

# Worcester Technical High School helps students raise grades and test scores with help from Dell and Microsoft



- Backup/Recovery/Archiving
- Connected Classroom
- Desktop/Laptop Refresh
- Flexible Computing



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*Alan Delossantos, Senior,  
Worcester Technical High School*

## Customer Profile

Company:	Worcester Technical High School
Industry:	Education
Country:	United States
Students:	1,400
Faculty & Staff:	200
Web:	<a href="http://www.techhigh.us">www.techhigh.us</a>

## Business Need

Worcester Technical High School wanted to make its \$90 million, 400,000 square-foot facility into the most advanced building anywhere for teaching with technology, in order to give its students the best vocational and liberal arts education.

## Solution

The high school deployed a connected classroom solution with Dell™ PowerEdge™ servers, Dell Latitude™ notebooks, Dell Optiplex™ desktops and Dell Precision™ workstations all with Intel® processor technology. Windows® 7 powers desktops and laptops and Windows Server® 2008 powers servers in the data center. In addition, the school implemented Dell Latitude notebooks with Intel processor technology and Stoneware webOS Web Desktop Virtualization for a virtual desktop solution that students can access anywhere.



## Benefits

- 50% of desktop maintenance or 60 hours per week eliminated
- Close to 100% availability with Dell PowerEdge servers to run educational software
- 40% of students have raised their grades since they moved to new building with Dell educational infrastructure
- Anticipated ability to provide anytime, anywhere computing
- Reliable access to software that is transforming learning in the classroom

The birthplace of the American Industrial Revolution, the city of Worcester, Massachusetts is an appropriate place for a vocational high school that is revolutionizing the way students are prepared for 21st century careers. Worcester Technical High School (WTHS) has a 100-year old tradition as a trade school, but in 2006 it made a new beginning with a \$90 million, 400,000 square foot facility that has its own restaurant, bake shop, bank, gift store and print shop, all staffed by students and open to the public for business.

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*Robin Goodell, Instructor,  
Telecommunications Department,  
Worcester Technical High School*

Technology is the foundation of the school and critical to the way teachers present their subjects and students learn. From desktops and laptops to SMART Boards that enable students to develop solutions in collaboration with each other, technology drives the educational process.

“Math isn’t my best subject,” says senior Alan Delossantos. “I usually pull a C or a B in math. But with technology and the way my teacher presents it, I’ve been able to get it faster and better. This first quarter I received an A-minus.”

### Rising Scores For Nearly 40% Of Student Body

Enthusiasm, motivation and dedication to learning seem to be the norm among students at WTHS. “We have the lowest drop-out rate and the highest attendance rate in the city,” says Peter Crafts, director of vocational and technical education, City of Worcester. “Approximately 65 to 75 percent of our graduates go on to further education at two- and four-year schools. The others go into the military or to full-time jobs in the trades they’ve studied.”

Tests scores and assessments confirm that the school is making real progress. “We have met our Adequate Yearly Progress goals of No Child Left Behind for four years in a row in English and math,” says Sheila Harrity, principal of Worcester Technical High School. “We are one of only a few schools in the city to have done that. Since we opened the new facility four years ago, almost 40 percent of our students have raised their scores on the Massachusetts Comprehensive Assessment System exam, which is our state exam.”

### Modernizing Educational Infrastructure

The technology that can take part of the credit for this success comes

from Dell. The Telecommunications Department has three teachers and 35 students who run a help desk for the school. “The students actually do all the routine hardware and software support on the entire network, which includes about 800 Dell OptiPlex GX620

## Technology at Work

### Hardware

Dell™ Latitude™ 2100 netbooks with Intel® Atom™ N270 processors

Dell Latitude D530 and D520 notebooks with Intel processors

Dell OptiPlex™ GX620 desktops with Intel processors

Dell PowerEdge™ servers with Intel Xeon® processors

Dell Precision™ 490 workstations with Intel processors

Dell/EMC SAN storage

### Software

Alan Bradley PLC

Auto Desk Inventor

Automation Studio

Cisco Packet Tracer

MasterCam

NI Multisim

Microsoft® Exchange Server

Microsoft Office 2007

Microsoft Office SharePoint® Server

Microsoft SQL Server® 2003 R2 database

Microsoft Windows® Active Directory®

Siemens PLC

Stoneware webOS Web Desktop Virtualization

Windows® 7

Windows Server® 2008

desktop PCs and 200 Dell Latitude laptops," says Robin Goodell, instructor, Telecommunications Department, Worcester Technical High School. "There are also some Dell Precision 490 workstations."

Applications used on the Dell Precision workstations include Auto Desk Inventor, Cisco Packet Tracer, MasterCam, Automation Studio, NI Multisim, Alan Bradley PLC and Siemens PLC.

The school also uses Dell hardware in its data center, with Dell PowerEdge servers housing its Microsoft Windows Active Directory, Microsoft Exchange Server and Microsoft SQL Server database software. A Dell/EMC storage array provides centralized storage for the servers.

"We rely on Dell PowerEdge servers to support a lot of the new applications that we are bringing online," says Goodell. "Education is really being driven now by the use of technology. My students today are learning in a way that I never dreamed of learning. They're on their computers, running simulation software, doing their lab work on their computers, accessing their curriculum on their computers, and we need reliable servers to support that. We've recognized a great increase in availability with our Dell PowerEdge solution. Dell and its partners have transformed classrooms into unique learning spaces that have energized education."

### **High Availability For Learning Software**

"Our uptime is close to 100 percent with the new servers, and we are now able to offer more apps to a larger population from a centralized location," Goodell continues. "Windows Server 2008 makes use of the 64 bit platform on the Dell Learning server, offering both improvements in networking and file management. Terminal services is a key enhancement we have been able to exploit. Our old solution was very antiquated. They were refurbished machines that crashed regularly and did not meet our needs. Our current solution has launched us into a whole new realm with improvements in availability, scalability, security and manageability."

Students have many more resources available for problem solving, and they are encouraged to use all of those resources and make evaluative

judgements about the information they find. "With the Dell solution, students are able to use technology to become more independent in their learning. The teacher's role becomes more facilitative and less directive," says Goodell.

### **50% Reduction In Desktop Maintenance Time**

Up until now, the school has not allowed off-campus network access for students. All school files, folders and materials are housed on the local area network, and students have been able to access only those files that are public.

A new initiative will make computing ubiquitous. WTHS is rolling out Stoneware webOS Web Desktop solution, which allows students to access remotely all the material they get at school. From a central location, the school will be able to push a virtual desktop to the machines. "With these secure systems, students will be able to see all their curriculum folders, files, homework—anything that teachers are able to provide," says Goodell.

While at school, the students will access their virtual desktops on Dell Latitude 2100 netbooks with Intel Atom processors.

Through the network WTHS maintenance technicians will be able to access the netbooks remotely to provide support. "One of the things we like about the Stoneware solution is that we can access the netbooks from a central location," says Goodell. "We don't have a lot of resources in IT support, and we're going to experience hours of labor savings with virtual desktops. Approximately 50 percent of our labor hours are used to configure or repair workstation settings, remove viruses and add software. This equates to approximately 60 hours per week. The Stoneware solution will eliminate all of those problem reports and requests."

### **Simplified Navigation With Windows 7**

WTHS wants its students to have the newest technology available to them, which includes Windows 7. "Our students are going to spend four years here, and they need to be working on an operating system like Windows 7 that's going to give them a competitive edge when they leave," says Goodell. "Windows 7 is also going to fix some of the security and networking issues that we have had."

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WTHS started to load the release candidate for Windows 7 last year. Subsequently, whenever there was a computer repair issue, it went ahead and loaded Windows 7 on the machines, which solved the configuration problem. The school plans to have all 800 machines on Windows 7 by the end of the 2010 school year.

"I was really surprised when I loaded the release candidate of Windows 7 on my own laptop," says Goodell. "Right away it was a great improvement when it came to accessing network resources. A lot of the Windows XP issues that happened in the background with network connections, causing my computer to run slow, were no longer occurring. And it just really felt like it was easy to navigate. I expected there to be a big learning curve, and there wasn't."

The school is also migrating to Windows Server 2008. "We feel that the combination of Windows 7, Windows Server 2008, and as many Dell netbooks as we can get out there is going to make the access to the applications more seamless and available," says Goodell. "Our Windows 7 implementation is progressing well. Most users quickly adapt to the new interface and really like the improvements in network connection time, both wired and wireless, and the intuitive way that peripherals are recognized. Additionally, we upgraded each machine from Office 2003 to Office 2007, and users are excited about the additional features available in their applications."

### Empowering Teachers

WTHS would not be able to realize the value of all of its technology if it did not train and support teachers to

use it. Thanks to Dell, teachers were trained when the technology was first delivered, and continue to participate in professional development courses throughout the year. "Dell also has a very good online professional development curriculum that teachers can use whenever they need it," says Harrity.

WTHS also has a facilitator program to help teachers during the school day if they reach a roadblock. Teachers act as facilitators to share their knowledge of the technology on an informal basis, with one teacher taking responsibility for one period during the school day.

"Also we have teachers that stay once a week after school to train other teachers on the school's Microsoft Office SharePoint portal, which teachers use to organize their classes and grades. The teachers troubleshoot any problems they are having with the portal," says Christine Lloyd, biology teacher. "We ask questions like 'Can I download documents in a folder?' and 'Can the kids drop documents to me in a digital drop box?'"

### Making A Difference

Thanks to its comprehensive teacher training program, teachers and students are advancing leaps and bounds beyond a traditional education. Dell's combination of technology, services and training made it an ideal partner to work with WTHS to help it achieve its educational outcomes.

"Dell is making a major contribution to our students' and our school's success," Harrity says. "Dell plays a magnificent role in the facilitation of the technology and in teachers' professional development."



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