Transforming Education, Transforming Lives: A Path Toward Next Generation Learning

The Cisco Connected Insight Series. Thought-provoking discussions on common issues facing public sector agencies today in government, education, healthcare, and safety and security.
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Contents

Executive Summary......................................................................................................................... 2
Education for Innovation.................................................................................................................. 2
Challenges to Education Leaders.................................................................................................. 3
Education Systems to Education 3.0 ............................................................................................. 4
Education with a Purpose............................................................................................................... 5
Putting Schools at the Heart of Smart+Connected Communities.............................................. 5
Connected Learning Environments............................................................................................... 6
  Connected Learning Roadmap......................................................................................................... 7
  New York City iSchool .................................................................................................................. 8
  Jefferson Parish Schools............................................................................................................... 8
Cisco Solutions for Education........................................................................................................ 8
  Cisco Unified Communications...................................................................................................... 8
  Connected Real Estate.................................................................................................................. 9
  Safe and Secure Learning............................................................................................................. 9
  Cisco Self-Defending Network...................................................................................................... 9
  Physical Safety............................................................................................................................. 9
  Next-Generation Learning........................................................................................................... 10
  Digital Media System.................................................................................................................. 10
  Cisco Mobility........................................................................................................................... 10
  Cisco WebEx Collaboration........................................................................................................... 10
  Cisco TelePresence Technology.................................................................................................. 10
Summary.......................................................................................................................................... 11
Acknowledgements...................................................................................................................... 11
Executive Summary

Education is at the heart of human progress: educating students, driving innovation, and promoting social equity. The very best educational systems prepare people to be successful, productive, and engaged members of society. These systems provide appropriate knowledge, skills, and experiences, enabling students to obtain jobs that promote social equity and economic growth.

Today, education is undergoing change at an unprecedented rate. To prepare for the jobs of tomorrow, today’s students need new skills, taught in new ways. Teachers need to develop new material and deliver it differently. Parents expect greater involvement, and administrators need to constantly do more with less.

Cisco can help educators overcome these challenges. Our solutions drive cost savings, expand access to quality education, support learning transformation, improve student engagement, prepare the workforce of the future, and place schools, colleges, and universities at the heart of smart and connected communities.

Education for Innovation

Students and their parents know that they can no longer expect a job for life. Globalization and technological change mean that tomorrow’s workforce needs to have new skills, and be prepared to learn throughout life. This means learning in new ways: solving real problems, using multiple disciplines, and drawing on the very best content that the world has to offer. Countries that fail to invest in education and their students (or invest in the wrong areas) will be left behind, as jobs and the prosperous communities that go with them transfer rapidly across the globe.

Education is a complex process. It demands the very best from parents, teachers, students, and administrators. But all can benefit from building on the right foundations. A fast, secure, reliable, and integrated network provides that platform. Collaboration tools and advanced video support embedded into the network can transform learning. Teachers can work together to develop new material and learn from each other. Students no longer face the choice of either working flexibly at home or in school in teams: they can do both. All can benefit from virtual experiences, places, and events never before possible.

“The purpose of education is to prepare people to be successful, productive, and engaged members of society, and in so doing, shape sustainable societies, enhance economies, and improve lives.”
Figure 1: The performance of traditional teaching vs. online or blended delivery. Until now, the experience of technology has lagged behind traditional face-to-face education. With recent advances in video, collaboration and mobility, blended learning experiences are set to surpass traditional ones.

Technology plays a critical role in this innovation. When technology is implemented and integrated appropriately, students have an opportunity to learn about that technology by using it as a part of their learning. For example, students might build an online portfolio, develop a spreadsheet to track the results of a science program, and do Internet searches on specific research topics. Using technology also helps to improve efficiency. Online attendance, mass notification systems, and streaming video applications all make it easier to administer the business of education and the art and science of learning. Finally, technology helps to improve equity. Students from across the globe can use technology to interact with resources and information, outside experts, and one another, regardless of physical location or demographic status.

Challenges to Education Leaders

Every country must prepare students to become active and productive citizens; however, different countries face different challenges in achieving this goal. And some countries face a range of challenges within their own borders.

In less-developed countries, such as India, there are not enough schools or teachers to deliver education to all children. This challenge mirrors those faced in rural areas of the United States or Europe, where vast distances prevent the best teachers from being everywhere at once. In emerging countries, such as Brazil and Russia, challenges of accountability, cost, and quality instruction are daunting. While they have the schools, they are lacking in these areas. Developed...
nations, such as the United States, Canada, and the United Kingdom, have largely addressed the issues of performance metrics, capabilities, and workforce provision, but they are not doing these well enough, and they are still not effectively able to prepare students with skills required to succeed in 21st century careers—which may change many times over a lifetime.

Regardless of the geographic location, Cisco can help with a range of global solutions that meet the most pressing imperatives of educational leaders worldwide.

**Education Systems to Education 3.0**

Closing the global education gap requires us to think about education in a new way. We call this Education 3.0. It takes a holistic approach, learning from the failure of piece-meal approaches in the past. 21st skills cannot be implemented alone, but only in lockstep with new pedagogy and assessment. This—the core of Education 3.0—is supported by new systems that take an integrated approach to technology, governance, and leadership.

In the classroom, Education 3.0 means a rich, collaborative learning experience focused around authentic, project-based learning. Students and teachers should have access to materials, formative assessments and each other “anytime and anywhere,” and be able to draw in experts from around their system or around the world at the touch of a button.

Today, Cisco is working with some of the world’s most innovative school systems to make Education 3.0 a reality, bringing advanced student learning and teacher professional development together with the efficiency benefits of a next-generation network.

**Figure 2: Education 3.0—A Paradigm Shift**

“Fully arriving at Education 3.0 requires collaboration. Collaboration as a form of virtual communications is a cornerstone of educational transformation: faculty members collaborating with each other, with students, and with outside experts, and collaboration between students within their schools and campuses and across traditional educational boundaries.”
Education with a Purpose

Cisco understands the purpose and the mission of education and uses innovative technology to connect communities and people, thereby helping people improve their lives. We call this the Human Network. When technology meets humanity on the human network, the way we work changes and the way we live changes.

This impact, this cross-communication, enhances cultural sensitivity and helps us better understand differences in views, perceptions, and potentially solutions. This is the Human Network Effect. A company that helped build the Internet, Cisco has delivered networks and networked services that help businesses, governments, educational and healthcare institutions, and individuals connect with information and each other in new and innovative ways. The Human Network links the world’s regions, transforming communities, businesses, and lives everywhere.

Cisco is creating the Human Network. Today, Cisco touches approximately 67 percent of the world’s population, or 4.6 billion people. Our public-private partnerships have made significant, positive strides in education, socioeconomic development, and crisis relief. We offer experience, technology, people, and reach to help public sector leaders use the power of the network to address the very real challenges faced by educators today.

Putting Schools at the Heart of Smart+Connected Communities

Just as the Human Network connects people and regions, it also connects communities. We believe the same principles of openness that made the Internet a thriving ecosystem for the past 20 years can be applied to help schools, colleges, and universities thrive as well. Through our global Smart+Connected Communities initiative, educational institutions can use the network, as well as critical technologies and solutions, to transform education. The Smart+Connected Communities initiative employs next-level infrastructure, technology, services, and platforms to create intelligent, enduring solutions for education. Cisco Smart+Connected solutions are based on technologies that enable educational organizations to meet these requirements. These technologies include:

- **Collaboration:** Solutions that facilitate inclusiveness and encourage collaborative decision-making among students, faculty, staff, citizens, and public/private partners and help effectively harness the efforts of talented people to solve problems and create value.
• **Virtualization**: Solutions that enable resources such as information, workspaces, and expertise to be shared and dynamically delivered to applications and individuals on demand. Today, virtualization is occurring with university data centers, IT-as-a-Service solutions, and specialized school expertise.

• **Borderless Networks**: As the interactions of students, faculty, staff, outside experts, community members, and other resources extend beyond physical classrooms and school buildings, a “borderless network” provides security, flexibility, and reach that enables institutions to implement their learning model at any time, using a wide range of devices.

**Connected Learning Environments**

As part of the Smart+Connected Communities initiative, Cisco helps schools, colleges, and universities shift their focus toward Education 3.0 by delivering Connected Learning environments that support robust collaboration, relevant learning experiences and learning that takes place beyond the walls of the traditional school or campus.

Educational institutions increasingly report the need for problem-based learning. According to *The Horizon Report: 2009 K-12 Edition*, “Learning that incorporates real life experience is not occurring enough and is undervalued when it does take place.”

Today’s complex and multidisciplinary issues can be used to place students at the center of problems such as climate change, the genetic basis of disease and other problems. Students need math, science, ethics, and history to solve problems, and they need to be connected with a larger community of learners.

Cisco Connected Learning environments include solutions for improved administrative and operational efficiency, enhanced safety and security, and effective next-generation learning. They support educational experiences that:

• Aim at solving real-world problems

• Provide learning in physical or virtual groups and teams as opposed to sitting in a traditional lecture-based classroom, providing students with a key 21st-century skill that will help them be effective and thrive in the workplace

• Support learning experiences that can occur almost anywhere and at any time

• Capable of sustaining learning journeys that support lifelong learning, as people change jobs and careers multiple times in their lives, thriving on technology changes and new skillsets required for job changes
Connected Learning Roadmap

The Cisco Connected Learning Roadmap can help schools, colleges, and universities thrive by saving money today, investing in technologies and solutions to prepare for the future, and using the network as a platform to create Connected Learning environments. This roadmap includes innovative ways to:

1. **Save**: Increase savings by converging multiple networks onto one robust IP network, consolidating and virtualizing server resources and improving energy savings.

2. **Invest**: Invest in solutions that will make a long-term, sustainable difference by further improving efficiencies, creating next-generation learning environments and enhancing safety and security.

3. **Use the network as a platform**: Ensure that you have the right infrastructure and network architectures in place to support advanced technologies that help you expand access to education and prepare the next-generation workforce.

4. **Maximize funding**: Take advantage of public and private funding streams, as well as attractive offers from Cisco, including leasing options from Cisco Capital, for developed and developing nations to support your investment in education.

5. **Partner with Cisco**: Select Cisco for our understanding of, and commitment to, education as evidenced by our Cisco Networking Academy® program, global education initiatives, research programs and investments in education.

**Figure 3: Connected Learning Roadmap**

<table>
<thead>
<tr>
<th>Save</th>
<th>Invest</th>
<th>By Using the Network as a Platform</th>
<th>Maximize Funding</th>
<th>Partner With Cisco</th>
</tr>
</thead>
<tbody>
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<td>Invest in solutions that will make a difference in the long run</td>
<td>Ensure that you have the infrastructure and network architectures to support advanced technologies</td>
<td>Take advantage of public and private funding streams</td>
<td>Select Cisco for our understanding of, and commitment to, education</td>
</tr>
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</table>
New York City iSchool

To better prepare students for college and careers in the 21st-century global economy, the New York City Department of Education (DoE) is incorporating technology-based teaching methods into everyday learning. By implementing a Cisco unified wireless network, a systemwide mobile computing environment and multimedia solutions, the DoE enabled improved student and faculty collaboration and research as well as easier, faster communication between teachers and parents. For example, video conferencing allows students to learn from college professors, authors, top scientists, and business leaders around the globe. And a customized virtual desktop program enables students to access their work on any computer, with online coursework complementing classroom learning.

Jefferson Parish Schools

After Hurricane Katrina severely damaged the U.S. Gulf region in 2005, the affected areas have worked hard to recover and move forward. With the help of Cisco and others participating in the Cisco 21st Century Schools (21S) program, the Jefferson Parish Public Schools system in Louisiana has gone beyond simply restoring its schools to dramatically raising education quality. Cisco helped lead a coalition of public, private, and nonprofit organizations, including IBM, Promethean, Singlewire, One Economy, and Digital Opportunity Trust. Together they implemented a Cisco Connected Learning model to help rebuild and connect the schools to unite students, parents and the community, thereby enabling education transformation.

Students in Jefferson Parrish are developing 21st century skills supported by the network. Interestingly, scores have gone up against traditional tests as well. By studying in new ways, students are increasing their overall comprehension and performing better on all exams. In 2007–2008, scores increased across all grades and subjects by approximately 2.5 percent.

Cisco Solutions for Education

Cisco Unified Communications

This solution is a powerful, IP-based communications system that uses your existing data network to provide new, advanced communication services such as voice, video, and web collaboration to help ensure that your school, college, or university is communicating in the most effective and efficient manner possible. IP-based communication services help improve campuswide or districtwide communications, safety, and productivity, all while offering significant cost savings.
Connected Real Estate
Cisco Connected Real Estate consists of a highly secure, resilient, high-speed network backbone running through the core of all buildings to deliver data, voice, mobility, security and other services. Equipped with this versatile network foundation, you can create connected learning environments in which facilities, technologies and services work together to promote administrative and operational efficiency, increase safety and security, and improve energy management.

Safe and Secure Learning
Solutions for safety and security protect your network along with the actual campus environments of local schools, colleges, and universities. Cisco Secure Education is designed to improve communications for schools, colleges, and universities. By using the Cisco Unified Communications infrastructure and proven network designs, along with leading industry applications from partners such as Singlewire and SchoolMessenger, Secure Education provides a dynamic collaboration platform for better efficiency, safety, teaching, and learning. Importantly, this solution enables real-time communication between safety and security systems, networked data and first responders.

Cisco Self-Defending Network
Cisco Self-Defending Network provides identity management, network admission control, firewall, VPNs, intrusion prevention systems, Cisco Security Agent, and email and web security capabilities to protect your network.

Physical Safety
Cisco Video Surveillance Manager with IP cameras and physical security access control helps safeguard assets and people.
Next-Generation Learning
Solutions for Next-Generation Learning help schools, colleges and universities create a connected and collaborative experience for students by using technology to enhance the educational learning environment and improve learning outcomes.

Digital Media System
Cisco Digital Media System is a comprehensive suite of digital signage, desktop video and Enterprise TV applications that can be centrally managed and operated. Cisco Digital Media System gives you the flexibility to deliver digital assets in different ways, including digital signage, desktop video and Enterprise TV, without having to purchase additional management software, providing you more value from your digital assets at a lower total cost of ownership.

Cisco Mobility
Cisco Mobility and Wireless Solutions give students and staff the freedom to be anywhere on campus and still perform tasks they would normally do on a classroom’s wired network. The solutions enable new network connections to PCs, laptops, PDAs, printers, video cameras, videoconferencing units, IP phones and other devices, making school resources more widely available and improving collaboration among students, faculty, parents and administrators.

Cisco WebEx Collaboration
Cisco® WebEx® solutions expand the reach of courses to remote learners, provide rich interactive environments for online classes, and enable collaborative online projects and conversations between faculty and students.

Cisco TelePresence Technology
Cisco TelePresence® incorporates high-quality spatial audio and life-like video at low latency in a specially tuned, high-definition environment. The immersive experience is nearly as good as actually being in the same room with the other participants. Cisco TelePresence systems provide compelling, innovative, and easy-to-use collaboration applications, a highly secure, reliable architecture, and a low total cost of ownership.
Summary

Today’s economic and social realities require changes to the ways education is delivered, and today’s educators must be able to use technology to facilitate learning and help students excel. The Cisco Smart+Connected initiative and Cisco Connected Learning solutions are helping many schools and other educational institutions meet this objective by using the network as a platform for next-generation communication, collaboration, and service delivery.

For more information about the Cisco Smart+Connected initiative and other education solutions, visit www.cisco.com/go/education.

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