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## Laying the groundwork for tomorrow's digital schools

Primary and Secondary Education Networking Guide

Brochure

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Alcatel·Lucent   
Enterprise

# A network foundation for digital learning

Advanced technology in elementary and secondary schools creates new ways for students to learn, and changes how teachers plan and deliver lessons. It also provides the digital tools for school administrators to simplify operations, better comply with regulations, and deliver a safer environment for students and teachers.

Is your school network ready for the digital education innovations of the future?

This guide provides information and strategies for how school administrators and IT teams can design efficient and cost-effective IT networks that enable dynamic digital learning experiences. This secure, high-performance platform supports administrative innovation for today and into the future.

# Changing realities for students and learning

Today, most students in primary and secondary schools have never experienced life without the internet or smartphones, and this reality is reflected in the classroom. Digital learning processes and experiences are enhancing traditional textbooks and upending conventional classroom teaching methods. Online lessons, testing and assessments are now part of most curricula. Laptops, tablets and smartphones have become primary instruction tools for students, who are downloading an increasing number of online apps to enhance their digital learning experience.

The underlying IT network that supports these innovative educational advances must be a cost-effective investment today, while also extending value into the future as a platform for new technologies entering the educational space.

These include:

- The Internet of Things (IoT)
- Augmented and virtual reality
- Learning experiences in coding
- Makerspaces
- Robotics and other STEM initiatives (science, technology, engineering and mathematics)

In today's educational facilities, the network must address the needs of school administration, staff and IT departments. For these audiences, data privacy plus network and device security are of primary importance. Other considerations include:

- Deployment and procurement costs
- Ease of device onboarding
- Network speed and coverage
- Training and operational issues

To support these diverse users requires pervasive wireless connectivity and a robust, secure wired Local Area Network. Wi-Fi is the dominant wireless networking standard as it allows users to be located virtually anywhere and to employ any device. However, as use of mobile devices increases, existing networks can easily be overwhelmed with increasing bandwidth demands.



Preparing your school network for tomorrow's digital advances in learning, teaching and administration requires a thoughtful approach and a comprehensive strategy to ensure investments are future proof and ensure optimal interoperability.

This document provides eight tangible recommendations for IT departments in primary and secondary schools to use in designing efficient and cost effective school networks. Building a school network infrastructure that addresses these requirements will enable more collaborative digital learning experiences, support more creative teaching methodologies, and empower administrators with the latest monitoring and management tools.

# Market trends

Primary and secondary schools are undergoing a digital transformation. Technology is the driving force for enabling more personalized and dynamic learning experiences for primary and secondary students. These advances are impacting the classroom in a variety of ways.



- **Digital and immersive textbooks.** Today, digital textbooks have displaced paper textbooks in many primary and secondary classrooms. They have advantages over physical books, including instant availability, ease of updating, and the ability to store many e-books on a single device. However, digital textbooks are in turn being displaced by immersive textbooks that employ interactive technologies, advanced user-experience design, and gamification to enhance instruction, make learning more engaging, and address differing learning styles.
- **Game-based learning.** Game-based learning blends video game technology and online learning tools to make teaching and training more engaging. These technologies are designed to take advantage of virtual and augmented reality to increase student engagement and content retention.
- **Blended learning and the flipped classroom.** The blended learning model combines classroom and online learning to give students more control over the time, pace and place of their instruction. Blended learning is ceding importance to the flipped classroom model in which students watch video lectures on their own and then attend class for discussions and collaborative activities.
- **1:1 student to device ratios.** Many educational institutions have made the commitment to a 1:1 ratio between students and devices. This is now shifting to a one-to-many paradigm where different tasks require different devices, and students need access to laptops, tablets and smartphones depending on the project.
- **Digital testing.** Online testing and assessment technology helps teachers and administrators more accurately and meaningfully measure student achievement. Digital testing can provide detailed insights into the success of learning methods and offer detailed metrics and analysis for developing remediation solutions. These platforms provide visibility into how individual students are interacting with online content, enabling ongoing monitoring of individual learning.
- **Predictive assessment capabilities.** At the cutting edge of assessment technologies is the development of predictive assessment capabilities that can track student proficiency without actual testing. By monitoring how individual students are interacting with educational content and relating that data to past testing scores, advanced analytics platforms can make predictions about the progression of students without having to submit them to constant testing. The same platform can also provide teachers with targeted recommendations and relevant lessons to address the needs of individual students.
- **Bring Your Own Device.** With the Bring Your Own Device (BYOD) movement students and teachers bring their private devices to the network. This may be a boon in districts that can't afford to equip classrooms with a variety of devices, but implementing BYOD securely and effectively can present challenges. Many conventional IT networks weren't designed to support a diversity of devices and protocols, and the school's underlying infrastructure must be sound enough to support multiple disparate devices and networks while guaranteeing interoperability and security.