

Wayland Public Schools

TECHNOLOGY REPORT

Jean Tower, Director of Technology and Accountability

June 16, 2008

I. Executive Summary

This Wayland Public Schools Technology Report is prepared by the Director of Technology and Accountability annually. It is presented to the Superintendent and to School Committee. The report is a status update on the state of technology in the Wayland Public Schools in terms of goals set and progress made against these goals (Section II). Goals that are set for the upcoming year are described in Section III. Section IV is an outline of the planning requirements set forth by the Massachusetts Department of Elementary and Secondary Education (ESE). Typically this section would include descriptions of where Wayland stands with respect to these guidelines. This year, however, the Technology Task Force (TTF) will be working over the next few months on a response document to the state guidelines. Section V, Technology in the Curriculum, provides a status update on goals set and a description of ways that technology has been used in the curriculum this year.

The forward progress reported in Section II may paint too rosy a picture of technology in the school district. The goals set forth in the annual report are already reduced to reflect the actual budget that has been allocated. The goals are ambitious and we work very hard to achieve them, but they do not fairly represent the “big picture” goals of the schools. The overarching goals for technology are found in our three-year plan at http://www.wayland.k12.ma.us/district/district_info/departments/technology_office/techplan3year.pdf, and in the assessment of the Technology Department, are modest goals, in keeping with the funding practices of recent years. The capital budget requests put forth in that plan have never been fully funded, and although we have made incremental progress against all of the goals in the plan, it would be accurate to say that we have fully achieved none of them. That will require more funding, more commitment, and more attention to the subject than we have previously been able to muster.

I have often heard it said in this school district that it is everyone’s job to teach reading. In the same spirit, it must be everyone’s job to know and teach technology, to teach *with* technology, to understand what 21st century skills are, and to contribute in a meaningful and knowledgeable way to the topic, to our goals, and to our planning process.

I suggest that the primary “technology” goal for Wayland Public Schools for the upcoming year be to maintain a focus on improvement that includes raising the awareness and increasing the knowledge of *all* stakeholders – School Committee, parents, administrators, teachers, students, and others. Certainly, the TTF is poised to help a great deal in sustaining the momentum we have generated by the external audit and our by appeal to staff and to the citizens of Wayland to participate in an improvement process. I am optimistic that Wayland can sustain the interest and energy of the TTF and use it to fuel visible development.

II. Progress Report Relative to Goals

Following is an update on the progress made against our goals for 2007-2008 school year.

Update by Goal

Infrastructure Goals Update

- This summer we will complete the transition to OS X computing by removing all OS 9 computers from the managed network. Many of the oldest computers will go to recycle and some will be kept for single purpose computers while we investigate replacing those key software titles that will reside on them.
- *We accomplished this goal and moved the entire school district a version of the OS X operating system. Different ages of hardware required different incarnations of OS X, so we are still a shop of many operating systems. We made a few exceptions for those people who were using key programs that had not been recoded to run on the newer operating system.*
- All of the servers for the instructional side will be upgraded with newer release of the operating system. This, coupled with taking the OS 9 computers off the network, will poise us to be able to take advantage of more of the capabilities of Workgroup Manager, including improved access management to shared folders.
- *The Technology Department accomplished this goal as scheduled. All of the instructional servers were updated to a newer operating system and were also updated with new configurations to allow newer clients Tiger and Leopard clients) to join the network.*
- A new server is being installed at the High School to house our new student database management system, iPass. iPass is an important upgrade that we will be working to support and help users to make the transition to all year.
- *The server and the software were installed and brought online during the summer. We have been supporting this transition all year. In spite of a few glitches, all functions that had been carried out in SASIxp were executed in iPass. Furthermore, staff data was brought into the staff module of iPass and with additional data-entry I was able to complete the newly required Education Personnel Information Management System (EPIMS) data reporting to the Massachusetts Department of Elementary and Secondary Education (ESE).*
This is what the high school reported about using iPass:

This year we moved over to a new student information system, iPass, which included a new grading system. The new system allowed us to take attendance online and improved the attendance process immensely -- a lot of time and energy was saved with this new implementation. Immediate status of students' attendance and the ability to check it online saved the faculty time. The system also allowed teachers to take class (period) attendance if they so chose, and enabled them to view a student's schedule online. Although there were hurdles to overcome with the new system, by the end of the year, the high school has a fairly smooth system in place for attendance, checking schedules, locating students when the need arises, checking to see if a student was absent, and being more self-reliant submitting and verifying grades.

- We are replacing our Firewall this school year. We have used a Firewall called BorderWare since 1994. Switching to one that is more of an industry standard will widen opportunities for training, support, and enhancements, since a wider user base usually translates to more rapid improvements in the product. The switch is necessitated by the fact that we require a fourth network card or port on the enterprise firewall.
- *We accomplished this goal. The new firewall functions both as an enterprise firewall and as a content filtering device. As a content filtering device, it provides us with the ability to bypass the content filter either for specific web sites and/or for specific computers within the Wayland Public Schools. This is accomplished by IP address. We have now granted unfiltered access to many computers in the district as requested by administrators and teachers. The most common reasons for the requests were for employees to have access to sites like youtube and facebook, while still keeping these sites blocked from student.*

Please note that this is a controversial point and one that requires further discussion by several parties. The Children's Internet Protection Act requires that:

A technology protection measure is a specific technology that blocks or filters Internet access. It must protect against access by adults and minors to visual depictions that are obscene, child pornography, or — with respect to use of computers with Internet access by minors — harmful to minors. It may be disabled for adults engaged in bona fide research or other lawful purposes. For schools, the policy must also include monitoring the online activities of minors.

That we have totally unfiltered access for some is clearly not CIPA compliant. Further, there have been requests to extend this access to more computers. Administrators at the high school and central office should get together and decide on a policy that meets all needs. I have communicated in detail about the situation to all parties.

- The six administrative servers in the district will be replaced with new hardware and will be upgraded from Windows 2000 server to Windows 2003 server.
- *All of the administrative servers are now Windows 2003 server. In addition, as we designed the plan for the new domain name controllers, we included the ability for administrative users (administrators, guidance counselors, secretaries, etc – all PC network users) from any building to login at any of the other buildings, and on any computer in that building.*
- We are testing twenty new OS X software titles to work on the network and hope to have at least 17 of them deployed by September 1, 2007. The remaining three, we plan to configure for network use in the fall.
- *All software titles that we had planned for were operational, tested, configured, and installed last fall.*
- At Wayland High School we will continue to bring universal wireless access to the buildings. It is in place in the Administrative building, the commons and the Social Studies building. Only a few wireless access points need to be added to the language building and then we hope to do the Math-English building and Science as well.

- *We made a little bit of progress in this area. We added the planned-for access points, but were still dissatisfied with the lack of flexibility in the system and find the design we have implemented to be unwieldy in scaling up the access. We have new goals for this set forth in the following section.*
- *We have upgraded our Internet bandwidth over the last several years by gradually adding Comcast cable modems at each school. Bandwidth is still an issue, especially at the High School, where we have more staff, students, and computers than any other school. In addition, when Comcast has technical issues we lose connectivity entirely. One goal we have this year is to investigate the possibility of adding another provider to the network. This impact would be two-fold: an increase in bandwidth every day, as well as a built-in redundancy for those times when Comcast service is down. If affordable, we hope to make this improvement during this school year.*
- *Verizon is the most affordable provider for this improvement. The Town of Wayland contracted with Verizon this year, allowing Verizon to come in to the town and compete with Comcast. As part of their contract, Verizon has brought fiber into Wayland High School to provide internet access to the cable television studio housed at WHS. It is my understanding that the school system will be able to tap into this same fiber line and will be able to accomplish the goal of adding a secondary internet provider as soon as Verizon completes this installation. We are in contact with the WayCam board to learn the details of the Verizon contract in order to ascertain the exact terms of the agreement. We're not sure whether we will still need to pay for an Internet Service Provider, or if that is also included.*

Claypit Hill reports the following:

Overall, our internet connection speed continued to be very fast and this allowed the Claypit teachers and students to rely on the internet for teaching and learning. The teachers rely on a variety of sites for curriculum projects, especially Discovery Education streaming, and we need the internet speed to remain excellent.

This is an interesting point, as all three elementary schools have identical Internet access and Claypit Hill has the most computers and users of the three schools. I suggest we study this further, and we may find that the middle and high schools are the schools that primarily need increased Internet bandwidth for the near-future.

- *We want to continue to make progress on our plans, as outlined in our capital budget request. These items include more instructional computers, more projectors and other peripherals, and replacing hubs with newer manageable switches.*
- *We continue to make as much progress in this area as budget allows. Additional progress was made in projector installation as a result of Wayland Public School Foundation grants to Wayland Middle School and Wayland High School.*

Professional Development Goals Update

- All instructional staff will complete the TSAT annually. We began doing this assessment in the 2004 – 2005 school year. We will use the results of the TSAT and other teacher input devices to inform our professional development planning.
- *We continue to have all staff complete the TSAT annually. Our intention has been to use the results of this self-assessment to inform us as to what professional development is needed by the staff. In reality, this is not always possible. One issue has been that there is not always a match between areas of weakness and teacher interest; another is that teachers are very pressed for time and competing professional development concerns have taken priority over technology; lastly, what the ESE considers important teacher skills does not always match the new and exciting tools that the Technology Specialists have found for teachers to use and integrate into the curriculum.*

Offering adequate professional development opportunities and having staff avail themselves of those opportunities remains a significant challenge. For example, we have planned a two-day Technology Summer Institute, with five unique workshops. We asked that teachers register by June 10th. As of today, we do not have the minimum required number of people registered for any single workshop, and are looking at cancelling them all. The workshops are: 1) Blogs, Wikis & Buzzword, 2) Podcasting, 3) Building Webpages using TRintuition, 4) iMovie, 5) Weblogs and RSS. These are all excellent topics and focus on using software tools that are either bundled with the computers or are free on the Internet. In addition, the workshops focus on using these multimedia and Web 2.0 tools for advancing true 21st century skills, areas that teachers have expressed an interest in learning more about.

- We will continually assess our professional development program to reflect current research and best practices, and will use teacher evaluation forms to improve the professional development opportunities that we offer.
- *This year the technology department made a concerted effort to develop workshops in using web 2.0 tools in the curriculum and in using new technologies with students. The Technology Specialists find they are able to meet the needs of some teachers when they work one-on-one with them on topics like: using iPods in the curriculum, using interactive white boards, and incorporating Moodle (shared web classroom "space") and youtube into lessons. However, this method of Professional Development, while effective on a small scale, has drawbacks. One drawback is that by addressing teacher technology learning needs in a one-on-one model, systemic change is nearly impossible. The second major disadvantage is that it is not scalable to the needs of the district. Technology Specialists have only limited hours when they are available for Professional Development, so if it doesn't happen in a group then it becomes impossible to reach everyone.*
- We will continue to strive to have a technology strand embedded in all professional development offered by the school district.
- *This remains a challenge for the Technology Department. One way to have more success in this area would be to adjust the staff development proposal form so that it asks how technology will be embedded into the course or workshop. Another suggestion is to have curriculum leaders at all levels commit to some professional development for themselves*

in this area so that they can better incorporate technology into their less formal staff presentations and work.

- For the Technology Department itself, I have been investigating a Professional Development firm, Ouellette and Associates, Consulting. Their approach to IT is to focus on IT as a customer service branch of the organization. Universities that have used Ouellette for professional development have been very successful in improving their service level, minimizing downtime, and increasing "customer" satisfaction. If funding can be found, I'd like to have Ouellette provide training for my entire department.
- *While I still think that this type of training would be beneficial for the technology department, there was no funding to undertake this endeavor.*

Personnel and Staffing Goals Update

- The Middle School Technology Assistant position should be increased to full-time.
- *This goal has appeared in my list every year since the 2004 – 2005 school year. The impact of not funding this position is that the Technology Specialist, for a good percentage of her time, becomes a low-level technician, reacting to peoples' technical needs for a majority of the day. Technology Specialists are licensed teachers with a specialized skill set, and I argue that we are diluting their effectiveness by having them work in this dual role.*
- I continue to advocate for increasing the High School Technology Specialist position from .8 to 1.0, as soon as funding permits such an increase.
- *The High School Technology Specialist was part-time again this school year, but has been budgeted for full-time for the 2008 – 2009 year. This is a good step toward providing more support to the high school community.*
- In order to meet the DOE benchmark, "*The district has one FTE person dedicated to data management and assessment,*" the district needs to hire someone in this capacity. It is becoming more evident over time, that this position needs to be filled. We have skilled and passionate educators who would benefit from the data analysis that someone in this capacity could provide.
- *Hiring someone in the capacity of data management or analysis has not yet happened, nor is it foreseen for the upcoming year.*
- Due to budgetary constraints, at the elementary level, one of the Technology Specialist positions has been cut to .9 and two of the Technology Assistants positions have been cut. I advocate that we reinstate this Technology Specialist to full time.
- *This change was not made for the current year nor budgeted for FY09.*

III. Goals for the 2008 – 2009 School Year

Infrastructure Goals

- Increase Internet Bandwidth

There are three distinct projects that are goals for next year. One is to tap into the fiber line that Verizon brought into the high school thereby increasing the bandwidth for Central Office and the High School. The second is to implement a slight redesign of our wide area network (WAN) VPN. Right now at each school outside of the high school, there is one cable modem serving WAN connections and a second cable modem serving traffic that is destined for the internet. Our plan is to upgrade the firewall at each school to a model that allows for the two cable modems to both serve both purposes. This will effectively increase bandwidth for all locations. The last project is to replace our current listserv with a contracted service. The impetus for this has to do with cost and quality, but it will also positively impact bandwidth. The membership on our eNews (listserv) lists now exceeds 5000 and we are increasing our traffic by sending out more emails to our subscribers. While this is a really good and positive change, it has directly impacted the connectivity from Central Office to the Internet. Central Office shares bandwidth with the eNews lists, so large mailing cause significant slowdowns to Central Office Internet and WAN speed. Outsourcing this will alleviate this problem. Interestingly enough, using an outside service for our listserv needs is much less expensive than upgrading our current listserv software.

The name and membership count for each list is:

base_news	280
claypit_news	399
hh_news	502
hs_news	1473
hsbc	294

loker_news	319
ms_news	1224
pegasus_news	148
super_news	559
tcw_news	165

This is an impressive number of subscribers (5356) representing a broad readership.

- Improve High School Wireless Infrastructure

We have a proposal from Unicom to implement a new wireless infrastructure with much more flexibility and true layered access. Key improvements would be the ability to have several classes of network access, from full access (computers the school owns) to only Internet access, with many different partial access models between. In addition, if high school teachers were to agree to allow students to bring personal laptops in and go online, we could throttle their bandwidth. That we cannot do so now was an important factor in their decision not to allow student online access this year. Our goal is to have this project implemented.

Note that if this project does go forward, the High School staff will need to discuss the advantages and disadvantages to allowing student access to the internet on personal

laptops. Since this project would allow us to limit their bandwidth, protect the network resources from access, and would still filter Internet sites, I think this is something that should be seriously considered. The end result may be that simply by providing the bandwidth, our requirement for numbers of laptops at the high school may decrease.

- **Move Technology and Accounts as Needed for Elementary School Changes**
The restructuring of the elementary schools will require a great deal of time and planning from many different departments in the school district, and technology is certainly one of those departments impacted. We will be moving equipment, reconfiguring computers to new network and software settings, moving student accounts and moving teacher accounts and documents.
- **Create Second Computer Lab at the Middle School**
The middle school has decided to set up a computer lab in a study hall room. Technicians will wire the room, set up and configure computers, and install the requested software.
- **Install Wireless Access Points at Elementary Schools**
The elementary schools all need some tweaking in order to achieve ubiquitous wireless connectivity.
- **Upgrade Wintel PCs**
The majority of our administrative computers are still running Windows 2000. We have the licenses to upgrade to Windows XP pro, Microsoft Office 2007, and Contribute 4, and it is our plan to have all these upgrades done over the summer.

Professional Development Goals

- Our Professional Development goals remain much the same as they have for the previous two years. However, it is my suggestion that the Technology Task Force (TTF), the Administrative Council, and the curriculum leadership of the school district share this problem and contribute to a solution.
- An additional professional development goal that is somewhat unrelated to curriculum is to provide much more training in using iPass. We intentionally do not yet use iPass to the fullest extent of its capabilities. Our goal for year one of iPass use was to successfully manage one full cycle of scheduling, progress reports, report cards, GPAs, honor rolls, transcripts, exports for Naviance and EPIMS reporting. We were successful in reaching these goals.

Our new goals for next year should include uploading more test data into iPass, preparing to implement the Parent Portal module of iPass, and using the standards-based reporting feature for the elementary schools. Achieving these goals will require extensive professional development and the support of all administrators. This will ultimately impact teaching and learning, in a couple of ways. Once we upload or enter more test data teachers will be able to use this data to inform instruction. When we do begin to open the parent portal we can choose to allow access to homework assignments in real time. When we reach that point, we can expect more support and involvement from parents.

Personnel and Staffing Goals

Some of the goals below are repeated from previous years.

- The Middle School Technology Assistant position should be increased to full-time.

- Increase the one part-time Technology Specialist at the elementary level to 1.0.
- Address the need for low-level technical support at all the schools. The need can be described as someone who can be called on to: help set up laptops and get a class started connecting, troubleshoot printing issues, assist syncing up iPods to load instructional material, and generally provide "reactive" support to teachers as required.
- One more goal is for the TTF to study the entire staffing model and make suggestions for improvements.

IV. Local Technology Plan Guidelines from the ESE

Below are the guidelines that the Massachusetts Department of Elementary and Secondary Education requires school districts to address in their local technology plans. Technology plans not addressing these areas will not be approved by the state and the school district would then not be eligible for ERATE reimbursements.

This can be found at: http://www.doe.mass.edu/edtech/tplanguide04_07.html

The newly constituted Technology Task Force (TTF) is using this outline as the basis for their subcommittee structure and areas of study. The subcommittees will study documents, current practice, hardware, and other information and will work together to provide a response to each of the items in the guidelines. They hope to have completed at least a preliminary document by November 2008. Our current Three Year Technology Plan covers 2006 through 2009. The school system will be able to incorporate the work of the TTF into their next three-year plan, which should be completed and submitted to the ESE by June of 2009.

Benchmark 1

Commitment to a Clear Vision and Mission Statement

- A. The district's technology plan contains a realistic and clearly stated set of goals and strategies that align with the district-wide school improvement plan. It is committed to achieving its vision by the end of the school year 2006-2007.
- B. The district has a technology team with representatives from a variety of stakeholder groups. The technology team has the support of the district leadership team.
- C. Budget
 - 1. The district has a budget for its local technology plan with line items for technology in its operational budget.
 - 2. The budget includes staffing, hardware, software, professional development, support, and contracted services.
 - 3. The district leverages the use of federal, state, and private resources.
- D. Evaluation
 - 1. The district evaluates the effectiveness of technology resources toward attainment of educational goals on a regular basis. Prior to purchasing the district assesses the products and services that are needed to improve teaching and learning.
 - 2. The district's technology plan includes an evaluation process that enables the district to monitor its progress in achieving its technology goals and to make mid-course corrections in response to new developments and opportunities as they arise.

Benchmark 2

Technology Integration

A. Teacher and Student Use of Technology

1. (a) Outside the Classroom

At least 85% of teachers use technology everyday, including some of the following areas: lesson planning, administrative tasks, communications, and collaboration. Teachers share information about technology uses with their colleagues.

(b) Within the Classroom

At least 85% of teachers use technology appropriately with students each week, including some of the following areas: research, multimedia, simulations, data interpretation, communications, and collaboration.

2. At least 85% of students from grades 5 to 8 show proficiency in all the Massachusetts Recommended PreK-12 Instructional Technology Standards for Grades 5 to 8.

3. At least 90% of teachers are working to meet the proficiency level in technology, and by the school year 2006-2007, 60% of teachers will have reached the proficiency level as defined by the Massachusetts Technology Self-Assessment Tool (TSAT)₂.

4. The district has a CIPA -compliant Acceptable Use Policy (AUP) regarding Internet use.

B. Staffing

1. The district has a full-time equivalent (FTE) district-level technology director/coordinator.

2. The district provides one FTE instructional technology teacher per 40-80 instructional staff.

3. The district has one FTE person dedicated to data management and assessment.

Benchmark 3

Technology Professional Development

A. By the end of the school year 2006-2007, at least 85% of district staff will have participated in 45 hours of high-quality technology professional development covering technology skills and the integration of technology into instruction.

B. Technology professional development is sustained and ongoing and includes coaching, modeling best practices, district-based mentoring, and study groups. The professional development includes concepts of universal design and scientifically based, researched models.

C. Professional development planning includes an assessment of district and teachers' needs. The assessment is based on the competencies listed in the

Massachusetts Technology Self-Assessment Tool³. The Department, the Educational Technology Advisory Council and stakeholders will review the levels of competencies in the Massachusetts Technology Self-Assessment Tool on an annual basis.

Benchmark 4
Accessibility of Technology

A. Students per Instructional Computer

1. The district has an average ratio of fewer than five students per high-capacity, Internet-connected computer. The Department will work with stakeholders to review the capacity of the computer on an annual basis. (The ultimate goal is to have a one-to-one, high-capacity, Internet-connected computer ratio.)
2. The district considers students' access to portable and/or handheld electronic devices appropriate to their grade level.
3. The district has established a computer replacement cycle of six years or less.

B. Technical Support

1. The district makes a commitment to provide timely in-classroom technical support with clear information on how to access the support, so that technical problems will not cause major disruptions to curriculum delivery.
2. The district provides a FTE network administrator.
3. The district provides at least one FTE person to support 100-200 computers. Technical support can be provided by dedicated staff or contracted services.

Benchmark 5
Infrastructure for Connectivity

A. Internet Access

1. The district provides connectivity to the Internet in all classrooms in all schools including wireless connectivity, if appropriate.
2. The district provides bandwidth of at least 10/100 MB to each classroom.

B. Networking (LAN/WAN)

1. The district provides a minimum 10/100 MB Cat 5 switched network and/or 802.11b/g wireless network.
2. The district provides services for secure file sharing, backups, scheduling, email, and web publishing, either internally or through contracted

services.

C. E-Learning Environments

1. The district encourages the development and use of innovative strategies for delivering specialized courses through the use of technology.
2. The district deploys IP-based and or ISDN-based connections for access to web-based and/or interactive video learning on the local, state, regional, national, and international level.
3. Classroom applications of e-learning include courses, cultural projects, virtual field trips, etc.

Benchmark 6

Access to the Internet outside the School Day

- A. The district maintains an up-to-date web site that includes information for parents.
- B. The district works with community groups to ensure that students and staff have access to the Internet outside of the school day.

The district web site includes an up-to-date list of places where students and staff can access the Internet after school hours.

V. Technology in the Curriculum

The Technology in the Curriculum section is divided into two parts. In the first, goals set last year are updated and goals for the upcoming year are outlined. In the second are the noteworthy projects from each level that the Technology Specialists have submitted for this report.

Goals and Progress Report

Students Meeting Standards and Assessing Students Update

One of our goals for the past school year was to continue our work in measuring whether we are providing sufficient opportunities for students to meet the student standards as set forth by the Department of Education and to create a plan to assess students against the standards. The Technology Specialists have been working with building level technology committees and curriculum leaders to begin to develop a comprehensive plan at all levels to systemically provide the opportunities for students to meet the standards, and to determine where, within the core curriculum areas, the standards are introduced, practiced, and mastered.

Technology Specialists continue planning with building based Technology Committees. While the discussion is rich and interesting, we have not yet finalized a plan for assessing students against the standards required by the state.

The Technology Specialists cannot carry this project without the close cooperation from curriculum leaders and administrators. Until and unless we all (the collective "we") take more of the planning burden and responsibility for this, we will continue to be stalled in making this a reality. We are still in need of a comprehensive plan that outlines opportunities for students to meet the standards, an assessment strategy.

Stronger Coordination Between Technology and all Curriculum Areas Update

Another goal was to meet more often with the K-12 curriculum leadership teams in order to better understand the curriculum challenges so that we might better target technology as a tool toward helping to make progress in these challenges. As in the past, Jean Tower attended all the K – 12 curriculum meetings. These meetings continue to provide wonderful opportunities to share ideas, problems, and initiatives. This has set the groundwork for further collaboration. It is my suggestion that each K – 12 curriculum team take on the task of planning technology integration goals for their department, with collaboration, support, and input from the technology department. Goals that are more jointly developed and widely discussed have a much better chance of successful implementation. Threading technology use appropriately into the curriculum is the work of the entire school system and requires participation of all of our teachers and administrators. This concept is advocated in the state curriculum frameworks, all of which have technology strands embedded in them, and by the federal NCLB act. Below is a brief excerpt from that law.

One of the requirements of NCLB is:

to assist every student in crossing the digital divide by ensuring that every student is technologically literate by the time the student finishes eighth grade, regardless of the student's race, ethnicity, gender, family income, geographic location or disability

Immediate status of student's attendance and the ability to check it online saved the faulty time. The system also allowed teachers to take class (period) attendance if they so chose, and enabled them to view student's schedules online. Although there were hurdles to overcome with the new system, by the end of the year, the high school has a fairly smooth system in place for attendance, checking schedules, locating students if need be, checking to see if a student was absent and being more self reliant on grade submission and verification.

Social Studies

In the Social Studies Department, the Internet was used more than ever. This year many of the faculty began to use YouTube for a variety of sources. In Entrepreneurship & Business Management (EBM) the students created a commercial about the product they were selling for EBM and uploaded it to YouTube for the class to view. Some students created websites as part of their Creative Economy project. The students played an online national stock market simulation game, used PowerPoint to present their work in their stock market and investing component of the class and frequently accessed Google Finance for investing and in class analysis. The Stock Market Game is a national game split up into state competitions. Sam Shaw and Jackie Wogan took first place in MA out of 800+ teams. In addition, Stef Scari won the InvestWrite competition...an essay contest versus actual online investing. She placed #1 in MA.

The social studies department received four mounted projectors with sound systems, which enhanced teaching tremendously. Most of these systems are in use on a daily basis, where the teacher walks in and either plugs in their own laptop or turns on the classroom computer, goes to the internet to access You Tube, American Rhetoric, or databases relevant to course projects. Eva Urban (nominated by her students for the "Preserve America- History Teacher of the Year" award sponsored by the Mass Dept of Education and the Gilder Lerman Institute) also incorporates web quests such as the Cold War Project, Jackson and Lewis and Clark to engage her students in these historical events. Web quests are designed to support a unit of instruction, and contain many pages, links, resources, activities and assessments to enhance and help create an environment for critical thinking.

English

In the English department, all of the teachers are thrilled with and use daily the new mounted projectors and document cameras. The digital document cameras make showing handouts a breeze, so the teachers can reinforce points for the visual learners. The document cameras also allow teachers to now display student work as it is created. The combination of speakers, projectors and screens enables teachers to make use of visual and auditory files from the Internet.

In the Freshman English Honors class the students used Garage Band and iPods to record their "This I Believe" essays and create podcasts. These will be published on the English Departments website. This class also created a website for a Julius Caesar newspaper.

The computer labs are used extensively for Creative Writing and Internet searches.

The Last Word (student newspaper) migrated from PageMaker to Quark Express.

Science

In the Science department, Qwizdom interactive remotes (student response systems) were used throughout the year for immediate assessment tools. The web was used throughout the year to view videos. The Science department uses both the Mac and the pc carts extensively for labs. The physics (Vernier) probes are used with the laptops during labs. Most of the science faculty has a web page, which is accessed in and out of class to get assignments as well as reviews for tests. The document cameras and projection equipment in the science classrooms are used daily. The tablet has become almost irreplaceable. These tools have changed the way the Science department teaches.

It is easier to explain and demonstrate certain chemical phenomena that are abstract and cannot be seen, when incorporating the projector systems in the Science classrooms. Students use laptops to connect to Vernier probes to measure, record, and plot experimental data.

Fine Arts

In Fine Arts, each concert is recorded on a portable recorder and downloaded to the departmental iBook and iTunes library, for future reference. The music software and midi keyboards are used in the music workshop classes. Mr. Oneschuk uses Garage Band software and DVDs to create original scores to movies.

Rachel Carroll frequently uses the iPod & iPod speakers in the Little Theater with her choral classes. This has been a tremendous tool, along with the laptop, since she has a student in a wheelchair that cannot get upstairs in the Fine Arts building, so classes are held in the little theater.

Students frequently practice their music theory on the computers using Practica Musica software and many students explore composition using the programs available in the lab.

Math

The Smartboard (interactive white board) has made a huge difference in the teaching of both algebra II and statistics. For algebra II, the smartview software from TI allows for the graphing calculator to be displayed in very large format. It also allows several screens to be viewed at once, so students have the opportunity to see the function, graph, and table of values simultaneously. This rule of three is strongly recommended by the national council of teachers of mathematics. The Smartboard also provided a great coordinate plane for students to construct, linear, quadratic, and exponential functions.

In statistics, the Smartview calculator is used for computing confidence intervals, and hypothesis tests. Histograms were also created.

For the end of the year projects, students used excel spreadsheets, for displaying data and normal curves. Each student gave a PowerPoint presentation on the Smart board. This is a tremendous improvement over our other methods of presentation. Some students obtained all of their data from the Internet while others collected data through surveys. Some students incorporated photos and short video clips (from YouTube) in their PowerPoint presentations.

Noteworthy Projects and Technology Integration Examples

This section is the contribution of the school Technology Specialists.

Technology Specialists:

<i>Name</i>	<i>School</i>
Beth Ann Burton	Happy Hollow School
Rita Partridge	Loker School
Mary Patterson, long term substitute for Nancy Colbert	Claypit Hill School
Bethann Monahan	Middle School
Mary Barber	High School

All or most of the technology rich projects reported on last year continue. In this section I make an effort to select out those projects that are either new extensions of existing projects or are new this school year.



Wayland High School

Moodle

Teachers continue to use Moodle as an online adjunct to their face-to-face class meetings. Moodle is an online classroom portal that offers many tools for classroom use, from asynchronous threaded discussions to hand-in and hand-out folders to poll taking and surveys.

Three of the Social Studies faculty members use Moodle to extend their class discussions outside of the classroom. Students become very entrenched in these online discussion and the teachers believe that the discussions are at a much higher level than what has traditionally taken place in the classroom.

In the English department, many teachers have incorporated Moodle into their classroom curriculum to extend class discussions about Julius Caesar, the Odyssey, Romeo and Juliet, Jane Eyre, and the Death of a Salesman.

Ed DeHoratius used Moodle this year as a resource to communicate with his class, post his classroom material, conduct assignments, and share syllabus.

A school-wide Moodle discussion group was established this year. This allowed for discussion outside of the faculty meetings to continue online. Many deep and thought provoking discussions took place surrounding the Achievement Gap initiative at the High School. Moodle was also used for the technology committee to share ideas in between meetings.

iPass

This year we moved over to a new student information system, iPass, which included a new grading system. The new system allowed us to take attendance online and improved the attendance process immensely – a lot time and energy was saved with this new implementation.

“The implementation of document cameras and projectors into the ME building has been great. I use mine everyday in every class in the ME building. The downside is that any class outside of my building does not allow me to use these, and I need to prepare differently for these classes.” ~ Mike Hopps

The language department uses the iPods extensively for various oral exercises, review of materials, and for viewing foreign language videos. All projects that are created with the iLife suite of software is saved to the language department iTunes library and loaded to the iPods for students to view.

This year LRT made extensive use of the eight laptops assigned to their area, working with students in many curriculum areas using a variety of software.



More teachers took advantage of the teacher wireless VLAN and brought in their laptops for not only teacher productivity tasks such as email and iPass, but for direct instruction in conjunction with a projector. Teachers are viewing websites, downloading videos using the latest version of Google Earth, creating PowerPoint presentations, connecting to the Promethean board, and utilizing Windows-only software. This arrangement allows teachers to prepare for lessons at school or at home and have confidence that it will work as planned in the classroom. Teachers

can also install or upgrade software or browser plugins as necessary without having to wait for a member of the IT staff.

One of the most exciting additions to the middle school this year is the installation of ceiling-mounted projectors and connection boxes in fourteen classrooms. This was made possible by a grant from the Wayland Public Schools Foundation. Teachers immediately took advantage of the ability to add a strong visual component to the curriculum, showing pictures of distant lands, demonstrating math software, and showing videos. Eighth grade teachers used the projectors with Google Earth to show students where they would be walking while visiting Washington, D.C. Upon their return, all students were able to view videos on Youtube.com about the Tents of Hope project to raise awareness for victims of the Darfur conflict, before painting tents themselves. Having more of these units should be a priority for the school.

In addition, the school's document camera has inspired innovation. Teachers from the English, Science, Language, and Math departments have raved about how easy it is to show material (books, photos, postcards, magazines, motion probe display, a revised piece of writing) to the entire class without having to either make transparencies or run-off many photocopies.

The sixth grade joined the 7th grade in using the school's Promethean board. It was wheeled into a science classroom for lessons on gravity and by the Math department for use with Geometer's Sketchpad. The board and voting eggs were also instrumental in assessing all 8th graders on their technology skills. The data was then exported to excel for tabulation.

The computer lab was recently upgraded from the Panther OS (10.3.9) to the highest version of Tiger (10.4.11). This allowed the installation of both iLife and Google Earth. Classes can now have each student use their own computer to create multimedia projects or explore the world.

iLife Suite

The iLife suite of software includes iTunes, iMovie, iPhoto, iDVD, and Garage Band.

iTunes was used to put books on iPods as well as burned to CD's for student support in both 6th and 7th grade English classes.

A sixth grade math teacher had students take photos of geometric shapes found in their homes and import them into iPhoto. Students arranged these into one of iPhoto's book formats and added captions for each photo, describing the shape. Instead of printing the books, students saved them as PDF documents and used Preview's slideshow mode to share with the rest of the class.

iPhoto has also been used as a means to format pictures for posting on the web. The school's webmaster uses this method for the front page of the school's website and an 8th grade Social Studies teacher posted photos for a project that students needed access to over the weekend. He was also able to burn the photos to a CD so he did not have to keep them in his own networked documents folder.

iMovie and iDVD were used to create DVD's for three events this year; Dr. Terrence Roberts' visit, the *Grease* play, and an advertisement for the MS Bike Drive that was shown on Wayland's local cable channel.

Garageband has been a big hit with students this year and many are eager to create their own music. A sixth grade teacher assigned an extra credit project for students to create a musical score to accompany a book that was read by the class. Garageband has been so well received that for next year the 8th grade music curriculum will be re-vamped to include work with music notation software, midi, and digital music. Additional machines will be needed to support this program.

Direction for Next Year

Since teachers will not have to commit to learning two new productivity tools next year (new email client and iPass), it is my hope that they will be able to turn this "technology energy" to learning more about iLife and web 2.0 tools for classroom instruction. As the new technology standards show, it is essential for students to become facile with 21st century skills for connecting and communicating with others and working creatively to problem solve in every subject area.



Elementary Schools

General

As recipients of a foundation grant, Happy Hollow reports that they purchased a document camera, Promethean electronic whiteboard, and electronic slate. The whiteboard and slate are used in the computer lab and all classes are able to use the board when in the lab. It is used regularly with students. The board is a huge facilitating factor of the lesson. Students are excited and eager to participate when given the opportunity to come up to the board and share what they know. The document camera is being used in classrooms and teachers and students alike rave about the benefits of the document camera. Beyond the convenience (less prep time needed to setup the equipment, no need to make transparencies) the teacher can project student work (writing, math) immediately and display various types of print media (newspaper, books, pictures) and other small items you might wish to display to the class (Lego parts). This provides an immediate visual aid available to the entire class.

The HH Technology Committee met and addressed building technology issues, purchasing, and technology trends. The committee and the entire staff are responsible for setting up building tech goals. After seeing the success of the document camera and the staffs' response on how to use it, we decided to use our capital money and purchase as many document camera/projector setups that we could. We were able to purchase 6 setups. These setups were dispersed to classrooms where they reside on a permanent basis. We will continue to purchase these setups and hopefully get one in everyone classroom (we have not set a time-table for this as we need to plan our budget).

Teachers and students throughout the elementary schools use Discovery's United Streaming. Discovery Education streaming is a digital video-on-demand and online teaching service designed to help improve students' retention and test scores; content is aligned to state frameworks. This online resource is a great way to bring powerful education videos into the classroom and to supplement print and other online material. Social Studies and Science lessons regularly incorporate this resource.

Teacher Quote:

I think it would be amazing if all teachers had laptops that we could take back and forth that worked with the school tech system and our home tech system.

Teacher Quote:

A good goal would be to design one lesson using technology that is not Internet research or word processing to go with each math and science unit at each grade level. This could be part of summer curriculum work. It takes time to find a good application and to design how it is going to fit into classroom instruction. If we found a few common lessons, then all staff would have access to something that is not an add-on, but supports the existing curriculum.

Teacher Quote:

Technology is changing so rapidly. I could benefit from continued professional development and perhaps suggestions regarding programs or equipment that would enhance my teaching. I'd love to use more technology in math, reading, and writing.

Grade K

Kindergarten classes continue to visit the lab on a weekly basis on their "no special" day. They focus mainly using technology to literacy skills, using Lexia, websites like PBS Kids, Starfall and software such as Kid Pix.

Teacher Quote:

The most noteworthy project was being able to use a laptop and a [disk on] key. In the classroom, I could type the students' stories as they created their creature, and then load them onto the connected MAC to edit and print. This really enabled me to encourage and capture the students' growing abilities to compose stories with a beginning, middle, and end.

Grade 1

Grade 1 classroom teachers continue to block times in their weekly schedule to do whole call Lexia practice. As the year progresses students sometimes are given a choice between several activities such as: Lexia, Wiggleworks, Starfall, and PBS Kids Between the Lions. They also use this time to reinforce math concepts. The children learned how to make covers for their books. Each child started a cover in computer class and then the finished it off in the hallway lab later. We used what they had learned to make another cover a few weeks later.

Teacher Quote:

I would like to see more computers in the K - 2 classrooms since they cannot use the laptops as well as the older children. Ideally - in a dream classroom, teachers would have computers connected to display boards so they can easily use technology with the students.

Grade 2

One new project for grade two this year was a "Continents Slideshow." Classroom teachers and the Technology Specialist collaborated and had students carry out research on the internet using the Enchanted Learning website. The students used Kid Pix to create a 5-page slideshow. Many tools and skills were incorporated into this project – drawing, editing pictures, writing, writing, writing, and formatting writing, recording sound, and adding transitions. I think the students really enjoyed this project and were especially enthusiastic about adding their voices to their finished product.

Second-graders at one school recorded podcasts. Pictures they created in Kid Pix were then imported into Garage Band. The completed podcasts were uploaded to Podbean and families were invited to visit the site and download the files. (see: www.mpatterson.podbean.com)

Grade 3

A major project for third graders was the "Rock and Mineral Webquest." At the beginning of the unit students illustrated the rock cycle using Kidspiration software. They then conducted research on rocks and minerals. There were many questions to answer through this research. They also watched a video clip from United Streaming that provided background and great visuals that aided understanding about the different types of rocks. Students then used Kid Pix to create a Rock and Mineral slideshow, complete with background, formatted text, and picture and stamp details. All of the finished slides were put together into a slideshow into which students added slide transitions and sounds.

Teacher Quote:

Several teachers have started to explore how technology can be used to support math/science topics. One teacher is especially interested in how technology can allow an individual to explore at his/her own pace. She has tried an activity with on-line Library of Math Manipulatives, and used a lesson on electricity from Promethean Planet.

Grade 4

Here is a list of some of the fourth grade technology-integrated projects:

- PowerPoint slide shows for the endangered species project
- Creation of t-shirt transfers for endangered species project
- Use of graphing software to learn and compare bar graphs and circle graphs with meaningful classroom data
- Timeline software and creation of student "special event" time lines to support the personal narrative unit
- Use of Inspiration to support the personal narrative writing unit
- Use of Kid Pix to create world maps to support fourth grade social studies unit
- Use of Microsoft Word/teaching of related skills to support writing across the curriculum. "Lincoln" cut/paste project to work on organization skills/word processing relating to writing. Cut/paste images for "mini-poster" unit related to endangered species unit.
- Lexia use to support reading/spelling skills
- Keyboarding to support writing skills

- At one school the grade four teachers created class wikis and blogs to share our thinking and learning from our interactive read-aloud books.

Grade 5

A Happy Hollow fifth grade teacher continues to be the Lego Robotics instructor for all 5th grade students. Again this year, there was an after-school Lego Robotics club. Their final assignment was to create a robot to assist the handicapped. Several groups then presented their robots at the WPSF fall celebration.

Here is a list of some of the fifth grade technology-integrated projects:

- Word-processing all reports, essays, book review, poetry
- Inspiration webs
- Using the internet for research: biography project, ancient civilization
- Creating Astronomy slideshows using PowerPoint
- Using TimeLiner to create a timeline for their biography project "Americans Who Made a Difference"
- Incorporation of the Geo-Kits has supplemented units on Explorers, and Colonial America
- (NEW) Use of Garageband – introduction to podcasts

One-fifth grade teacher had the students use Garageband to create a new version of the National Anthem.

Grade 5 students used the lab to research the collection of American Art at the Museum of Fine Arts (MFA) before a field trip there. This activity helped to familiarize them with the art work they were soon to see. In addition to this preview, at the MFA website students read about the artists and their works in art class rather than doing it all at the museum.

Teacher Quote:

The document camera and use of Garageband are a huge success!

Student Quote:

We love Garageband. One of the best new projects we done this year.

At one of the elementary schools, a teacher was the driving force behind setting up Writer's Studio. Students worked regularly in the Writer's Studio (the former keyboarding lab). They transitioned from AppleWorks to Microsoft Word for word processing and they published narratives, essays, nonfiction picture books, poetry, and biography reports. They used specific sites for internet research and Noodle Tools to publish bibliographies for their work. This was a great success. Research shows that students who compose at the keyboard exhibit more fluency in writing, write longer documents, and are more ready and willing to edit their work.

Another grade five teacher reported using technology intermittently in the classroom. The laptop and projector are used most frequently in that class. These are used to view videos from United Streaming, to share documents, to play review games, and, to review MCAS open response questions and answers with students. Some teachers used digital video cameras to record students' science experiments.