SAMSUNG

Making the Grade with Educational Technology

Digital learning environments transform both learning and teaching

Table of contents

Introduction

"Today's K-12 students were born in an 'always-on' era of digital devices and digital content, and we needed to adjust our education delivery model."[1] That's the conclusion of the CTO of one school district in the southern United States—and he's right. Digital learning environments, where technology inspires and engages students in the classroom and throughout campus, represent the future of learning and teaching. And they also pose a tremendous challenge.

Part of that challenge is embracing the way kids use technology in their daily lives: Today, 38% of children under two have used a mobile device, and 75% under eight have one of their own.[2] Rather than require these digital natives to power down their devices when they walk into the classroom, schools are instead asking kids to power them up, building on their interest in technology and leveraging it to create meaningful learning experiences that connect students to each other and to the wider world. And administrators and teachers are using digital tools to manage the classroom, assess student progress and administer newly mandated online state testing.

The potential of technology to transform learning is particularly striking in the context of its limited role just a few years ago. As recently as 2000, computers were largely used only to teach computer skills. Each classroom had three or four desktops for shared use, and skills were taught in isolation, in computer labs. In the decade that followed, technology began to enhance traditional learning, often supplementing textbooks. Today, educators are using technology to transform learning and teaching, creating powerful 1:1 computing environments in which every child has a device, equipped with digital curriculum that allows for self-directed learning. Far from replacing teachers, though, this technology allows educators to explore new models for learning and rethink collaboration and communication in the classroom. By 2030, the classroom will have shifted again to a student-centric model; technology will be fully integrated into each student's experience, and students and teachers will use devices to learn together.[3]

"Today's K-12 students were born in an 'always-on' era of digital devices and digital content, and we needed to adjust our education delivery model."

- Tom Cranmer, CTO, Richland Two School District, Columbia, SC

CHAPTER 1

Top Instructional Technology Priorities

Realizing the transformative potential of technology for education involves a great deal more than simply purchasing a fleet of laptops and making them available in the classroom. In conducting its Digital School Districts Survey for 2015, the Center for Digital Education identified the top priorities of K-12 administrators who are making the shift to a digital environment. These priorities highlight the key elements that schools will need to bring together for a successful transition.[4, 5]

1 Personalized learning

Even within a single classroom, individual students can have a wide range of backgrounds, learning styles and comprehension levels. A one-size-fits-all curriculum directed at the entire class—or at the "average" student—can leave exceptional students bored and struggling students falling further and further behind. Digital devices equipped with personalized learning apps enable teachers to tailor lessons for students based on their needs and talents, which they may then tackle at their own pace.

2 Digital content and curriculum

Devices become truly powerful when paired with dynamic, interactive content and engaging curriculum. This type of learning encourages students to work in teams to create content, share ideas and solve problems—while also helping them develop the communication and interpersonal skills they'll need to succeed in their later professional lives.

3 Professional development

Professional development and online resources give teachers the tools to coax the best possible results from technology. These resources include training in how to employ new teaching methods and strategies to address new classroom dynamics that result from assigning more collaborative work.

④ Online testing

In states such as California, assessment tests for the Common Core State Standards Initiative must be administered online. This requirement puts pressure on school districts to make sure there are enough appropriate devices for students to use for testing, and that kids who are not tech-savvy develop the skills to use them.[6]

⑤ Common Core state standards

The requirement to adhere to a single standard such as Common Core can lead to the creation of better educational technology, because it means developers don't need to focus on making solutions interoperable to meet multiple standards. Instead, emphasis can be directed at improving the learning and teaching experience.[7]

Putting together a strategy that addresses each of these priorities is a major part of building a successful digital curriculum. This eBook will describe the questions districts should ask as part of that process, along with the steps involved and the challenges administrators, educators and IT professionals are likely to face along the way.

Devices and digital curriculum

CHAPTER 2

Key Challenges and Needs in Modern Learning Environments
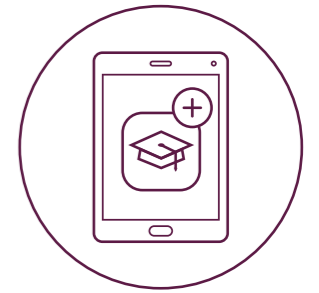
Education Dive's 2015 survey polled more than 150 education leaders across the country to see how they're using technology and what challenges they face.[8] When it comes to providing devices and digital curriculum to students, more than 75% of administrators listed budget limits as a top challenge. And while many have been tempted to make do with legacy technology like traditional laptops, *maintaining* legacy devices can actually require a much larger investment in time and resources than purchasing new technology. At the same time, the majority of respondents in the survey also said that connected technologies like laptops, interactive white boards and tablets had the largest impact on learning outcomes. Within those categories, administrators and IT professionals face the daunting task of choosing not just the most affordable devices, but also the ones that are the best fit for students and teachers. These are devices that are easy to use, reliable and simple for a small IT team to maintain.

The next hurdle is choosing from a wide array of vendor solutions to find ones that offer exceptional digital curriculum and resources. School districts may also need to find solutions that jumpstart the sometimes overwhelming task of incorporating 1:1 computing initiatives into core lessons. There's no one-size-fits-all answer for every classroom, so thorough research and the opportunity to conduct small pilot programs are key. Ideally, these programs provide devices for every student and equip classrooms with connected displays and other peripherals such as printers, along with trials of market-leading digital curriculum, applications and resource libraries from proven providers. Districts also need the tools to support educators and benefit from solutions that offer professional development and online training.

Real-world example: Desert Sands Unified School District

In an effort to meet Common Core standards, Desert Sands Unified Schools in California purchased 17,000 Samsung Chromebooks for every fifth-grade classroom and every sixth- to eleventh-grade Language Arts classroom, with a long-term plan to provide 1:1 computing access over time. These devices help students develop critical computer skills while also allowing the district to build an affordable infrastructure for giving online assessments.[9]

Supporting STEM

Collaboration and communication tools

The U.S. Bureau of Labor Statistics projects that STEM (science, technology, engineering, math) employment will increase by more than one million jobs between 2012 and 2022.[10] A strong focus on these topics in K-12 helps prepare students for secondary education and inspires them to pursue the careers of the future. STEM lessons also work to close the gender gap between girls and boys in math and science and to create a positive experience to counter unconscious "pink and blue" gender bias in schools.

The vast majority (80%) of teachers in a recent survey said that online access to STEM lesson plans integrating technology into the classroom would be helpful in preparing students for these future jobs.[11] The introduction of mobile STEM labs into schools offers a simple way to integrate digital curriculum into classes on an everyday basis or in specific lessons, including interactive games that incorporate reading. Schools can also pique student interest in STEM topics by bringing in industry professionals to share stories about their careers, research, projects and interests.

The *Internet of Things* has a role to play as well. For instance, Sequoia Park Zoo and Humbolt County use Samsung School digital solutions to enable students to explore the ecosystem around the zoo. Students use mobile devices and connected peripherals like digital thermometers and microscopes to take pictures, collect samples and send data back to the classroom, where they can work together to create presentations to share with the class. Teachers can then create instant quizzes and polls to quickly assess whether students understand the underlying lesson.

"The classroom is no longer four walls and a blackboard in the front. Now the whole world is open to students— to use all kinds of digital resources and assets to engage, to collaborate, to learn at their own pace. This really enables them to be true learners."
— Diane Ashby, National Education Manager, Samsung[12]

A well-rounded education also includes the opportunity to develop skills beyond mastery of core topics. Digital tools that allow students to work together and to learn and communicate through video, audio, graphics and interactivity help them develop critical thinking and analytical skills as well as the social and cooperative skills they'll need later in life. The challenge is that small- and whole-group projects can also shift the dynamics of the classroom as younger students adjust to working in collaboration with their peers. Because of this adjustment phase, educators must be prepared to help students "get comfortable with the uncomfortable" and recognize that during that time, it may be difficult to cover material in as much breadth or depth.

To make the most of these experiences, teachers need technology solutions that combine 1:1 devices with large-format displays and management tools like screen sharing, student screen monitoring and device control. Sharing capabilities allow students to contribute to on-screen content from their own devices, increasing the chances that everyone will participate, and helping to create a powerful student-led, interactive dialogue with each other and with teachers. Teachers also need the tools to check student progress on devices and the ability to take control of those devices when necessary.

"Students like having more control over their own learning path, and it makes them work harder to improve their skills."
- Donna Teuber, Richland Two Team Leader for Technology Education[1]

Special education

For most students, digital tools offer an opportunity to express themselves in new and creative ways. But for special-needs kids, especially those who have difficulty communicating, devices such as tablets can offer the stunning opportunity to express themselves at all—sometimes for the first time.[13]

Digital curriculum with self-paced and personalized learning features can also help special-education students return to the regular classroom to work successfully with their peers. To achieve these outcomes, teachers need technology that helps them build scalable, customizable learning environments for students at every skill level, and that gives them access to curriculum and activities that have been vetted by experts. When students move between the grade-level classrooms and special-ed environments, the ability to capture data from devices also helps teachers work together to track individual student performance and share lesson plans and progress reports.

Real-world example: Eaton Regional Education Service Agency

Samsung and SmartEd Tech teamed up to improve access, participation and outcomes for students with special needs in general education classrooms. Combined with a technology-enriched general education environment, specialized tablet technology enables even non-verbal students to better communicate. Teachers at Eaton improved insight into each special education student's learning abilities and styles, positively changing the trajectory of their education, learning experience and future.[13]

Professional development

Professional development ranks as a top priority for educators in 2016, as well as one of their top challenges.[8] Incorporating technology into the classroom can present a steep learning curve for many teachers, especially those who haven't had much experience using these kinds of tools. For others who have more familiarity, professional development can help them improve what they're already doing in the classroom. For instance, 90% of teachers in a recent survey said they believe modern technology in classrooms is important to student success, but 60% said they'd need more training to do so, and 37% expressed keen interest but said they simply didn't know where to begin.[11]

In order to make technology an integrated, successful part of learning, teachers need solutions that incorporate not only digital curriculum, but also training in how to put it to work. This includes professional development days that can focus on district-specific issues and needs, as well as online resources and communities that teachers can call on as needed to share ideas and dig deeper at their own pace.

"Technology can have a dramatically positive impact on student success, but it's important to ensure that educators are equipped with the resources and skills needed to leverage its power."

- Ted Brodheim, Vice President of Vertical Business, Samsung Electronics America[14]

Devices

Choosing the right devices for the K-12 environment is critical. Chromebooks and tablets should have enough processing speed to handle real-time collaboration between students and teachers. Devices for everyday student use need robust security features, long battery lives and

durable construction that can stand up to heavy wear, drops and spills. At the same time, budget is always a concern in education environments. IT pros and administrators need these devices to be low cost, with high interoperability and quick provisioning and setup.

CHAPTER 3

IT Considerations

Behind the scenes of every school district is a team of IT professionals charged with deploying and managing these digital transformations. Of course, IT professionals face a unique set of challenges when taking on the digital conversion within schools, including doing everything they can to make the transition as seamless as possible.

Ease of management

It's also important to choose devices that can be easily managed by a small IT staff. Web-based management tools make it easy to create user groups and manage access, users and applications across a large fleet.

Total cost of ownership (TCO)

Cloud-based devices and software can reduce TCO by making provisioning simpler—for instance, eliminating the need for imaging and for manual software updates and patches. In addition, it's up to IT to do everything it can to optimize the schools' existing technology assets as long as possible.

A recent IDC study noted that Chromebooks require 69% less labor to install and 92% less staff to support when compared to a traditional PC—reducing per-device TCO by up to $1,135 over three years.[15] To help get this technology into the classroom, there are applications that can actually convert PCs into Chromebooks, extending the life of these previous investments.

CHAPTER 4

Taking Your Digital Transformation to the Next Level

Perhaps the biggest lesson to take away is that creating a digital learning environment is far more than a one-time financial or technical task. It's an ongoing process, and one that requires a holistic approach and a clear commitment from administrators, staff and educators. Consider these steps to help smooth the road to success:

Evaluate your school.

Perform a readiness assessment and gap analysis of your current environment. Should current policy be updated to support digital learning initiatives? Look at your infrastructure, especially network bandwidth, internet connections and wireless access points. Are teachers already comfortable with using technology to deliver content, assess progress and grade assignments? Or do they need help to prepare?

Develop a strategy.

How will technology be introduced and used? How will it be integrated into the entire campus— for instance, into computer labs and libraries? What types of professional development and resources will be available to teachers? What does success look like, and how will you measure it? Create concrete goals and clearly identify outcomes.

Implement pilot programs.

In designated classrooms, test whether devices are easy for students and teachers to use and easy for IT to manage. Does the curriculum match the needs of the classroom? Are there infrastructure issues to address before you attempt to connect devices to the web on a larger scale?

Create a project plan.

Create a plan based on the successful pilot and roll it out to the entire campus in stages.

Provide support and training.

Offer a combination of professional development days, self-paced online training and access to a technical support center.

Assess and refine the plan.

Regularly change up your plan, putting an emphasis on innovation. What can you do to further integrate technology into the learning process?

In addition to crafting a strategy, you should research your digital curriculum options carefully and ask your solutions provider the right questions. Here are a few to consider:

? Does the solution provide not only devices, but also high-quality digital curriculum, professional development and vendor support?

? Does the solution include classroom management tools to monitor progress, track student data and control devices?

? Is digital curriculum aligned to Common Core and/or other state standards?

? Can the vendor point to successful use cases and proven results?

CHAPTER 5

Core Education Solutions from Samsung

No matter where your school is in its digital transformation, Samsung has the partnerships and solutions to help successfully implement 1:1 learning in the classroom and beyond—meeting the needs of students, educators and IT.

Student computing devices

• The **Samsung Chromebook** is a secure, reliable web-client laptop ready for student use right out of the box. It features a web-based Google Chrome Management Console (requires seperate licensing fee) to make it easy to set up networks and manage a large fleet from a single location.

• The Samsung Chromebook also features **Google Apps for Education**, a robust set of productivity tools including email, calendar and documents, as well as access to thousands of apps in the Chrome Web Store. The devices have up to 8.5 hours of battery life—which means students can use them for the entire school day, and they're made from durable materials that make them backpack-ready for the trip home at night.

• **Neverware "CloudReady" OS** is a conversion tool that turns legacy Mac or PC laptops into Chromebooks, making it easy to test a Chromebook environment or convert a fleet of outdated computers—without having to replace existing resources. This solution includes 100 Samsung Chromebook 3 devices with 100 Neverware CloudReady licenses. It also includes 200 Google Device Management Console licenses, enough for each Chromebook and 100 for your converted devices.

• **Samsung Galaxy tablets** for education provide an engaging and immersive learning experience for students. Designed with durability features and a bundled protective case, they're built for today's mobile students.

"With the [Samsung] Chromebook, you can take it out of the box, put in the hands of the student, and they can log in and begin working productively right away."

- Tom Cranmer, CTO, Richland School District Two[1]

21

Digital curriculum

- Created in partnership with McGraw-Hill Education **Classroom-in-a-Box** is a fully integrated classroom solution to jumpstart 1:1 digital learning for third through eighth grades. Focusing either on English Language Arts or Math, the pilot includes 30 Samsung Chromebook 3 devices as well as Google Device Management Console to help teachers control student access, track assets and keep an eye on security. It also offers professional development for teachers from McGraw-Hill, deployment services from Samsung and market-leading digital curriculum including:

Choose from:

English Language Arts Classroom-in-a-Box

- 30 one-year trial subscriptions to **Thrive™ Powered by Time to Know ELA**

- 30 three-month trial subscriptions to **Reading Labs 2.0**

OR

Math Classroom-in-a-Box

- 30 one-year trial subscriptions to **Thrive™ Powered by Time to Know ELA**

- 30 three-month trial subscriptions to **ALEKS®**

STEM

- **STEMFUSE**, a Samsung partner, provides a way to build mobile STEM labs featuring Chromebooks, all-digital curriculum, interactive games and professional development. These labs enable schools to incorporate STEM topics into any lesson or to design specific STEM-focused classroom sessions.

- Samsung partner **NEPRIS** matches engineers, designers and other science and technology professionals with schools to offer students examples of real-world applications of STEM skills and topics in their careers.

Classroom collaboration tools

- **SMART amp** by Smart Technologies, bundled with 10 Samsung Chromebook 3 devices, works on any LCD or smartboard in the classroom to make the most of existing technologies and easily integrate into different environments. The solution learning software enables co-creation and fosters student collaboration on devices while giving teachers real-time visibility into the learning process. Also includes 60 SMART amp licenses, access to a 10-module SMART professional development unit for one educator per bundle, and 10 Google Device Management Console licenses.

- **Tidebreak** software solutions offer collaboration for whatever your needs: traditional classroom layouts, group classrooms and dedicated group study areas. Student devices (laptops, tablets, smartphones) connect wirelessly. Students can quickly share content and freely exchange ideas, while faculty can easily facilitate the experience.

- **Samsung School** is an integrated digital learning solution combining Samsung Galaxy tablets, an interactive whiteboard and a wireless multifunction printer. The Samsung School software provides a learning management system and powerful interactive tools like group reporting and screen sharing, so teachers can easily deliver content, manage the classroom, create collaborative lessons and assess individual student comprehension in real time.

Special education

The **SmartEdPad** solution includes a Samsung Galaxy tablet, a case and the SmartEdPad platform, which allows teachers to easily design scalable, customizable learning environments for special education students. Teachers can access hundreds of activities vetted by experts and categorized by age and skill, automatically capture data to track student performance, share lesson plans and progress, and receive training and support from SmartEdTech.

Mobile printing solutions

Google Cloud Print running on Samsung Android-powered multifunction printers creates a simple document solution for schools that enables secure mobile printing and document sharing. It includes a cloud printing experience that's ready right out of the box, making it easy for students, teachers and administrators to securely share printers and print to Samsung printers from any mobile device, anywhere.

Digital signage

theconnectEDU is a signage solution offered by Hypersign, Samsung and Google that allows administrators to create content—including videos, images and PowerPoint presentations—and instantly share it across campus. This solution incorporates a Google Chromebox to connect the displays and Hypersign's cloud-based software to create and share messages. Because the solution uses Samsung's SMART Signage Platform displays, it does not require the purchase of additional media players. It also includes an emergency notification system that can publish alerts to campus displays, computers, tablets and laptops within milliseconds.

Conclusion

Educators are just beginning to tap the full potential of the digital learning environment, and the opportunities for creativity are limitless. The key to success is to start with a realistic assessment of your current educational environment—from infrastructure to culture—and develop a holistic, integrated approach to technology in and out of the classroom that can grow and change as new innovations appear. With that strategy in hand, teachers and students alike will be well positioned to make the most of technology in the future.

LEARN MORE
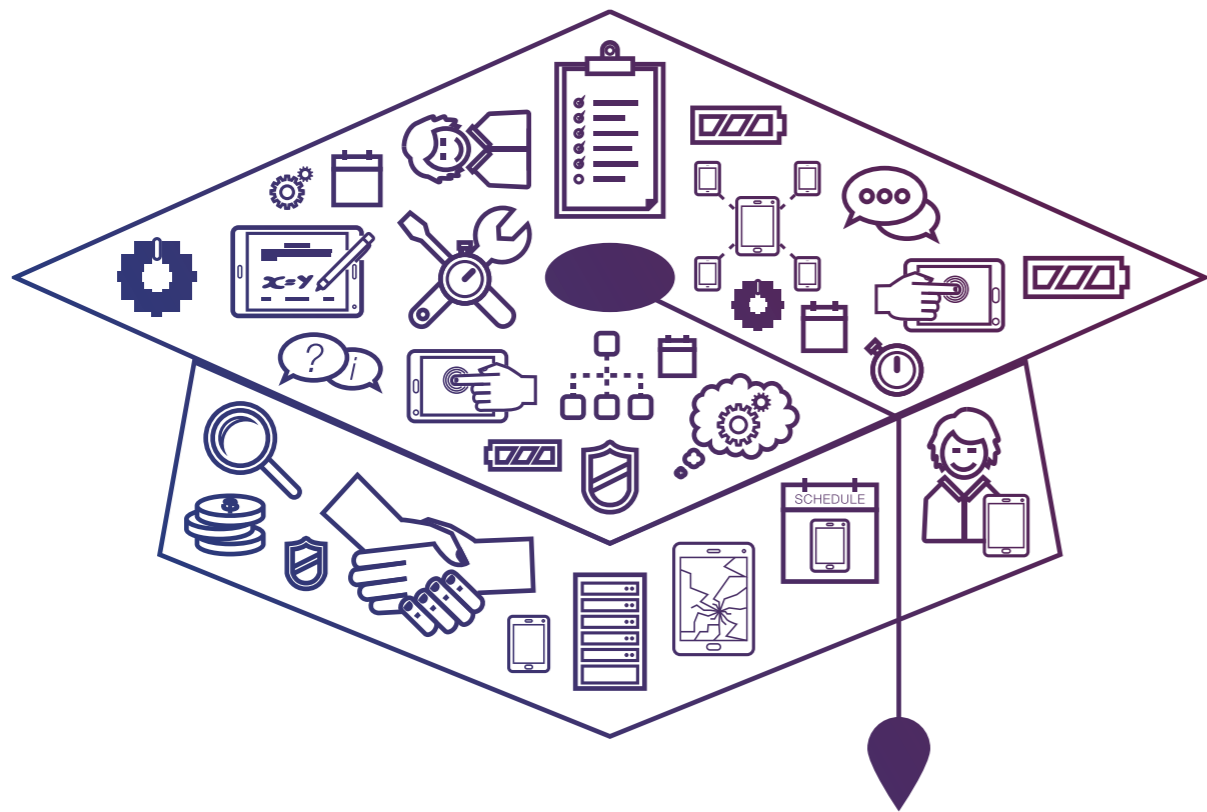
About Samsung

Samsung Education has solutions and partnerships devised to meet the needs of the unique challenges of the education market. At Samsung we create groundbreaking solutions that empower educators and students to embrace tomorrow's opportunities today. Our innovative offerings add value to any curriculum by giving instructors the tools they need to engage students, inspire imaginations, elevate learning and bring lesson plans to life.

References

[1] "Case Study: Richland Two School District: District Combines the Power of Cisco, Pearson and Samsung to Enable Award-Winning 1:1 Learning Initiative," *Samsung, Pearson and Cisco*, October 2014.
http://www.samsung.com/us/system/b2b/resource/2014/11/06/CASEST-RICHLAND-COBRANDED-OCT14J.pdf

[2] "New Research from Common Sense Media Reveals Mobile Media Use Among Young Children Has Tripled in Two Years," *Common Sense Media*, October 2013.
https://www.commonsensemedia.org/about-us/news/press-releases/new-research-from-common-sense-media-reveals-mobile-media-use-among

[3] "3 turbulent decades that are changing education forever," *Digital Book World*, February 2013.
http://www.digitalbookworld.com/2013/3-turbulent-decades-that-are-changing-education-forever/

[4] "Top Education Trends Driving K-20 Technology Spending in 2015," *e.Republic*, March 2015.
http://www.erepublic.com/blog/Top-Education-Trends-Driving-K-20-Technology-Spending-in-2015.html

[5] "5 National Ed Tech Goals for 2015," *Center for Digital Education*, November 2010.
http://www.centerdigitaled.com/policy/National-Ed-Tech-Goals-2015.html

[6] "Kids Start Preschool Tech-Literate," *Center for Digital Education*, December 2015.
http://www.centerdigitaled.com/k-12/Kids-Start-Preschool-Tech-Literate.html

[7] "Five Ways Teachers Can Use Technology to Help Students," *Brookings*, May 2013.
http://www.brookings.edu/research/opinions/2013/05/07-teachers-technology-students-education-west-bleiberg

[8] "The 7 Greatest Challenges Facing Education Technology," *EdTech*, November 2013.
http://www.edtechmagazine.com/k12/article/2015/11/7-greatest-challenges-facing-education-technology

[9] "Samsung Chromebooks Democratize Learning in Diverse School District," *Samsung*, April 2013.
http://www.samsung.com/us/system/b2b/resource/2014/09/08/CASEST-CHM-DESERTSANDS-AUG14.pdf

[10] "Stem 101: Intro to Tomorrow's Jobs," *STEM Education Coalition*, 2014. http://www.stemedcoalition.org/

[11] "Teaching Tech to Teachers: The Need for Professional Development to Power Classroom Success," *Samsung*, 2015.
Infographic: Teaching Tech to Teachers - The Need for Professional Development to Power Classroom Success

[12] "ASMS Takes Participatory Learning to the Next Level with Samsung School," *Samsung*, January 2015.
Video: Alternative School for Math & Science

[13] "Using Tablets in Education to Empower Special Needs Students," *Samsung*, July 2015.
ISTE 2015: Using Tablets to Empower Special Needs Students

[14] "Samsung, McGraw-Hill Partner on Classroom in a Box Package," *The Journal*, June 2015.
https://thejournal.com/articles/2015/06/30/samsung-mcgraw-hill-partner-on-classroom-in-a-box-package.aspx

[15] "Quantifying the Economic Value of Chromebooks for K–12 Education," *IDC*, August 2012.
http://static.googleusercontent.com/external_content/untrusted_dlcp/ggg.re/en/us/intl/en/chrome/assets/education/pdf/IDC-WP-Quantifyingthe.Economic.Value.of.Chromebooks.for.K-12.Education-082012.pdf

Twitter: @SamsungEDU
Blog: insights.samsung.com
LinkedIn: Samsung in Education

SAMSUNG