected to be standards experts, but the more conversant they are with the topic the better they can support their district’s interoperability goals. If districts continue to move away from single-vendor solutions and require more interoperable systems, CoSN expects fluency with technical standards to grow.

About Technology

For four years, survey respondents have been asked about the outsourcing of IT functions. The trend line shows a decline with 49% of 2017 respondents indicating that no IT functions are outsourced, compared with 32% in 2014. Only 45% indicated their districts currently outsource one or more functions, compared with 59% in 2014.

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>No functions Outsourced</td>
<td>32%</td>
<td>44%</td>
<td>47%</td>
<td>49%</td>
</tr>
<tr>
<td>Considering Outsourcing</td>
<td>9%</td>
<td>8%</td>
<td>7%</td>
<td>6%</td>
</tr>
<tr>
<td>Currently Outsourcing one or more functions</td>
<td>59%</td>
<td>48%</td>
<td>46%</td>
<td>45%</td>
</tr>
</tbody>
</table>

For two years, respondents whose districts outsource were asked to identify the specific functions from a supplied list. The top two most commonly outsourced IT functions were the same both years—break/fix (service agreements) and remote network maintenance. IT support for users and software installation were tied for a distant third in both years. All categories had significant year-over-year growth. The outsourcing of service agreements rose to 30% in 2017 from 18% the prior year. In the same time period, remote network maintenance rose to 27% from 15%. IT support for users and software installation outsourcing rates rose in equal amounts, to 8% in 2017 from 2% the prior year. Despite an apparent overall decline, the districts that outsource are doing so for more of their IT functions.
There has been modest improvement regarding the aging of district-owned computers. When the question "What percentage of your district-owned computers are five or more years old?" was first asked in 2014, almost a quarter of respondents (24%) worked in districts where the majority (51-100%) of the computers were older than five years. Today, districts with a majority of old computers are down to 17%. On the other end of the spectrum 5% of 2014 respondents reported that none of their computers were five or more years old, in contrast to 8% for 2017.
A new question—“What is your experience with peer-to-peer technology reviews?”—was added to this year’s survey. A technology peer review is a quality assurance process whereby various organization stakeholders assess how well a system meets defined requirements across their respective functional areas. This review methodology is commonly used in the tech sector for debugging software. The vast majority of IT Leaders (73%) have no experience with the practice. However, almost a quarter (23%) have conducted peer-to-peer technology reviews and “like them” as compared to just 4% who have done peer reviews “but don’t like them.”

What is your experience with peer-to-peer technology reviews?

![Pie chart showing the distribution of responses.]

About Budgets

Every year a majority of survey respondents have indicated that their budgets stayed flat. In 2013, 62% of respondents reported that budgets stayed the same, compared to 59% in 2017. Unfortunately, fewer districts are receiving budget increases than in the past. This is a steady downward trend over four years. This year 25% of respondents reported budget increases compared to the 34% high in 2014. At the same time, there has been a 7% increase in respondents reporting reduced budgets, from 9% in 2014 and 2015 to 16% this year. The increasing challenges of managing modern infrastructure, including the demands of 24/7 learning environments and the complexity of keeping systems secure, are not being met by increasing budgets to handle such demands.
When asked if their IT budgets enabled respondents “to meet the overall expectations of the school board/district leaders”, 57% said yes. The positive response was greater (64%) when respondents were asked if their IT budgets “allocate enough financial resources to support the technology assets that have already been purchased.” Unfortunately, the level of “no” responses to those questions, 43% and 36% respectively, means more than a third of IT Leaders have budgets that are too small for their needs. Of those respondents with insufficient funds, a large majority (66%) plan to overcome the budget gap by delaying replacement or deferring maintenance/upgrade contracts. A majority (53%) of respondents also plan to use E-rate funds to close the gap. Using grants and reducing technology purchases are strategies that are being employed equally (38%). These four strategies (delaying/deferring contracts, E-rate funds, grants, and reducing tech purchases) have consistently been the top strategies for securing additional monies. E-rate has consistently been the second most-used strategy. With the E-rate program subject to increased discussion at the FCC and in Congress, availability of those funds is uncertain. Districts may need to find another solution to address future IT funding gaps.
For the third straight year and for four out of five years, budget issues are ranked the number one challenge IT Leaders face “to planning and implementing technology-enabled learning environments.” The one year it was not ranked first, 2014, it was ranked second. The persistence of this issue indicates that even IT Leaders with flat budgets, and possibly those with increased budgets, struggle to meet objectives. Dealing with silos has been the second most-persistent issue over that past five years. Note that the wording of the answer option changed slightly from the original “Breaking down silos within the district” to the more precise phrasing used since 2015 “Existence of silos in the district, which make it difficult to work together on technology planning.” While neither phrasing includes the word “budget” it is highly likely that an environment that doesn’t foster collaboration, and hence timely and value-added input, is adversely affecting a district’s budget. However, the main issue with silos isn’t their impact on budgets but the impact on students. As one survey respondent explained the problem—

There continues to be a great divide between technology departments and other management teams within the school districts. School districts are either unaware of the importance the technology departments serve to the instructional success and day to day operation of the school system or spend time challenging the information technology professionals, actions because they don’t understand the intricacies and depth of the information technology industry. As with any organization, proper integration of IT services with what the business is working to accomplish requires close and constant collaboration from all parties. Schools are not exempt from this rule.

<table>
<thead>
<tr>
<th>Top 3 Challenges</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Budget constraints and lack of resources</td>
<td>Changing the culture of teaching to student-centered*</td>
<td>Budget constraints and lack of resources</td>
<td>Budget constraints and lack of resources</td>
<td>Budget constraints and lack of resources</td>
</tr>
<tr>
<td>#2</td>
<td>Changing the culture of teaching to student-centered</td>
<td>Budget constraints and lack of resources</td>
<td>Relevant training and professional development unavailable</td>
<td>Existence of silos in the district, which make it difficult to work together on technology planning</td>
<td>Relevant training and professional development unavailable</td>
</tr>
<tr>
<td>#3</td>
<td>Breaking down silos within the district</td>
<td>Breaking down silos within the district</td>
<td>Existence of silos in the district, which make it difficult to work together on technology planning</td>
<td>Lack of vision/support from senior district leadership</td>
<td>Existence of silos in the district, which make it difficult to work together on technology planning</td>
</tr>
</tbody>
</table>

* This answer option was re-worded from 2013/2014, “Changing the culture of teaching & learning to a student-centered environment with ubiquitous computing (1:1 student to device or better),” into two options in 2015—“Lack of support for creating personalized learning environments” and “A technology-adverse culture.”
About Staffing

A clear majority (66%) of respondents reported that the size of their staff has stayed the same as compared to the prior year. A fifth (20%) reported an increase and the remainder (14%) reported a decrease. This reflects 3% shifts in both the “increased” and the “stayed the same” rates from the prior year. This year “stayed the same” increased from 63% and “increased” decreased from 23%.

Compared to last year, has the size of your IT staff:

While staffing continues to lag behind department needs, the “staffing is matched to needs” response rates increased between 1-3% from the prior year for every IT function except one, which moved 1% in the other direction. However, the rates in this category remain dismal. Overall, only 13% of IT Leaders report staffing is matched to needs. With 18% each, “Install IT applications” and “Maintain IT applications” had the highest response rate in the “matched to needs” category. In the category on the other side of the spectrum—“can’t get to critical areas”—modest improvements have also been made from the prior year, with response rates going down, without exception, for every IT function listed. The positive shift in these two categories has resulted in increases across the board in the third category—“staffing is adequate but we are very busy.” Six of the eight categories have majority percentages, twice as many as in the prior year. Although the response rates have changed, the three IT functions that are least-supported are the same as the prior year—integrate technology into the classroom, implement new technology, and plan for technology.
Overall, do you feel that you have enough IT staff to:

<table>
<thead>
<tr>
<th>Task Description</th>
<th>We are stretched too thin and can't get to critical areas</th>
<th>Staffing is adequate but we are very busy</th>
<th>Staffing is matched to needs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectively support the needs of the district/school</td>
<td>30%</td>
<td>60%</td>
<td>11%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meet your department's yearly objectives</td>
<td>26%</td>
<td>61%</td>
<td>12%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain network systems adequately</td>
<td>22%</td>
<td>62%</td>
<td>16%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Install IT applications</td>
<td>18%</td>
<td>64%</td>
<td>18%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintain IT applications</td>
<td>20%</td>
<td>62%</td>
<td>18%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plan for new technology</td>
<td>37%</td>
<td>51%</td>
<td>12%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implement new technology</td>
<td>43%</td>
<td>47%</td>
<td>9%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrate technology into the classroom</td>
<td>46%</td>
<td>44%</td>
<td>10%</td>
</tr>
<tr>
<td>* Row %</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Row total does not equal 100% due to rounding of the nearest whole percent.
A majority (52%) of respondents indicate that their IT departments spend the majority of their time solving technical issues as opposed to working in proactive mode. While this is a disappointing statistic it is an improvement over the prior year, when the response rate was 61%. This improvement aligns with the year-over-year improvements seen in adequate staffing evaluations.

What percent of your department’s workload is spent reacting to technical problems (as opposed to working in a proactive mode)?

![Pie chart showing workload distribution]

**About Professional Development**

Virtually every profession in the 21st Century benefits from on-going Professional Development (PD). For IT Leaders who must keep pace not only with changing technology but also with an increasing array of issues—from privacy regulations to ransomware attacks—PD is essential. The fact that the vast majority of IT Leaders (67%) are very or somewhat familiar with the Certified Education Technology Leadership (CETL) credential bodes well for districts. Only 8% of respondents rated the CETL as “not important.” Unfortunately for emerging leaders—those with five years or less experience in K-12 educational technology—less than a quarter (22%) have access to funding for any type of credential. The percentage (22%) is equally small for funding for a consultant or training. While 29% of respondents indicated there is funding support for

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9 NOTE: Four years of education technology experience is one of the requirements for CETL candidates.
emerging leaders to access in-person training at conferences, only 14% indicated that there is funding for those emerging leaders to become members of the associations that hold the conferences. The largest amount (30%) of support for emerging leaders comes in the form of funding for online courses. The majority of respondents (53%) indicated that no additional support is provided for their emerging leaders.
When asked to identify their preferred method for online PD, the majority (51%) selected "self-paced." With 31%, "moderated" was the distant second choice followed by "no preference" with 15%. The remaining 3% selected "don't know." While there is general agreement that completion rates for self-paced online courses is low (generally cited between 5%-15%), those that do complete courses are cited as having "the ability to cut through the noise... and find the content and opportunities to address and meet their goals." This is a skill possessed by every successful IT Leader.

When taking online courses, which method do you prefer?

While the time needed for PD was not addressed in any question, a few respondents in the open feedback area of the survey highlight the issue:

"I am a technology staff of one. That puts a constraint on extra training because there is no one to do the day-to-day tasks."

"I wish there were more hours in the working day in which I could participate more in the functions of CoSN. I feel it is a very worthwhile community but I simply cannot afford to take off very much due to the increase of workload while away."

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In Closing

Summary

Since the first annual CoSN IT Leadership Survey five years ago, there have been many shifts in educational technology—affordable device options, access to open educational resources, and the availability of online professional development. CoSN, currently celebrating its 25th anniversary, no longer needs to ask survey respondents if they are “familiar with CoSN.” However, not all changes are positive, and solving one problem can create another. As districts have transitioned to digital environments, concerns have increased regarding data privacy and data security. A low ranking priority in the early survey results, Cyber Security is now one of the top concerns for IT Leaders. IT Leaders also contend with persistent issues that are unrelated to their digital ecosystem. Five years of survey results show that budgets and department silos consistently pose problems for them. Broader issues, such as racial diversity, and lower priorities, like revising acceptable use policies, still require attention. Over the years, the role of the IT Leader has continued to be vast in scope and complex in nature. And over the years, CoSN has been here to support them.

About CoSN

CoSN (the Consortium for School Networking) is the premier professional association for district technology leaders. For nearly quarter of a century, CoSN has provided leaders with the management, community building, and advocacy tools they need to succeed. Today, CoSN represents over 10 million students in school districts nationwide and continues to grow as a powerful and influential voice in K-12 education.

CoSN Core Beliefs:

- The primary challenge we face in using technology effectively is human.
- Technology is a critical tool to personalize learning and overcome barriers of time and space for each learner.
- Equitable and ubiquitous access to technology is a necessity.
- The effective use of technology for the systemic transformation of learning cannot occur without strong organization, leadership, and vision.
- Technological fluency allows our children to be prepared for the world of today and tomorrow.
CoSN Resources

CoSN's Certified Education Technology Leader (CETL)™ Certification program – www.cosn.org/certification

Leadership & Vision

- Leadership for Mobile Learning – www.cosn.org/MobileLead
- The Empowered Superintendent - http://www.cosn.org/superintendents

Understanding the Educational Environment

- Teaming for Transformation – www.cosn.org/OnlineCoP
- CoSN's Annual E-rate and Broadband Survey – www.cosn.org/ErateSurvey

Managing Technology & Support Resources

- Smart Education Networks by Design (SEND) – www.cosn.org/SmartEdNetworks
- Protecting Privacy in Connected Learning - http://www.cosn.org/focus-areas/leadership-vision/protecting-privacy
- Raising the BAR: Becoming Assessment Ready – http://www.cosn.org/assessment
- Data-Driven Decision Making – www.cosn.org/3dm
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SchoolDude provides a full suite of solutions for educational institutions to streamline their operations. Our technology management solutions improve the efficiency of the IT help desk and provide visibility and transparency to successfully manage the technology infrastructure, IT asset hardware, operating systems, software, and mobile devices. SchoolDude also helps schools manage maintenance, inventory, future capital needs, after-hours events and cost recovery efforts, safety and security, and utility usage and energy conservation. SchoolDude's full suite of cloud-based software provides institutions with a lower cost of ownership, scalable solutions, unlimited support, and benchmarks for success based upon data from thousands of schools, districts, and higher education institutions.

Paula Maylahn, an education industry consultant with over 30 years’ experience across the K-20 spectrum, prepared this report. Paula is a contributing author on two books, The Experts’ Guide to the K-12 Market and The Experts’ Guide to the Postsecondary Market, and has penned the “Enterprise Systems” chapter of the 2016 and 2015 editions of the State of the K-12 Market publication. Paula is a member of CoSN's Standards and Technical Committee, a former board member of the Education Division of the Software & Information Industry Association, and an Executive Council member of the PreK-12 Learning Group of the Association of American Publishers.