

Worcester Technology Blue Ribbon Panel

The State of Technology in
the Worcester Public Schools

October 2012

Representative of Information Technology and Executive Leaders from:



Background: Ted Coghlin from Coghlin Electrical, and Bob Walton, Information Technology Officer from Worcester Public Schools, convened a Blue Ribbon Technology Panel in December 2011. The goal of this Panel was to bring together IT Executives from the local business and universities to advise the school district on technology trends. Where do these companies see technology evolving and what efficiencies do they see that can be obtained within the district? With these goals in mind, the Panel was formed with representatives from Hanover Insurance, Unum, UMass, and WPI. The Panel met several times and presents this report to summarize its findings.

Facts regarding the Worcester Public Schools:

- 50 locations, 25,000 students, 4,000 staff, 7,000 computers
- Staffing: 2 network admin, 8 computer techs, 2 trainers, 3 databases/ applications staff, 1 web master
- Infrastructure: Many buildings in the district are over 100 years old; electricity was a retrofit in these buildings. Electrical, network, and cooling are all factors when upgrading technology in district buildings.
- Filtering: In order to retain federal Erate funding, the district must filter Internet traffic. "The protection measures must block or filter Internet access to pictures that are: (a) obscene; (b) child pornography; or (c) harmful to minors (for computers that are accessed by minors).
- LAN: 27 Schools have 1GB to the desktop as well as building-wide wireless, the other 20 have 100MB to the desktop, with one to two wireless access points per school.

Successes: The Worcester Public Schools has a robust data network, with 10MB connection at every school, and a 150MB Internet connection. The district provides cloud based services such as NWEA MAP testing, Plato Learning, Fast For Word, Headsprout, AESOP, SchoolSpring, and more. Worcester Technical High School is an excellent example of how well a school can perform with proper technology in place. Tech High was built with state of the art technology. The school supports and maintains this technology through the student help desk system that they have developed. This keeps their computers up to date and fully functioning. MCAS scores and student achievement at Worcester Technical School have shown impressive gains since the new school opened in 2006. In 2010/11 it received national recognition for outstanding student gains.

Additional successes include:

- Document cameras: In the last two years, the district has deployed 450 document camera carts with projectors. Every school now has at least 6 document camera carts; Level 4 schools have one in every classroom, and the high schools have 19 per school.
- iPads: The district is currently piloting an iPad cart at three of its elementary schools. This includes 30 iPads per school, charging carts, and MacBook sync station.
- NHS: The new North High School was built with interactive whiteboards and document cameras in every room, as well as building wide wireless and modern computer labs.
- Secondary computer labs: Last year, 9 secondary schools received new computer labs, which included new computers, LCDs, and printers.
- Moodle: The district learning management system has been an excellent site for online learning.

Current Issues: Over 8 years ago, the district spent \$1.5 million annually on technology. When budget cuts occurred, technology was cut to \$500,000 and has remained at that level each year since then. This has created severe limitations on the district's ability to maintain its 7,000 computers. Purchasing new computers is cost prohibitive, so the district purchases refurbished computers. The typical refurbished computer is 3 to 4 years old when the district purchases it. By the time a full replacement cycle occurs, the oldest computers in the district are 10 to 11 years old. It is challenging to run modern software and maintain computers this old. The district has considered virtualization technologies, parent portal access, student email accounts, teacher/parent email communication, and technology initiatives. Funding, staffing, and contractual issues have limited implementation.

The district faces a number of additional issues in the coming years.

- Windows XP end of life: Windows XP is the primary operating system within the district, installed on over 6,500 computers. Microsoft has announced that it will end support of Windows XP in 2014. The district will have major security vulnerabilities as these updates keep the computers secure from hackers and viruses. One virus or hack can rapidly bring down all of the other vulnerable computers, as well as the network. In addition, the district will be out of compliance with regulatory laws which require regular patches to occur. This is an issue that is critical and will need to be addressed before the deadline. **WE MUST ACT NOW!**
- Technology utilization: The district is not fully utilizing what technology it has for a variety of reasons. Some of these reasons include a lack of technical support for teachers in the classroom, lack of external professional development, and lack of technology repair support.
- Internet policy restrictions: certain resources are inaccessible to students or teachers.

Moving Forward: In order for the district to continue with the progress it has made, it must not become stagnant. The key to achieving this will be multi-faceted. First and foremost, elevated levels of technology funding are needed. This is not a one-time infusion solution. An ongoing significant financial commitment must be made.

The district must continue to pursue innovative technologies. Gone are the days when technology simply meant computers and laptops. Technology is now document cameras, projectors, iPads, Chromebooks, mobile devices, and more. There are indications that we are entering the post PC era, where the device does no longer matters; the device provides the access to the Internet or cloud where the application resides. While the Panel does not believe this day has yet arrived, if the district does not continue to pilot and test these new technologies, it will be ill prepared to take advantage of them as the market shifts, thus effecting student successes.

The district currently has several iPad pilots ongoing within the school system. Based on the recommendations of this Panel, starting in the next school year, the district will begin a Google Chromebook pilot to test the effectiveness of these products. Google Chromebooks are

lightweight laptops that cost around \$350. They have a very light operating system on them that boots in less than 10 seconds directly to a browser. Everything on the Chromebook is done in the cloud rather than locally on the device. The district will conduct a fit gap to determine how well these devices would integrate into the curriculum.

Ideally in the district every student should have a device to achieve a one-to-one initiative. More and more students have some sort of mobile device, whether it is a cellphone, iPod touch, iPad, Android device, or even a Nintendo DS. All of these devices have the ability to access the Internet when a wireless connection is present. A concept called Bring Your Own Technology (BYOT) may solve the budget issue of one-to-one computing. In a BYOT pilot, instead of the district providing devices for students, students would bring their own devices. This allows the students to access web based resources real time, facilitating instruction in appropriate places.

In order to properly implement a BYOT initiative, several things would need to happen. The student policy currently prohibits the use of cellphones in schools. This policy would need to be sensibly changed, putting parameters on how and when a cellphone could be used. In addition, many cellphones have data connections, thus bypassing the district's filtering technology. Students would need to be educated on the appropriate use of these cellphones while at school. Accommodations would need to be made to provide devices for those students who cannot afford a device such as a loan or lease plan. Finally, not all schools have wireless connections, but there is a plan in place to add wireless to all building by the summer of 2014.

In order to sustain teacher use of technology, professional development needs to be redesigned. The traditional method of attending full day off-site professional development, then returning to the classroom to apply the new technology may not be the complete solution. Teachers have large classes and limited number of days to teach students. They cannot turn their classroom in a lab experiment, hoping some new technology they have learned will work when "the button" is pressed. If it does not work, classroom discipline and attention quickly deteriorate until the teacher throws in the towel, vowing "never to try that again!" In addition to full day professional development, teachers need assistance while developing their technology integrated lessons. On demand videos would refresh the teacher's memory and reinforce the learning they have done. When the teacher is ready to press "the button," he or she needs someone in building to assist to make sure the technology goes as planned. This type of support can be provided by in school technology integration specialists. In addition, the Colleges of the Worcester Consortium could help by providing the district student interns to standby and assist as needed. This extra level of support would go a long way to providing the safety net that a teacher needs to implement new technologies.

What is Needed: (further detail in Appendix 1) The most pressing technology issue facing the Worcester Public Schools is the expiring support for Windows XP. The district needs an entire refresh of its computers before the summer of 2014. This will require replacing the 7,000 computers with Windows XP. In the past, the district has maintained a 7 year computer replacement cycle. Industry standard is a 4 year replacement cycle. This Panel recommends the Worcester Public Schools adopt the industry standard of 4 years. It is critical that funding is increased so that the district can provide current fully functional computers to its students and

staff. The currently allocated technology funds would be freed up to provide some of the innovative technology that our students need to be exposed to in order to succeed in this technology literate society. This will include additional iPads and mobile devices, document cameras, lightweight type laptops, student response systems, and more. Many of these tools can also address the education of special needs students at a fraction of the cost of former and current solutions.

In order for technology to be properly used, there must be on-site technology integration staff to assist teachers with their lessons. Many other school districts have one (or in some cases, multiple) technology integration staff per building. Worcester has one technology integration specialist *for the entire district*. Clearly one is not enough. This Panel recommends the district move to the model of at least one per school. This would be difficult for the district to move to immediately, so a phased approach may be more realistic. As an example, add at least 11 per year for the next 4 years. This would allow the district to achieve a proper level of teaching support. In the short term, the district can rely on the Colleges of the Worcester Consortium to provide interns to assist as well as a train-the-trainer model to train existing staff.

The Worcester Public Schools has an IT department which provides the technology infrastructure to support teaching and learning. The Professional Development department provides training on using the technology. But the position of Educational Technology Liaison was eliminated three years ago because of budget cuts. This position was a vital link between technology and education. The purpose of this position is to be able to work directly with the educational division and to help choose the most educationally sound products while still balancing the technology constraints. Filling this position is critical. This person would lead and supervise the technology integration specialists and would work directly with the education and IT departments.

The professional development budget was cut just as drastically as the IT budget. While investing in technology integration specialists will go a long way in assisting teachers with technology professional development, additional professional development funds will be needed to keep the specialists and teachers up to date with the technology integration.

Consequences: What happens if we do not act? From a technical standpoint, the expiration of Windows XP support is of paramount importance. Many risks are involved. The computer systems may become unusable as security holes are discovered and exploited. The district may be out of HIPAA compliance, which has a security standards regulation. HIPAA regulates the protection of student medical records, and breaches may result in the compromise of data and fines. The true scope of the issue is unknown, but the risks are very high.

From an education standpoint, the Worcester Public Schools has been treading water since the substantial budget cut 8 years ago, barely keeping its head above water. Technology in the district's schools is underpowered and most people would not find a 10 year old computer sufficient at home. The district desperately needs an infusion of technology to quickly improve the state of the technology in its schools.

Conclusion: Despite having its budget cut by over 65% 8 years ago, the IT department has done its best to maintain a minimal level of technology in our schools. *The time has come to make a*

sizable investment in the technology within the district. Network safety and security mandate immediate action. Worcester Public School students need modern tools and the professional support that goes along with it. Worcester Technical High School has demonstrated that technology savvy students translate into high performing students. Presently when our students enter the work force or college, they find they are many years behind in terms of what most students have used for technology. Is that acceptable? The members of this Panel, from Worcester's local businesses and universities, do not think so.

Acknowledgments:

We would like to acknowledge the hard work and contributions of the following people. Their help was invaluable and sincerely appreciated. The Panel members are willing to assist the district to achieve implementation.

Lisa Dyer, Manager of Staff Development,
Worcester Public Schools

Deb Donohue, Technology Integration
Specialist, Worcester Public Schools

Kathy Ivanowski, Visual Arts Liaison,
Worcester Public Schools

Frank Mann, Worcester Technical High
Telecommunications Department Head,
Worcester Public Schools

Kamil Alachi, Vice President, Infrastructure
Technology Services, The Hanover Insurance
Group

Jennifer Luisa, Assistant Vice President,
Community Relations at The Hanover
Insurance Group

Professor Martha Cyr, Director STEM
Education Center, Worcester Polytechnic
Institute

Mary Beth Harrity, Director Academic
Technology Center, Worcester Polytechnic
Institute

Erin DeSilva, Learning Management System
Faculty Support, Worcester Polytechnic
Institute

Deborah Scott, Chief Information Officer,
Worcester Polytechnic Institute

Jason Gaudreau, Systems Manager,
Infrastructure Services - Virtualization, Unum

Maya Katz, Consultant

Lyn Riza, Director, Educational CoACIO,
Academic Computing, University of
Massachusetts Medical School

Bob Walton, Information Technology Officer,
Worcester Public Schools
waltonb@worc.k12.ma.us

Ted Coghlin, Treasurer, Coghlin Electric
tedcoghlin@coghlin.com

Appendix 1:

Economics:

As explained in this report, to improve Information Technology capabilities within the district, a significant investment in equipment, staffing, and professional development of faculty and administration must be made. This Appendix further details the investments needed to accomplish these goals.

Priority: Infrastructure

The district needs to complete its upgrade of the network infrastructure in order to be able to take advantage of new technologies. This includes adding wireless and upgrading the network at 16 additional schools. To achieve this, the district has applied for \$5.4 million in E-Rate projects encompassing infrastructure and network connectivity over the next two years. After E-rate subsidization, the district's portion will be \$830,000, of which \$400,000 is already allocated in budgets. The district will need an additional \$430,000 to bring these projects to completion. The district was recently notified that the 11-12 and 12-13 applications were denied due to lack of funds.

Priority: Hardware

As outlined in this report, Windows XP support is expiring in 2014, creating a security issue within the district. **The district needs an immediate solution.** The City of Worcester replaced all of City computers in the summer/fall of 2012 because of the impending issue with Windows XP. The City chose to secure a 5 year lease. The Panel recommends replacing 7,000 computers either through a one-time purchase or through a lease. Purchase option: at \$700 each per computer (with LCD), the district would have a one-time cost of \$4.9 million. In order follow the City's lead, the district will pursue a 5 year replacement cycle. The Panel recommends allocating an additional \$980,000 to the annual technology budget in order to maintain a replacement cycle. Lease option: The City of Worcester entered into a 5 year lease agreement in order to replace all City computers. Assuming the same terms, the annual cost to lease 7,000 computers at \$700 each for 5 years is \$1.074 million. The district would need to increase the IT budget by \$1.074 million each year for all five years. At the end of the lease, the district would recommend starting a new lease in order to maintain to not once again fall behind in technology. The lease option is attractive because it creates a fiscal strategy for having modern computers that are replaced every five years.

Priority: Professional Development and Staffing:

The Worcester Public Schools needs a culture where technology is the norm. In many cases, today's students are more technology literate than the teachers teaching them. In order to accomplish this, teachers require ongoing year-in and year-out technology training to translate into student success. The Panel realizes that there may be a fear of adopting technology based on limited knowledge and experience with technology. Therefore the Panel feels all administrators and faculty need to be educated and evaluated on their technology skills yearly. This Panel suggests the district implement this by formally including technology as a component

of the teacher and administrator evaluations. The Panel recommends further study and implementation of this by the relevant stakeholders.

To make an immediate impact, the Panel recommends a train-the-trainer program. This involves \$142,000 to have an IT knowledgeable person in each school. A long term solution involves adding a technology specialist at each school. Also, additional computer and network technicians are needed. These total 57 new positions at an approximate cost of \$3.8 million.

Train-the-trainer costs:

Train 45 people 80 hours at \$35/hr = \$126,000 (will involve 5 school days and 5 non-school days)

Substitute teachers = \$16,875

Additional staffing costs:

44 additional technology integration specialists estimated at \$70,000/each = \$3.08 million

1 Educational Technology Liaison estimated at \$90,000

5 network technicians estimated at \$62,000 each = \$310,000

7 computer technicians estimated at \$47,000 each = \$329,000

Priority: Policies

The Panel addressed the Bring Your Own Technology concept and the numerous policies in place regarding the use of smart devices by students. Many Worcester Public Schools policies will need to be reviewed and updated to allow BYOT. Each year, more and more students are accessing their own BYOT device to improve their successes. This Panel recommends the District pilot BYOT in at least one school. This would involve updating the student cellphone policy, upgrading the network infrastructure, and making a device available to those students who cannot afford one. Depending on which school the District chooses, costs will vary to implement this BYOT initiative; dollars unknown.

The table below summarizes the additional technology funds needed to fully implement:

Priority	2013/2014	2014/2015	2015/2016	2016/2017
Infrastructure	\$430,000	\$500,000	\$750,000	\$1,000,000
Hardware	\$4,830,000 (purchase) or/ \$ 1,073,590 (lease)	\$960,000 (purchase) or/ \$ 1,073,590 (lease)	\$960,000 (purchase) or/ \$ 1,073,590 (lease)	\$960,000 (purchase) or/ \$ 1,073,590 (lease)
Professional Development	\$142,000	\$200,000	\$250,000	\$250,000
Staffing	\$1,000,000	\$1,000,000	\$1,000,000	\$1,000,000
Totals	\$6,402,000 or/ \$2,630,253	\$2,660,000 or/ \$2,758,253	\$2,960,000 or/ \$3,058,253	\$ 2,710,000 or/ \$2,808,253

Note: Assuming a 5 year lease, there will be an additional \$1,073,590 lease payment in 2017/2018

Appendix 2:

This appendix includes the informal notes taken at each meeting included for reference purposes.

Minutes and Presentations

January 19, 2012 Minutes

In attendance:

Bob Walton, Worcester Public Schools

Ted Coghlin, Coghlin Electric

Brian Allen, Worcester Public Schools

Maya Katz, Unum

Deborah Scott, WPI

Lyn Riza, UMass

Kamil Alachi, Hanover

Jennifer Luisa, Hanover

Ted Coghlin gives update on Tech High:

Trade school was a trade school run by 5 trustees. A new school was needed, at a cost of \$90 million, the MA School Building Authority reimbursed at 90% so it made sense to merge with WPS to gain access to this money. Tech went with Cisco backbone and Dell PCs, 900 computers at the tech school, 150 laptops, 48 netbooks, for a total of 1100 PCs. Two departments maintain IT, network group and technology. These departments are run by staff, but students do the work - on the job training. Tech is a Cisco A+ Academy with dual enrollment at Mt. Wachusett Community College. Also they are beginning to work with Quinsigamond Community College for a similar arrangement. Technology at Tech is 6 years old and is getting dated. Security issue an issue at school, creating a need for more cameras. There are some blind spots in the current camera system. Tech had entrustments that worked well- 5 year entrustments with companies.

Continued next page

Bob Walton gives update on WPS:

Challenges	Successes
Scope: 50 locations, 25,000 students, 4,000 staff, 7,000 computers	WAN: District has a switched Ethernet WAN, currently at 10MBs for most locations, with the ability to expand to 1GB per location
Funding: \$500,000 budget to maintain computer replacement cycle, purchases such as servers, software, networking equipment, as well as new innovative technologies	Internet: District has a 150MB Internet connection with ability to expand
	Erate: The district receives an 80% discount on phone, cellphone, WAN connectivity, and Internet costs through the Erate program.
Staffing: 2 network admin, 8 computer techs, 2 trainers, 3 database/applications staff, 1 web master	LAN: 27 Schools have 1Gb to the desktop as well as building-wide wireless, the other 20 have 100Mb to the desktop, with one to two wireless access points per school
Infrastructure: Many buildings in the district are over 100 years old, electricity was a retrofit in these buildings. So electrical, network, and cooling are all factors in upgrades to buildings	Document cameras: In the last two years, the district has deployed 450 document camera carts with projectors. Every school now has at least 6 document camera carts; the Level 4 schools have one in every classroom, and the high schools have 19 per school
Professional Development: Professional development dollars have been cut just as severely as technology dollars. Very little technology professional development occurs, which makes successful implementation of classroom technology projects difficult.	iPads: The district is currently piloting an iPad cart at two of its elementary schools. This includes 30 iPads, charging cart, and MacBook sync station
Capital projects: Along the same line, one-time technology cash infusions can create support issues. Well intentioned cash infusions provide much needed hardware or software, but rarely come with the staffing or professional development to supplement proper implementation	NHS: The new North High School was built with interactive whiteboards and document cameras in every room, as well as building wide wireless and logins for each student
Filtering: In order to retain federal Erate funding, the district must filter Internet traffic. "The protection measures must block or filter Internet access to pictures that are: (a) obscene; (b) child pornography; or (c) harmful to minors (for computers that are accessed by minors)."	Secondary computer labs: Last year, 9 secondary schools received new computer labs, which included new computers, LCDs, and printers
	The district designed, supports, and maintains a HR and student information system that not only saves the district hundreds of thousands a year, but also allows the district to quickly and easily access and modify the systems
	Vernon Hill: Greenwood Street Landfill Taskforce is providing technology money to upgrade 72 computers at Vernon Hill School, add an iPad cart, and 12 laptops

The Panel was given a chance to ask more questions and get clarification:

Question: What Operating System are we using? Windows XP on existing machines, Windows 7 on new machines (but not refurb), noted that we are going to have issue with support of XP running out

Question: Why using Visual Basic for our applications? We have just started the transition to .NET and moving WPS to it

Question: What do we use for email? Exchange for staff, no accounts for students except at Tech High, we block web based email for all staff and students because of bullying incidents, the need for staff to use our email which is archived, and to avoid personal use of email while at work

Question: What problem are we looking to solve? We want to know what are universities and businesses looking for at in their employees/ students. If any restrictions how are they handled?

Question: Where do we go from here?

Looking in our current system, what could we do better?

For example, more PD, student web access, one on one computing access, etc.

Also as employers and universities, what proficiencies do you want to see are needed in your incoming students and employees?

Kamil from Hanover noted 3 areas of concern for WPS:

- Need for innovation
- Need for security, filter, IDs, logins
- Need for simplification, manage while reducing costs

At Hanover, AT&T manages filtering, Hanover still controls access, but AT&T handles equipment, etc Cut over to Microsoft cloud for Exchange email. Don't manage servers, pay monthly/employee. Has half a person to maintain email system. They have archiving included in service. Does not do instant messaging yet because it is not archived yet; should be ready 3rd quarter 2012.

Now have service in cloud with service.com; have their HR system in the cloud

Maybe eText books would save money.

Smaller devices are going to cost less. WPI is prototyping a mobile phone app for instant student "response" in classrooms. Older faculty are not up to speed as students are, so important to educate faculty so they can use the technology tools available to them.

Incentives for teachers to achieve technology proficiencies is happening in California.

Having Microsoft and Cisco certifications out of high school makes students instantly employable.

Possibility of bring your own device, there are software solutions that can disable 3G to force wireless only

What about the students don't have a device?

Bob Walton will speak with Neil Heffernan regarding Assisments

Where do we go from here?

Break into subgroups - Kamil and Brian will meet to discuss finance around tech

Lyn, Maya, and Debra will look into PD and staff needs to move forward

Need to address parent buy-in and support – Should WPS Parent Advisory Members be contacted now?

February 10, 2012 Minutes

In attendance:

Bob Walton, Worcester Public Schools

Ted Coghlin, Coghlin Electric

May Katz, Unum

Deborah Scott, WPI

Lyn Riza, UMass

Kamil Alachi, Hanove

Jennifer Luisa, Hanove

Presentation by Kamil Alachi, Hanover

Technology Innovation - reduce software and hardware costs, upgrades, and administration by leveraging lightweight technologies

Rationalization - Maximize \$500K budget for monthly services, use technology partners

Security - Enhance security posture, consolidate on singular platform

Windows XP will cause security concerns if support ends in 2014, they may extend it, but it will only extend the inevitable, will cause major security problems when this occurs

How do we avoid this impending issue?

One idea, Chromebook - wireless device, also 3G if needed, \$350 no operating system other than Chrome, reduction of security tasks, reduction of purchasing and deployment costs, reduction in server and storage costs, provide tablet like functionality, last about 8 hours, like a Netbook but no Microsoft operating system (OS). This light OS makes the device very fast, almost immediate boot up. Netbooks were heavy OS's on light devices, making them very slow.

What is the fit gap in the Worcester Schools with this technology? Do we need Microsoft OS to be able to install software and use Internet Explorer? Or would a Chromebook suffice? We would need to determine what would work and what would not. Possible case studies of other school districts should be made - successes and failures.

Some apps will run on it even if there is no wireless connection, but device truly designed to have a connection for best usage. If Gmail is used, what are the tradeoffs?

You can manage them centrally and can control what apps can be put on them

Consider pilot approach to see what issues we may have. Consider possibly a cart like we currently have with iPads.

When you buy new PCs, there are lots of costs, antivirus, intrusion protection, encryption, etc.

Cloud computing is maturing enough that enterprises are beginning to use them. Coca Cola outsourcing commodity services like email, IM, Sharepoint.

Hanover has done the same. They did have security, reliability, and compliance concerns.

Security concern - can you guard your data better than Microsoft? Microsoft spends much more on security than any one company, and they write much of the code that; so are they not better equipped to handle security issues?

Consider cloud based services for email, chat, etc.

If allowing chat programs, students should be provided chat by WPS? They use it out of school should they should use it in school?

Hanover doesn't let staff use Facebook or personal email. They subscribe to a private social network, but it is very costly.

Could approach a vendor to provide a model service and use the district as a case study at reduced or no cost. Ceridian is HR system that Hanover uses; it has self-serve system that allows staff to access tools. Consider going cloud based for HR and financial systems.

Hanover uses www.servicenow.com for help desk application; much less expensive than former solution and many more features.

Worcester Schools HR system right now is maintained by City of Worcester. It is Pentamotion which has been in place for 15 plus years. It is accessed through a terminal interface. As a result, the school system maintains its own HR Information System, but also must double data entry into the City HR system

Look at other school districts that have gone all cloud, cloud based HR, cloud based email, etc.

Security - web filtering, protection, eRate \$ financial support.

At Hanover, when they go out to the Internet, they are going out through VPN connection in cloud via AT&T service. AT&T handles all of the filtering of traffic

When Hanover discovers a site to block or unblock, an authorized person can email AT&T and they fix immediately.

You don't have to worry about upgrades, security, etc., all handled by vendor

They still do have firewalls for protection of internal systems

If you still going to have own devices, consider combining devices into one, firewall, content

Hanover subscribes to Fiberlink (cloud based) for their MDM solution (mobile device management) - allows them to monitor and control use of personal devices.

Lynn, Maya, Deborah presentation

Group met with WPI STEM (science, technology, engineering, and math) education director and incorporated her feedback

Goals: 1. cost effective and 2. increasing proficiency for faculty and learners in the use of tech in the classroom

Tapped into previous work. Bring together WPS district tech plan and coordination with curriculum planning – tech dept must work with curriculum development to be successful. Students must be brought into this as well. They often can use tech better than anyone else

Professional development days for general education on effective use of technology in all subjects, not just STEM areas (across the whole education spectrum).

College of Worcester Consortium has meeting, last one was around technology. They had people using Monster, Dice.com, etc online tools

Tech night at Unum for high school students. Used very simple exercises to show students that IT is more than just tech tools. It is about thinking, talking and problem solving.

Perhaps extend this to teachers and use a PD day to encourage the use of technology. Career day for teachers – how to use computer software.

Could possibly use local businesses and universities as partners to develop the curriculum for teachers and possibly host events

Pilot audience response system (clickers) in high school environment - good for dip sticking, good to get those who wouldn't to participate, would be a matter of finding the right teacher and the right subject.

Currently we have teacher at Tech High who is a model user. Other examples in WPS can be found.

Leveraging your successes: how do we use our successes to request additional resources?

Maybe look into outside group to study our successes.

Do we need to change the policy regarding student cellphone use; the world is changing?

WPI and UMass may be able to assist teachers to use tech tools like interactive whiteboards, iPads, and document cameras. Would need to find the teachers with the aptitude to use these tools and become a train the trainer.

Setup tech group of teachers, admins, and WPI and UMass to see how we can assist each other.

Create Community Engagement, WPS colleagues help each other, participation of curriculum coordinators, instructional tech specialist, students, and other external resources - working group at each school. A community of Trainer the Trainers; including IT savvy students.

Maybe form a help desk of students at each school like we have at Tech High now.

Restore budget to appropriate levels of technology - this group needs to be an advocate for this

Find areas from other WPS programs where documented evidence on improved learning outcomes that justify reasons for further investment, NASSP National Association of Secondary Principals, Sheila Harrity is guest speaker, she may have documentation of Tech High success correlated to use of technology

Do we need to look any further than Worcester Tech High for an example of how tech investment can improve student achievement?

Add instructional technology specialists to assist teachers with implementing coordinated curriculum and technology plans

Local colleges may be a resource for training WPS teachers in technology. Worcester College

Consortium may be resource to handle this

Ted will talk to Consortium regarding this. Consortium benefits from this as well.

Bob will work on creating presentation for next meeting summarizing the work so far of the group

Bob will get on the agendas of CPPAC (parent group), student advisory, and DELTA group (educational administrators) to inform them of the progress of this group.

Discussion Suggestions:

1. Smart-phone survey – Students in elementary, middle, and high schools

What phones do they use know?

2. Technology preparation for future teachers – Are courses preparing graduates to use the latest technology in teaching? How to bring less knowledgeable WPS teaches “up to speed” with it?

3. Should WPS cell phone policies be revisited?

4. What IT efficiencies can be realized in the city and schools systems?

5. The have/have not's: IT equipment of students and families needs discussion as to how to proceed.

March 16, 2012 Minutes

In attendance:

Bob Walton, Worcester Public Schools
Ted Coghlin, Coghlin Electric
Jason Gaudreau, Unum
Deborah Scott, WPI
Lyn Riza, UMass
Kamil Alachi, Hanover
Jennifer Luisa, Hanover
Brian Allen, Worcester Public Schools
Tom Zidelis, City of Worcester
Frank Mann, Worcester Technical High School

Bob Walton's power point slides recapping discussions to date and highlighting many items needing discussion and review as we finalize our report to the superintendent for the school committee action was presented.

1. Bob Walton- recap presentation (attached)
2. Security – cell phone policy – use your own device – filtering FaceBook, Twitter, YouTube, and others. At what grade is student responsibility expected to “do the right/ proper use of computing; (K-4) – (5-8) – (9-12)?” Should students and parents sign an agreement regarding use and student responsibilities? Major issue; federal/state law, government regulations. At collegiate level students are allowed more access. Is Worcester ready to give students access?
3. Cloud Computing – Virtualization – Storage – Software Services – Outsourcing – In-house Servers – Access – Reliability – Conversion costs. Frank, Jason and Kamil should get together to discuss how of cloud computing – issues, ideas, conclusions.
4. Professional Development is key item – could Consortium colleges and or IT skilled high school students be utilized to upgrade/ coach/ assist/ trouble shoot/ for faculty members in all Worcester schools? Increase “Train the Trainor” programs – bring more IT talents to faculty. Look at what we have and don't have and what needs to be done? Discussion next meeting.
5. Curriculum – Worcester Public Schools (Deb Donahue and Lisa Dyer) to be put in touch with Deb Scott and Lyn Riza to work on an online safety curriculum and acceptable use policy. At UMass they found that they should have considered technology in Phase 1 of curriculum redesign rather than waiting for Phase 2. Suggestions may shift the way you design the pedagogy.
6. Innovation – At what year/ what device/ devices? What apps? iPads (K-4), (5-8)? / Laptops, etc (9-12). BYOT (bring your own technology) Policy. iPads can not multi-task. Innovation ideas will discuss at the next meeting.
7. E-Rate 2012 requests – Bob to discuss at the next meeting what is in the E-Rate proposal this year. What synergies/ cost savings can be found in City + WPS IT systems?
8. Jennifer/ Kamil/ Ted to meet – start formulating report presentation to school superintendent – school committee.

Professional Development and Curriculum Meeting Minutes April 4, 2012

Lyn Riza (UMASS Med ACIO Academic Computing), Deborah Scott (WPI CIO) and Mary Beth Harrity (WPI Director Academic Technology) met with WPS staff of Deborah Donohue (Instructional Technology Specialist), Lisa Dyer (Manager of Staff Development), and Kathy Ivanowski (Visual Arts Curriculum Liaison). Below is a summary of points that we learned and can use to formulate further recommendations.

Availability and accessibility

- o Need Wireless Network Access and electrical power in order to utilize school provided or teacher owned laptops during instruction.
- o Accessibility to the Internet to enable use of on-line tools
- § Moodle on-line courses being used at Forest Grove Middle School
- o Need wireless more than wired connections, to give teachers flexibility to move within the classroom

Instructional Technology Specialists

- o Currently one staff for 50 Schools; used to be 5 for 50 schools before budget cuts
- o Recommend at least 10 staff, handling 5 schools each.
- On-Site Contact/Technology Coordinator
- o Each school needs to have a designated on-site staff member to be the primary contact to work with the Instructional Technologists and be there to support the teachers in the classroom
- o On-site coordinators can assist with Internet Security training in the school, and for ensuring the right information gets sent home to parents
- o New Job Family at UMASS was created to address similar use case
- o Administrative Coordinator – Educational Technology Coordinator: ***Under the direction of the Administrator/ Director, or designee, the Educational Technology Coordinator is responsible to coordinate curriculum scheduling, maintain web environments, produce technical and training documentation, administer training environments, provide multimedia support and production, and administer and support synchronous technologies***
- § Union to non-union
- § Subset of administrative jobs impacted
- § Improved just in time support and creation of power user group
- § Recognition of new paradigm needed to administratively support a course

On-Line Learning community

- o Leverage good work being done during curriculum development process to engage the teachers
- o Leverage Moodle users as a baseline group
- o Leverage Moodle technology for community and collaborative space regarding instructional technology
- o Offer on-line tools for Internet Security training
- o Continue to engage COWC instructional technology professionals in this community
- o Leverage senior students to answer on-line help inquiries, and provide support as a for credit opportunity to supplement Instructional Technologist and on-site coordinators efforts.

April 5, 2012 Minutes

In attendance:

Bob Walton, Worcester Public Schools
Ted Coghlin, Coghlin Electric
Jason Gaudreau, Unum
Maya Katz
Deborah Scott, WPI
Lyn Riza, UMass
Kamil Alachi, Hanover
Jennifer Luisa, Hanover
Frank Mann, Worcester Technical High School

Recap of progress of group

Explanation of Erate funding by Bob Walton (notes included below)

Deb Scott and Lyn Riza had a conference call with the following Worcester Public School staff: Lisa Dyer (Staff Development manager), Deb Donohue (technology integration specialist), and Kathy Berube (curriculum liaison). Report is attached.

We discussed the outline of the report that this group will produce.

They are three areas to be discussed in the report. Define the need, describe what is needed, and how we will keep this progress moving forward rather than being a temporary solution. Group felt the report should have measurable outcomes.

*Define the need – Windows XP support ending 2014, security issues, 10 year old computers, lack of 21st century schools, district technology not being utilized to fullest because of lack of support We don't want the report to be all negative. Tech High can be used as an example where proper technology and support can lead to results. Major companies in Worcester are behind this

*What do we need - more staff (tech support and PD), more professional development, more technology funding, refresh of PCs to replace XP, clerical support at each school, need to spell out clearly how any additional funds would be used

*How do we keep this moving - Innovation will keep the ball rolling – Bring your own technology (BYOT), Chromebooks, iPads, document cameras, interactive whiteboards, professional development, College of Worcester Consortium (COWC) offer a course that would fulfill teacher personal PD requirements that is convenient and would give college credit

Other countries are significantly investing in Science, Technology, Engineering, and Mathematics (STEM) classes. The US is falling behind in this respect. We need to boost our investment in these courses in order to compete globally. Local colleges can support the district by providing courses STEM for WPS teachers. In addition, local colleges can collaborate with our schools to provide assistance in creating and supporting STEM courses. Make it clear that this should dovetail with the WPS Curriculum redesign. Spell out specific use cases of what the technology will be used for

Work force in IT is aging, 20% of staff at Unum is eligible for retirement now, average age of IT staff is likely in their 50s. Must get companies involved because they will need students trained in these things. Businesses are outsourcing their IT support to India and Ireland because they are willing to learn mainframe old technology like COBOL, Ireland is willing to customize curriculum to meet needs of Unum Schools must begin to understand local business needs to remain relevant.

Follow ups:

Bob Walton and Ted Coghlin will create a rough draft of the report on Google Docs, send to group and give deadline - get this out by April 12th, respond to it by the 16th, revised draft by 19th, review at next meeting

Deb Scott will research what UMass offers in terms of STEM education for WPS teachers.

Erate Summary

Erate is a program run by the FCC and designed to insure schools and libraries have adequate access to the Internet and telecommunications. It reimburses schools using a formula based on free and reduced lunches. There are two levels of service it funds, Priority 1 and Priority 2. All districts receive Priority 1 funds; Erate then disburses the remaining funds for Priority 2 projects to the districts with the highest needs. Priority 1 requests include telephone service, cellular service, Internet service, web hosting, and wide area networks. Priority 2 includes internal wiring and basic maintenance (service) of internal connections.

The district has applied for Erate funds since the inception of program in 1998. The district has applied for more than \$12.5 million in services and projects, and has been reimbursed for over \$10 million of those costs (see table on next page). In the current year and previous year the district has applied for \$5.4 million in services and projects and hopes to receive \$4.6 million in funds.

Erate reimburses Worcester from 80% to 90% of a project, depending upon various factors. It has been a tremendous resource for the district and has allowed the district to move to a very reliable wide area network and a fast Internet connection. It has also reimbursed for commodity services such as cellular and telephone service. But there are some limitations and issues with Erate funding.

The first issue is with the funding cycle. Erate applications are due in March for the billing cycle beginning July 1. But Erate applications are often not approved until October, and sometimes as late as 16 months later. The next issue revolves around Priority 2 requests. Priority 2 requests are only funded once Priority 1 requests are fully funded. As a result, many Priority 2 requests are not funded. Any school that is below 85% eligibility generally does not get funded. The last issue has to do with web filtering. In order to receive federal Erate funds, we must agree to comply with the Children's Internet Protection Act (CIPA). This means we are required to filter "objectionable" material to minors. We must continually monitor this filter and keep records on file to show the district complied with this requirement.

FUNDED

Year	Discount %	Total Cost	Erate Funded	District Portion
1998 Total		\$ 514,876.00	\$ 360,413	\$ 154,462.80
1999 Total		\$ 846,922.00	\$ 592,845	\$ 254,076.60
2000 Total		\$ 321,600.00	\$ 228,336	\$ 93,264.00
2001 Total		\$ 332,421.35	\$ 236,019	\$ 96,402.19
2002 Total		\$ 364,628.63	\$ 258,886	\$ 105,742.30
2003 Total		\$ 492,577.45	\$ 364,507	\$ 128,070.14
2004 Total		\$ 325,969.44	\$ 244,477	\$ 81,492.36
2005 Total		\$ 482,226.00	\$ 361,670	\$ 120,556.50
2006 Total		\$ 1,386,315.00	\$ 1,168,967	\$ 217,348.50
2007 Total		\$ 1,223,121.00	\$ 1,023,962	\$ 199,159.14
2008 Total		\$ 2,049,111.52	\$ 1,661,501	\$ 387,610.42
2009 Total		\$ 1,553,995.92	\$ 1,251,652	\$ 302,343.69
2010 Total		\$ 2,243,835.73	\$ 1,879,297	\$ 364,538.57
2011 Total		\$ 501,193.68	\$ 405,967	\$ 95,226.80
Grand Total		\$ 12,638,793.72	\$ 10,038,500	\$ 2,600,294.01

PENDING

Year	Discount %	Total Cost	Erate Funded	District Portion
2011 Total		\$ 2,042,280.71	\$ 1,733,419	\$ 308,861.43
2012 Total		\$ 3,402,437.17	\$ 2,881,056	\$ 521,381.46
Grand Total		\$ 5,444,717.88	\$ 4,614,475	\$ 830,242.89