



# Leveraging Technology to Increase Student Achievement



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A person wearing a blue and white striped button-down shirt is sitting at a desk. Their right arm is resting on the desk. In the background, a globe is visible, showing parts of North and South America. The scene is brightly lit, suggesting an indoor setting like a classroom or office.

**Virtualization for  
Education**

**Leveraging Technology  
to Increase Student  
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**Bring Your Own Device  
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# Virtualization for Education

Decreasing budgets combined with aging facilities and equipment makes it increasingly difficult to manage the IT needs of multiple buildings, faculty, and student needs. Virtualization for education will reduce costs, offer reliable and faster services and allow for easily adaptation to required changes. Virtualizing your education IT needs offers:

- Management for computer lab applications
- District-wide automatic application deployment
- Faculty, staff and student access to school applications from a variety of computers and mobile devices
- Ability to run multiple operating systems
- Common Virtualization Used in Educational Environments

The most common type of virtualization used by schools include desktop and application virtualization. Virtualized desktops allow you to run multiple operating systems from a single desktop – instead of individually installing Windows 7 on each student computer in the school, Windows 7 will run on a virtual machine over the server and each computer can access it.

Application virtualization allows you to quickly install new applications on one machine that provides access to all

computers on campus, as well as enable access from mobile devices. The overhead costs of installing new applications are much lower in a virtualized environment, because you can maximize software licenses.

Virtualization will save money over installing multiple copies of software, troubleshooting problems on each individual machine, and free up the IT department to focus on efficiency instead of fixing multiple computers. The entire physical and virtual infrastructure can be managed with a unified set of tools and often from a single, remote location.

## Virtualization Benefits for Schools

Making the change to a virtualized environment offers a number of financial benefits, and benefits to both students and teachers.

- Each user receives optimal desktop solutions (teachers, staff, students, etc) since access can be configured to each type of user
- Total cost of ownership for computer equipment is reduced and the return on investment is increased across your computing infrastructure
- Less physical space is required for servers
- Can quickly make changes to applications and test different environments without the need for significant physical resources or increased costs
- Security across the network is increased, protecting data and minimizing risks for widespread failure
- All computers from computer labs, classrooms to libraries and regardless of their physical age will offer the same PC experience

- Teachers can access databases, student records and documents from any computer with an internet connection
- Resources can easily be shared over the network, opening the door for improved teaching capabilities and efficiency
- Applications can be accessed from any compatible mobile device on or off campus, allowing for distance learning
- Students can run both Mac and Windows operating systems side by side on a PC to explore the various tools and operating systems without needing to reboot
- Reduce costs by about 50% when you eliminate capital expenditures, management and maintenance of desktop environments and operational expenditures associated with a non-virtualized environment.
- Reduce energy consumption by 80% of individual computers by extending the life of existing hardware.

## Increased Flexibility from Virtualization

When you create a virtualized environment, each element is isolated and independent from the other elements. This allows for easier changes within the system, whether you are adding, updating or supporting each of the elements that make up your network.

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# Leveraging Technology to Increase Student Achievement

The students of today have more access to technology than ever before, and it is important for school officials and educators to tap into the tools that are available. Technology will be a critical necessity as they continue into the future and succeed in life. By embracing the technology that is available to students and educators now, schools are in a unique position to encourage and support a path toward success that is comprehensive yet affordable.

According to a 2010 study conducted by Project RED, technology helps schools save money; it reduces paperwork; and increases student engagement. Project RED identified the successes of technology in the education system, but the Project RED team also stressed the importance of commitment and consistency when implementing new technologies and modern learning strategies. Success is more than a book, pen and paper; it is adopting the wealth technology that is available and will be required in the future.

Technology in the classroom doesn't have to be expensive to make a difference. Thousands of schools are finding ways

to make a difference and transform the learning experience without going into debt. According to Project RED, a properly implemented strategy will have an impact if it consists of 9 major factors:

1. Technology is available in every class period
2. Administrators allow teachers to learn and collaborate monthly
3. Students use technology daily to collaborate online
4. Technology is used in the core curriculum more frequently
5. Assessments are done on a weekly basis
6. Lower student-computer ratios
7. Monthly virtual class trips
8. Students have daily access to search engines
9. Principals are trained to use the technology

For educators and administrators concerned about the cost of technology, they will notice that money is not necessary to implement the 9 technology strategies for student success. Many of the factors embrace common habits of the modern-day student. Students are more engaged when they are working with and have access to tools that excite them, so why not capture that attention when they are in class? Add wireless access for mobile devices across campus, and you'll be able to fully take advantage of technology to increase student achievement.

## Everyone Can Benefit From Technology

Everyone within the walls of the school can benefit from the use of technology, and it may only require the computers that are available to the students and staff. Many schools

have purchased tablets and smart boards, but whatever the technology, the goal should be a hands-on experience. Project RED stresses that the use of technology on a daily basis contributes to better discipline, attendance, and college attendance.

- Technology reduces the need for unnecessary paper and correspondence because documents, messages and tests can be made available online.
- Teachers, students, and parents can communicate more often
- Students can use search engines and online communities to research and contribute to classroom instruction and projects
- Students can interact with students across the globe from their desk
- Virtual field trips provide the teacher and students with a unique perspective and insight into a location that they can't see within the pages of a text book alone
- Educational games online will engage more students and expand their ability to analyze and process instruction

Administrators and educators can use these strategies to create a one-of-a-kind lesson plan that is tailored to the high-tech kids of today and leaders of tomorrow.

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# Bring Your Own Device

An increasing number of students, parents, staff and teachers at educational organizations expect the ability to connect to the network with their own devices. Laptops, smartphones, tablets and other devices are becoming items people simply don't leave home without, and educational organizations are faced with the challenge of accommodating the growing number of mobile devices.

Whether students are in elementary school, middle or high school, or college – they've been using technology and mobile devices most of their lives. Teachers and staff are working more efficiently with their own mobile devices and tablets. It's time to put BYOD to use in supporting educational goals.

A Bring Your Own Device (BYOD) solution offers easy deployment and controls for the IT staff, while creating a simple user experience for students, parents, and staff to access data, applications, streaming video, and the internet securely. A number of benefits of BYOD exist for teachers and students in school wireless networks:

## Improved Collaboration

Most schools look for ways to engage students and assign students to group projects. BYOD technology enables students to collaborate on projects easier, and can even open the door to collaboration with students from other school districts and from around the world.

## Customized Instruction Opportunities

Most educational environments group children by age and grade rather than academic ability. When you use technology, you make it possible to provide customized instruction to students of varying ability levels so that each child is working at their own level and pace.

## Increased Interactivity

Planning lessons around BYOD technology can greatly increase the interactivity of a classroom. Make arrangements for students to interact with students from other countries during a geography lesson, or organize a digital scavenger hunt or virtual field trip. The more a student interacts with a lesson, the more likely they are to be fully engaged and actually enjoying learning the material presented.

## Cost Savings for the School

The school won't need to update or purchase technology as often if students are bringing their own technology devices to school. If a school attempted to keep up with changing technology for education they would quickly run out of money but by allowing students to bring their own devices and creating a BYOD environment with wireless access, you can offer advanced interactivity among students without the expense.

### Helping Students Prepare for the Workforce

With the way the world is moving in terms of technology, there is no doubt that today's students are going to rely on technology in just about every future-career path they may follow. When your school offers BYOD, you are providing an opportunity to learn appropriate use of mobile devices and helping students gain experience with the technology and tools they will need for the future.

## Digital Textbooks and eBooks

Textbooks and nonfiction books are often outdated by the time they're published! Instead of needing to buy new books every semester, switching to digital textbooks and using ebooks in your classrooms saves money over buying new books. It also allows for the most up to date version of books. Students and teachers can keep hundreds of books on their digital devices and it won't even weigh down their backpacks.

## BYOD Challenges

When setting up a BYOD environment in a school, there are several challenges:

**Scalability** – with the wide variety of devices, how do you accommodate them all in real time and continue to support new devices and applications as they are invented?

**Security and Manageability** – how can you limit access to the network to certain people or prevent children from accessing inappropriate content on the internet from school? How can administration ensure BYOD policies are followed no matter who is connected or where people are connected to your network?

**Budget Concerns** – can the challenges of BYOD be handled while controlling costs and sticking to a budget?

**Accountability and Standards** – how can we measure student achievement and the benefits of BYOD on the educational experience in order to show it's usefulness?

## BYOD Solution

Our BYOD solution will enable you to take advantage of the teaching and learning opportunities offered through mobility and portable devices connected to your educational network. We work with educational institutions to create a secure, scalable, simple and cost-effective solution to support your learning environment. Rapid deployment of a BYOD environment will minimize disruption to the school and enable you to keep focused on academic achievement and under budget.

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# VoIP for Education

New technologies are improving the way we see, think, and absorb the information all around us in our daily lives. Technology is making our lives easier by providing us with the necessary tools to accomplish more tasks than ever before. Tools like VoIP are transforming the way educators and administrators monitor and improve the overall atmosphere on their campuses.

## What is VoIP?

VoIP, or Voice over Internet Protocol, is a system that uses the internet to place voice calls. Clarity, speed and efficiency of VoIP are why thousands of schools nationwide have decided to make the switch without breaking the bank. By embracing VoIP technology, school staff, officials and students can improve their experiences within the school community by staying up to date and in touch at any time they wish.

## How VoIP is Increasing School Efficiency

School officials will immediately be drawn to the cost of a VoIP system. Instead of having to install new and costly equipment into each classroom, VoIP can be hooked up where ever there is a broadband internet connection. Once VoIP technology is installed in a school, educators, support staff and administrators will immediately notice an increase in efficiency, safety and ease of access.

- Teachers will have access to 911 services, voicemail, phone services, 3-way calling and caller id. Teachers won't need to wait until class ends or until it is break time before they can make important calls to parents. Teachers can make their own calls without having to relay messages through a third party
- Staff, administrators and educators can be contacted via the VoIP system without having to interrupt classroom activities with an intercom system.
- VoIP increases communication between all the school's support staff, administrators and teachers.
- Any member of the school will have the ability to contact the authorities or school security immediately in an emergency situation.
- Teachers can give students across the globe access to their instruction by opening up their classroom and going viral.
- Teachers can develop a unique instruction plan that allows their students to explore the world without leaving their seats.

- The school can feel confident knowing that their VoIP system is safe and secure because all correspondence will be sent via a private intercom system.

## Students are Benefitting from VoIP

Not only will educators, administrators and support staff members benefit from VoIP, but they will notice that students will begin to flourish, too. Students will be given rare access to their teacher and alternative educational opportunities.

VoIP will encourage active learning skills and add a new level of excitement to the learning process.

Students will be given access to other students in the world via an internet connection. They will be able to interact and learn from their peers in another state, country, or continent.

Students will have an added sense of security knowing that their instructor has immediate access to first responders and school security if an emergency arises when they are in class.

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# eRate Certification

In 1997, The Universal Service Administrative Company (USAS), a not-for-profit corporation, was created to assist communities all over the country for securing access to affordable telecommunications services. The organization provides its programs under the oversight of the Federal Communications Commission (FCC). One of the services provided by USAS is the Schools and Libraries Program, more commonly referred to as “E-rate”, which provides a discount for eligible schools and libraries in the US of up to 90% for obtaining affordable internet access and telecommunications.

## Eligibility for the E-Rate Program

Most public and non-profit K-12 schools and libraries are eligible for E-rate. To participate, participants must accept bids from competing companies and then select the most cost-effective option for an organization to provide the services requested for telecommunications, internet, internal networking

and maintenance of the network. Discounts for services and support depend on the location of the school or library, the level of poverty of the area. Typical discounts range between 20% and 90% off the costs of services provided.

## E-Rate Service Providers

Troinet is a certified E-Rate service provider offering discounted services to eligible schools and libraries. For eligible organizations receiving the E-rate discount, Troinet recommends also bundling further technology solutions such as 24/7 network monitoring and cloud computing so that all of the organization's technology needs are met and maintained.

Troinet's technology consultants can assist your own IT department with the implementation and maintenance of your new infrastructure to support Common Core initiatives.

## Gateway to an Improved Learning Experience

The E-rate program and cloud computing is creating a gateway to an improved learning experience for students. As schools upgrade and expand their technology infrastructure, teachers and students can experience improved collaboration and sharing, secure data backup and retrieval, and mobile access. Troinet provides many of their technology solutions at a discount



under the E-rate program for eligible schools and libraries, and can also work with educational facilities for implementing Common Core technology initiatives. If your educational facility or library is in need of wireless solutions, Troinet can offer these through the E-Rate program, as well. When all of the various technology needs are provided by a single organization like Troinet, the school or library will receive even further discounts through the bundling of services.

Contact Troinet to learn more about the E-rate program and how to take advantage of technology discounts provided for K-12 public and non-profit schools and libraries.

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