Eight Big 1:1 Challenges, One Chromebook Solution

As technology continues to become more central to how students are taught and tested, districts and schools are looking for ways to maximize student access to technology. Simultaneously, IT must find ways to improve modernization and manageability while stretching budget dollars.

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IMPROVING CLASSROOM LEARNING

Teachers have seen what mobility can do:

85% believe mobile devices increase engagement.

78% believe mobile devices increase participation.

53% believe mobile devices increase creativity.

Source: Hetherington, Paget. "Mimio's Mobile Device Survey of Educators | K-12." *Mimio's Mobile Device Survey of Educators.* Mimio, 10 Apr. 2014. Web.
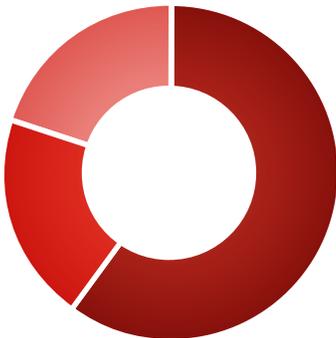
- **60%** Indirect (unbudgeted) end-user and downtime cost
- **20%** Direct procurement, deployment, and operations cost
- **20%** Direct purchase costs

Source: Lenovo. *TCO: Recapturing and Redeploying Your IT Spend.* Morrisville, NC: Lenovo, 2014.

The traditional approach to K-12 IT relies heavily on centralization — computer labs, libraries, even the occasional classroom desktop. That strategy is good for budgets and has mostly met the limited IT needs of students and teachers. But even as schools were slow to go fully digital, the world hasn't been so patient.

Most students now have access to technology that didn't exist 10 years ago. As a result, they are no longer waiting for computer lab to sharpen their digital skills or connect to a new world of applications and opportunities.

The power of 1:1

1:1 computing leverages these high-tech habits as a way to better engage and educate students, giving them anywhere, anytime access to the tools and resources they need.

For students:

- Prepare students for success as digital learners and citizens
- Drive more customized, student-focused learning strategies
- Equalize technology access across diverse student populations

For teachers and IT:

- Help meet new digital curricula and assessment requirements
- Support new data and measurement strategies
- Help meet BYOD and mobility needs while preserving manageability

The new Golden Ratio
(1:1 TO WHAT?)

As an idea, 1:1 computing seems easy enough. Give everybody a laptop, ask them not to take it to the beach, and let the learning commence. In reality, putting all those new devices into the classroom takes time and money — so how can you multiply your technology without raising your total cost of ownership (TCO)?

This guide

This guide looks at the challenges faced when rolling out sustainable 1:1 computing, working to meet student and teacher technology requirements while giving IT the tools they need to manage, maintain, and monitor infrastructure and endpoints. If just choosing the right device wasn't hard enough, it all has to be cost-effective and easy to support.

A Chromebook™ makes solving that equation easier than ever. Read on to learn more about how it can deliver efficient, effective, budget-friendly 1:1 computing. Lenovo® Chromebooks combine this value and innovation with education-built durability that protects your investment no matter what.

Sponsored by Lenovo and Intel®.

Your eight big challenges

If you're looking to solve your 1:1 needs, get ready for some complicated math. How do you add users while subtracting costs? This guide looks at eight big challenges you face when deploying, supporting, and extending a 1:1 environment.

Supporting more with less
DEVICES TO SUPPORT > IT RESOURCES

The numbers are clear: 91% of schools report more devices deployed and supported than the previous year, and 71% report fewer IT resources. The wrong 1:1 solution simply multiplies the IT workload, bringing a lot more technology to a lot more users — and the higher costs are about more than just purchase price.

Typically, your device cost is a small portion of your total device Total Cost of Ownership (TCO). In reality, your biggest cost driver isn't the device — it is the price of:

- Configuration and deployment
- End-user training and support
- OS/app updates
- Software licenses
- Content management/storage fees
- Classroom device management
- Network connectivity and capacity
- Security/monitoring

The costs above are for managed devices. Supporting unmanaged Bring-Your-Own-Device (BYOD) drives security costs higher. Defending against the unknown is always expensive, especially 24/7.

These are big categories. Anything required to keep your end-user devices connected and productive will eat into your budget, and a lot of it is unexpected. Ask your IT staff; their list is even longer. Ultimately, choosing technology that is optimized for manageability will drive huge long-term TCO reduction.

The Chromebook solution

By centralizing device management, Chromebooks allow IT to ease the hard work of device deployment and support. The Chromebook's web-based OS and services are the perfect solution for easily managed, easily scaled, full-powered student computing.

- Set up new devices
- Manage group policy
- Filter content and access

**71%
of schools** are now supporting more IT with fewer resources.

Source: *The Unique Challenges Facing the IT Professional in K-12 Education*, Schooldude.com

It's easy to talk about more with less. The Chromebook's easy, centralized manageability makes it a reality.

Simplifying your environment
(DEVICES × OPERATING SYSTEMS × USER PROFILES = INFINITE IMAGES)

Managing multiple endpoints is a challenge; multiple school or district images make it even more difficult. The more complex your IT ecosystem gets, the higher your TCO climbs. Building, deploying, and maintaining those images quickly eats up and time and money.

- Multiple devices and operating systems must be accommodated.
- Specialized application needs must be supported.
- Older operating systems require time to support and secure.
- Important policy, application, or security updates must be rebuilt for each image.

The ideal of a single universal user image isn't practical, but neither is the process of rebuilding static software images every time something changes. 1:1 computing multiplies the costs and consequences of a complicated ecosystem, leaving IT to find ways to balance the need for right-sized IT with efficient, scalable solutions.

The Chromebook solution
(1 DEVICE × 1 OPERATING SYSTEM = 1 BIG IDEA)

The Chromebook platform helps you support diverse user needs with a single, standardized hardware/software platform. Students get easy, reliable access to the best of the digital learning universe; IT gets a single, simple platform that reduces workload and TCO.

- One OS, a universe of apps
- One OS that automatically updates for new features and fixes
- One OS with a predictable application ecosystem that improves the efficacy of security and other services

Adding a new device to your ecosystem can be costly. Chromebook's support for easy integration keeps your cost and frustration low.

Powering the digital classroom
(DIGITAL LEARNING × RELIABLE TECHNOLOGY = BETTER STUDENT OUTCOMES)

As educators continue to find proven, practical ways to improve instruction and assessment through technology, IT will become even more critical to the success of the digital classroom and its students. The days of the occasional computer are gone. You need serious infrastructure and endpoints optimized for performance in class, around campus, and across town.

By 2015, **8 of 10 application developers will be working in HTML5,** the language of the web services and cloud.

Source: Ellison, Scott. *Key Milestones Reached in Mobile HTML5.* Publication. IDC, 10 Mar. 2012. Web.

• Students need consistent, reliable access.

• Distraction and disruption must be minimized.

• Technology must be intuitive and easily task-focused.

Any confusion around IT increases downtime, another huge TCO driver. 1:1 solves the access problem — suddenly there's enough technology to go around. But it doesn't automatically solve the classroom management challenges that come next. They are not purely technical challenges, but the right device goes a long way.

The Chromebook solution
[(ONE DEVICE) + (24×7 ACCESS)] × (NEW IDEAS AROUND LEARNING = A NEW DIGITAL UNIVERSE)

The Chromebook knocks down the walls of the traditional classroom, building a platform for learning inside the cloud. The lightweight OS is purpose-built for the new portable classroom, designed to give students a tool that matches the way they already live, study, and learn.

• Optimized for cloud performance

• Anywhere, anytime digital learning

• Personalized content per student

• Built-in content and network access filtering and monitoring

1:1 computing is about more than just connecting students and devices. Districts across the country are choosing Chromebooks as a cost-effective platform for moving their students forward.

Securing your ecosystem
(MORE DEVICES × MORE USERS = BIGGER RISK)

Priorities around data security are driven by new assessment standards, new legislation, and growing community concerns over the security of protected data in general and student data in particular. K-12 IT must now take a more comprehensive approach to security, finding ways to protect devices, data, and infrastructure.

• Threats are both internal and external, from careless users to sophisticated criminals.

• Broader data sharing is now the norm.

• Student privacy and safety must be protected.

1:1 turns big data into bigger data as more school-managed endpoints and user accounts are exposed to a whole new world of threats, including curious and crafty students. Endpoint security is complicated and expensive, so be prepared for that portion of your TCO to rise as you put more devices into service.

The Chrome OS makes recovering from a potential security issue or system error as easy as a system reset— **no data loss required.**

The Chromebook solution
(INTEGRATED SECURITY + MANAGEMENT CONSOLE > MALWARE + CARELESS USERS + DATA THIEVES)

Chromebooks are built with strong, integrated device and data security that gives you the confidence in knowing that no matter where students take them, the cloud-based architecture and feature set keep your Chromebooks safe and available.

- Strong integrated, layered account security
- Secure single sign-on to apps and services
- Traditional tools like verified boot and data encryption
- Easy, secure sharing between accounts (and guest users)

Security is rarely user-friendly, but Chromebooks offer a better way forward with well-integrated, automated protection that is always up to date, robust, and elegant.

Exceeding user expectations
(USER EXPECTATIONS > BUDGET)

Life in a digital world impacts user expectations around technology — teachers, parents, and students want the same tools and solutions they use outside of school. IT is responsible for matching user demand with solutions that satisfy without breaking the budget or creating too many headaches for IT. Consumerization dictates that if these tools aren't provided, users don't have the patience to wait.

- Students want tools that are intuitive and familiar.
- Students want technology with both substance and style.
- Students perform better with tools they know and love.

1:1 computing can turn questions of preference into policy and procurement decisions. Choosing a single device for student use requires carefully balancing student needs, IT requirements, and available dollars. Technology has to be portable, productive, occasionally entertaining, and easily integrated into today's infrastructure while also building for the future.

The Chromebook solution
(PERFORMANCE > USER EXPECTATIONS)

Chromebooks give students a familiar and consistent browser interface and a unified set of cloud-based tools like the ones they use every day, while also giving IT easy management and maintenance tools that make their job even easier. It's the elusive technology win-win, with students staying engaged and productive and IT always in control.

- Maximized for student-grade productivity

- Powerful collaboration and communication tools

- Productivity suites and applications (with easy import/
  export to other popular applications and file formats)

- Innovative education apps, games, and media tools

Students want the latest and greatest. The Chromebook delivers style, substance, and serious computing that impresses and empowers.

Meeting compliance requirements
(NEW MANDATES = IT HEADACHES × 10)

From Common Core State Standards to similar digital curriculum and assessment standards across the country, new rules about the measurement and delivery of learning directly impact your IT choices. Schools and districts are looking for solutions that meet compliance requirements while still driving other digital goals and priorities.

- Schools need more end-user devices and improved infrastructure.

- Student performance must be carefully tracked.

- Classroom and assessment environments must be carefully controlled.

At first glance, 1:1 computing seems like the perfect match for meeting digital assessment requirements. More devices should make wide-scale assessment easier, and student devices naturally support the infusion of technology into curriculum. In the end, though, pursuing 1:1 computing with tablets or other non-compliant devices might make 1:1 not enough, as you need additional devices for testing.

The Chromebook solution
(KEYBOARD + DISPLAY + AWESOME INNOVATION > STANDARDS)

Chromebooks come digital-assessment-ready, meeting and exceeding PARCC and Smarter Balanced Assessment Consortium technical requirements for Common Core digital assessments. Built for long battery life and easy connectivity, Chromebooks are the ideal digital learning companion.

- Full display and keyboard

- Easy connectivity

- Simple and straightforward manageability and security

- Easily shared between students if needed

The last thing you want is another requirement. With security and manageability built right in, the assessment-ready Chromebook lets you worry less about rules and focus on teaching and learning.

52% of respondents don't have the resources needed to implement the IT needed to support new state requirements.

Source: *The Unique Challenges Facing the IT Professional in K-12 Education*, Schooldude.com

Driving learning uptime

Reliability is everything in K-12 IT — device failure can quickly derail the day and lead to downtime that's expensive in both dollars and forward progress. Higher downtime leads to higher TCO, so reliability quickly rises to the top of your priorities.

- Classroom time is already stretched thin.
- Students and parents want remote access to learning resources.
- Home broadband access is not yet universal.

Again, 1:1 computing seems like the easiest way to keep students engaged and productive, but anywhere, anytime access isn't always as easy as it seems. IT is also responsible for quickly resolving support issues, which only gets harder as more students compute in more places.

The Chromebook solution
ANYWHERE + ANYTIME = MODERN DIGITAL LEARNING

Chromebooks are built to get to work fast and work all day in all sorts of places, on- and off-line. This makes massive task-focused computing power available whenever information or inspiration strikes.

- Quick start and resume
- Maximum mobility and battery life
- Content and data automatically backed up to the cloud
- Offline support for uninterrupted learning

1:1 computing should help drive better student productivity. Chromebooks help turn this big goal into an easy, predictable 24/7 reality.

Solving for durability:
The Lenovo Chromebook difference

(EDUCATION-BUILT DURABILITY × LENOVO RELIABILITY + CHROMEBOOK INNOVATION = EVEN BETTER ANSWER)

The cloud-optimized Chromebook is built for lightweight innovation and performance, but your students need rugged and reliable devices built to stand up to the challenges of K-12 computing. Classroom duty is tough enough, but 1:1 computing will put your technology through a lot with heavy daily use, from wear and tear to drops and spills. Hardware failure means everything stops — except your total cost of ownership, which keeps on rising.

- Technology has to be student-tough.
- Repair costs have to be controlled.
- Uptime equals productivity, and that equals money.

THE INTEL ADVANTAGE

Intel brings breakthrough performance and manageability to your education devices, helping students and teachers do more while reducing the cost and complexity of managing your IT.

- Groundbreaking Ultrabook™ PCs and convertibles

- Intel processors for maximum productivity in and out of the classroom

- Intel vPro™ and AMT for simple, robust IT management and security

- Productivity boosters like Rapid Start get students learning quicker

The Lenovo ThinkPad 11e and ThinkPad Yoga 11e Chromebooks take the platform to the next level, matching the cloud-based software innovation with real-world, education-built reliability.

1:1 computing turns occasional technology interaction into total daily IT integration, and that requires student-tough, built-to-last hardware.

The Lenovo Chromebook solution

The Chromebook platform is designed for easy, reliable, student-centered computing. The Lenovo ThinkPad® 11e and ThinkPad Yoga™ 11e Chromebooks take the platform to the next level, matching the cloud-based software innovation with real-world, education-built reliability. The end result is the ideal 1:1 platform that improves student outcomes, modernizes your IT, and helps reduce technology TCO.

Lenovo ThinkPad 11e Chromebook

Chromebook manageability combined with Lenovo education-built durability.

- Intel® Celeron® quad-core processor for maximum classroom productivity.
- Reinforced hinges, ports, and corners prevent accidental damage and reduce maintenance cost.
- Reduced-gap keyboard with anchored keys discourages tampering.
- Cloud-powered for easy storage, backup, reset, restore, and recovery.
- Tough, classroom-ready rubber bumpers protect sides from damage.

Lenovo ThinkPad Yoga 11e Chromebook

All the durability of the ThinkPad 11e, plus a tough 360° hinge and touch support for full-powered multimode learning.

- Durable glass prevents display cracks and scratches.
- Interact with touch-ready apps and the digitizer pen in **Tablet Mode.**
- Complete assignments on the go in **Laptop Mode.**
- Share important presentations and ideas in **Stand Mode.**
- Learn and collaborate up close in **Tent Mode.**

Making the math work

Rolling out a smart, sustainable 1:1 solution is about finding good ideas that scale well. The education-built innovation of the ThinkPad 11e and ThinkPad Yoga 11e Chromebook is ideal for any student-focused computing solution. To learn more about Lenovo ThinkPad Chromebooks, visit www.lenovo.com/education or contact Lenovo at eduteam@lenovo.com.

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