Innovative IT strategies to boost K-12 e-learning

Meet evolving school district challenges with the right network infrastructure.

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Technology is an ever-changing tool that can be challenging to keep up with, but is also proven to help achieve goals, provide tailored experiences and alleviate the burden on IT teams.

Innovation isn't possible without a modern network infrastructure that maximizes the value of IT, reduces operating costs and supports secure, high-speed connectivity. However, modernizing IT infrastructure brings many challenges.

In forward-thinking school districts, leaders are using technology to streamline operations and help prevent cybersecurity breaches. Teachers are using it to personalize instruction and empower students to take charge of their own learning.

This white paper takes a closer look at why it's important for K-12 school systems to modernize their IT infrastructure and what that entails. It also examines the biggest challenges to network modernization and how a managed approach can solve these challenges.

Why modernize

The world today's students will face when they graduate is very different from the one just a decade ago. McKinsey & Company reports that by 2030, up to 30% of the current hours worked could be automated — a trend that is being accelerated by generative AI.[1]

To prepare for the jobs of the future, students must learn essential technology skills, as well as communication, collaboration, creativity and critical thinking. The "sage on the stage" model of instruction isn't sufficient for helping students learn these foundational skills; instead, students need hands-on, technology-driven learning environments in which they take responsibility for their own learning by creating, collaborating, constructing and sharing new knowledge.

School systems should be prepared to support new learning environments in which students have a choice of attending live instruction either in person or online.

For decades, visionary K-12 leaders have been touting a future of "anytime, anywhere" learning in which students can learn from wherever they are, aided by powerful technologies. In shifting to remote learning, educators have found that some students learned more effectively with this model — and school systems should be prepared to support new learning environments in which students have a choice of attending live instruction either in person or online.

According to the Consortium for School Networking (CoSN), 35% of school systems now have a generative AI initiative.[2] In a growing number of schools, adaptive learning software helps personalize education by targeting the instruction to students' precise learning needs, while augmented and virtual reality tools enhance students' understanding of key topics by bringing abstract concepts to life and transporting students to places they could never visit physically. These emerging technologies will continue to play a greater role in K-12 instruction moving forward.

A modern IT infrastructure is essential for supporting K-12 digital transformation. Outdated IT systems make it hard for students to connect with modern technologies and for software to integrate seamlessly throughout the district.

Besides enhancing K-12 teaching and learning, IT modernization is critical for streamlining operations and reducing expenses. For example, smart building infrastructure can help school systems save on energy costs — and automation can reduce labor costs. These measures can play a significant role in reducing the budgetary pressures schools typically face year over year.

IT modernization is also an important cost-cutting strategy in its own right. Legacy IT systems are not only expensive and hard to maintain; they're costing school systems in other ways as well. For instance, unsupported systems that can't be properly secured expose schools to the risk of cyberattacks — and the average cost of a data breach in K-12 education is $2.18 million.[3]

Key elements of IT modernization

When modernizing IT systems, K-12 leaders should consider the full range of IT infrastructure necessary to keep pace with student and staff expectations and support future innovations. This includes:

Dependable connections. Modern teaching and learning initiatives require exceptional network performance and reliability. School systems must plan for uninterrupted internet access for essential applications. Redundant fiber connections are important safeguards for failsafe connectivity.

The network services that schools deploy must be able to scale easily to accommodate future growth. With live video and other bandwidth-intensive applications becoming more common, network technicians should be able to optimize and prioritize the fast-growing volume of traffic. IT teams need platforms that make it simple to manage updates and configuration settings for routers across the district.

Security solutions. Legacy firewalls are no longer sufficient. According to one recent report, 80% of school IT professionals say their schools were targeted by a ransomware attack in 2023 — up from 56% the year before.[4] Modern network architecture requires flexible security solutions that can meet the

unique risk profile of your school system. A trusted solutions provider can create the right combination of on-site hardware, unified threat management (UTM) and DDoS protection that meets your needs.

Cloud connectivity. School districts have steadily moved applications to the cloud for simpler remote access, greater interoperability and more efficient workflows across school locations. School systems can increase the speed and reliability of cloud-based applications with a high-performing and private connection between their organization and cloud service providers, bypassing the public internet for superior performance and security.

Modern networking. New turnkey solutions for routing, switching and other network architecture make deployment and configuration of network services fast, simple and easy to manage from the cloud using software-defined networking and other technologies.

Ubiquitous WiFi. Students and staff alike rely on seamless wireless access to keep them connected throughout your campus. To support this requirement, your WiFi infrastructure should connect users in the most efficient way possible, reducing congestion and blind spots and optimizing network performance. Modern WiFi infrastructure can self-optimize performance in high-density locations, balance the load evenly among multiple access points and ensure uninterrupted service with seamless failover capabilities if a controller or access point should fail.
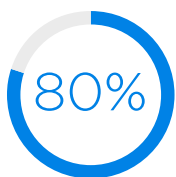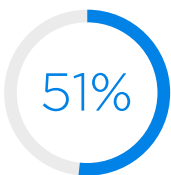
Challenges to overcome

Updating legacy IT systems can be difficult. Here are some of the main pitfalls that organizations encounter when they try to modernize their IT infrastructure.

Staff capacity. K-12 technology departments already grapple with IT staffing challenges. As a result, many IT employees are stretched to their limits just maintaining and supporting their existing technology systems. According to CoSN, more than half of districts (51%) struggle to integrate new technologies into the classroom because their IT departments are stretched thin.[6]

Switching out legacy systems for new technologies involves several hours of installation, testing, configuration and training. These tasks create an additional workload that simply isn't realistic for many school systems to take on for themselves. What's more, K-12 IT departments might lack the skills and expertise necessary to complete these tasks.

Budgets. Modernizing IT infrastructure has traditionally required a large capital outlay. Yet, K-12 IT leaders continually identify budget constraints and lack of resources as their top challenge to technology implementation.[7] With K-12 budgets already squeezed, making a significant upfront investment in new technologies might not be possible for many districts.

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How managed services can help

Managed IT services address these key modernization challenges. With managed services, K-12 schools no longer have to purchase and maintain their own IT infrastructure. Instead, they can choose IT solutions that are fully owned, installed and managed by a trusted service provider.

Managed services directly solve the problem of staff capacity. By offloading hardware installation, system configuration, maintenance, updates and network administration to an experienced partner, K-12 IT teams don't have to worry about whether they have the expertise on staff to handle these tasks and they can focus their time and effort on supporting students and teachers more effectively.

Managed services also make budgeting for IT simpler. Instead of incurring a large up-front capital expense for new technology, school systems pay a fixed monthly rate for managed services. This ongoing charge includes all maintenance and support, so there are no costly surprises if any equipment should malfunction.

Here are three additional benefits of choosing a managed approach to modernizing IT infrastructure:

51%

of school districts struggle to integrate classroom technologies because their IT departments are stretched too thin.[8]

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Cybersecurity monitoring is one of the top IT functions that EdTech leaders outsource.[9]

Flexibility. When you buy your own equipment, you're investing in a specific network infrastructure with a fixed capacity. If your needs change faster than you anticipated, or if you underestimated the demands on your network, you're stuck until you have the additional capital needed for enhancements. In contrast, a managed solution lets you easily add more capacity as necessary. It also gives you the assurance that as technology evolves, you'll have access to the latest innovations.

Reliability. When you own your IT infrastructure, you're responsible for all maintenance and repairs. How might this affect the reliability of IT services? With a managed solution, you have the peace of mind that comes from having service-level agreements (SLAs) in place guaranteeing network uptime and a fast resolution to any problems that occur.

Security. Cybersecurity is a top concern of EdTech leaders.[10] When you purchase and install your own network infrastructure, you're also accountable for implementing patches and upgrades to keep these systems secure. With managed services, security patches and firmware changes are installed for you to keep your systems up to date.

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A trusted provider is critical

When looking for a partner, your choice of service provider matters. You want a company that not only offers innovative technology but is fully invested in your success. The right partner can help you at every step in your project, ensuring the success of your IT modernization initiative.

Spectrum Enterprise® empowers school systems to transform the student experience with networking, voice, TV and managed services solutions. Our dedicated education IT experts serve hundreds of K-12 school systems nationwide with a network engineered for exceptional performance, end-to-end accountability and 100%, 24/7/365 U.S.-based support.

Discover how Spectrum Enterprise can help you innovate your IT to boost K-12 e-learning.

Learn more

1. "A new future of work: The race to deploy AI and raise skills in Europe and beyond," McKinsey & Co., May 21, 2024.
2. "2024 State of Edtech District Leadership Survey," Consortium for School Networking (CoSN), 2024.
3. Roger Riddell, "Nearly half of K-12 providers hit by ransomware paid to have data restored," K-12 Dive, August 7, 2023.
4. Lauraine Langreo, "Schools Are a Top Target of Ransomware Attacks, and It's Getting Worse," Education Week, August 17, 2023.
5. Ibid.
6. 'State of EdTech," CoSN, 2024.
7. Ibid.
8. Ibid.
9. Ibid.
10. Ibid.

About Spectrum Enterprise

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