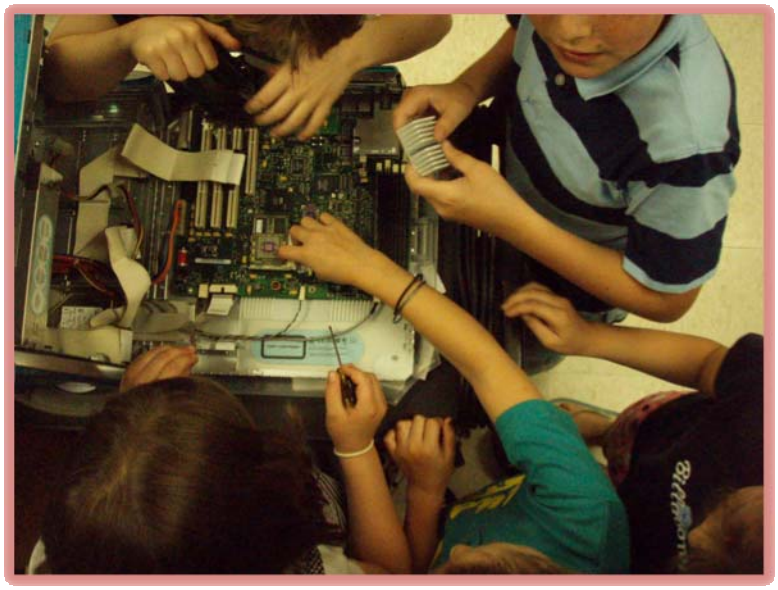
# Amesbury Public Schools
# Local Technology Plan
# *2012-2015*



# Amesbury, MA

Amesbury Public Schools
Local Technology Plan: 2012 – 2015

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# Benchmark 1
## Commitment to a Clear Vision and Implementation Strategies

A. The Amesbury Public Schools technology plan asks the essential question *Why Technology*? Our understanding is that, in the 21st century, technology is an integral part of virtually every aspect of daily life. It is the district's responsibility to prepare our students for their future. The classroom is the primary place where this preparation will occur; therefore, every classroom must be equipped with the diverse technologies to support teaching and learning. Every teacher must be knowledgeable and skilled in the use of these technologies in daily instruction. When integrated into instruction, technology will support new strategies for teaching and learning by addressing diverse learning styles, accommodating individual learning rates, providing appropriate assistive technology for those physically or cognitively impacted, provide a framework for cooperative learning, improve student ownership in his/her own learning, allow for global communication of shared ideas and improve academic achievement in all areas. This is the vision that guides this plan.

B. The district technology plan development and approval team includes representatives from a variety of stakeholder groups, including school committee members, administrators, and teachers and Management Information Services department members. The technology team has the full support of the school superintendent to implement the plan.

C. Amesbury Public Schools continues to use a variety of assessment methods to review technology products, services and the skill set needed to use technology for teaching, learning, data analysis, communication and personal productivity.

- Informal observation
- Electronic feedback- Forums/blogs/email
- Staff/Student surveys
- Administrative Team meetings
- Policy Sub Committee School Committee Meetings
- Professional staff phase one and two goal-setting meetings
- Research is utilized on a continual basis to determine how new technologies can be used to address curriculum and administrative productivity and reporting out needs. Pilot technology uses are encouraged and successful implementations are integrating into additional settings. Technology hardware/software and usage in district is reported out on an annual basis using the Mass DESE electronic technology update report. Progress in technology utilization is also assessed and benchmarks achieved or continued as evidenced in this annual report.

D. The district budgets for technology line items in the following categories:

- Hardware
    - Administrative

    - Educational

- Software
    - Administrative
    - Educational

- Library Media Services

- Assessment

- Infrastructure

- Internal/External Connections

- Internet

- Phone Communications

- Training/Professional Development

- Staffing

The District also uses privately and grant-funded opportunities to support the goals of this plan as well as federal funding in the form of ERATE reimbursement and discounted services for communication and Internet access. State and local procurement laws are abided by. The annual budget process is public and follows protocol outlined by the Amesbury Municipal Council, City Charter and Mayor's office. The annual budget is formulated based upon the goals of this plan and coordinated by the district's technology personnel, administrative team, superintendent and school committee. The following is a short list of the grant opportunities that have been exercised and will continue to be explored in terms of funding the ideas contained in this plan: AEFI Grants, PTA/PAG funding, ERATE federal funding, Provident Bank, community and parent donations. The school department annualizes a budget to pay for all expenditures planned for but not covered by a grant program, as listed previously.

E. The evaluation of the effectiveness of technology resources toward attainment of educational goals occurs on a regular basis, both monthly and annually. Communication of effectiveness is achieved through email, monthly district technology staff meetings, and special reports to school committee, PAG and PTA council reports, and school improvement plan committees. All requests from faculty are considered seriously. Personnel from MIS collaborate with education specialists to implement technology solutions to help teachers meet the challenges they face while achieving their curriculum goals, providing the ability to differentiate instruction and use ongoing assessment to fine tune their delivery system and classroom practice.

Student progress in achieving standards and benchmarks appropriate for their grade are monitored using electronic resources. Data analysis and electronic review of this progress data is used to prescribe learning and efficient access is granted to staff members to locate data appropriate for their grade and subject area. Some examples of electronic data available

to teachers are *DIBELS, SRI, Lexia, Aspen, Study Island, Inspire Data, Scott-Foresmen Reading Street, ESPED, DESE Data Warehouse,* and *MCAS* data.

This technology plan will be aligned with the district's new Strategic Plan, which will be formulated in FY 2012-2013. The goals of this plan will be revisited to align with this Strategic plan's vision. Emerging technologies will be continually examined to determine their value to Amesbury Public Schools. Our plan will provide the fluidity to adopt new technologies as they evolve.

The technology in this plan will allow teachers to serve as the facilitators of instruction not the sole gatekeepers of all knowledge. Through technology, teachers and students will access a wealth of materials, services and networks throughout the state, nation and the world. The technology in this plan will provide a record of student's academic history, ways to manage learning progress and activities and ways to communicate a student's achievement to parents and guardians. Teachers, administrators and support staff have access to data to inform instruction and make other important instructional management decisions. We believe all children can learn and that the use of technology will enhance the learning experience for most and allow basic access to learning experiences for some. Using technology is a basic core skill that will help students become life-long learners capable of critical thinking, problem solving and communicating effectively. All students and staff will employ technology as a tool to access, analyze and utilize information.

## Action Goals Related to Benchmark 1

***FY 2012-2013 -*** **Continue to promote the use of online data analysis to interpret test data, inform instruction, communicate to parents/guardians, and to research new tools to perform these tasks.**

***FY 2013-2014 -*** **Review Amesbury Public Schools Acceptable use policies and Internet filtering and equipment policies as proven emerging technologies are developed so that they can be utilized in Amesbury Public Schools.**

***FY 2014-2015 -*** **Update Technology plan benchmarks to align with newly adopted district strategic plan**

# Benchmark 2
## Technology Integration and Literacy

### 1) Technology Integration

a) Outside Teaching Time – 100% of teachers use technology every day, including some of the following areas: lesson planning, administrative tasks, communications, and collaboration. Teachers share information about technology uses with their colleagues.

Current Status: Based on the 2010-11 report to DESE: 80% of teachers use technology for professional activities every day. Uses include:

- Lesson Planning, E-mail, online assessments, IEP's, *Aspen* online Student Management System; grade book, progress reports, report cards, attendance, teacher/parent portal

b) Teaching and Learning – Our goal will be for 90% of teachers to use technology with students every day to improve student learning of the curriculum. Activities include some of the following: research, multimedia, simulations, data interpretation, communications, and collaboration. Teachers with consistent access integrate evolving technologies that enhance student interest, inquiry, analysis, collaboration, and creativity.

Current Status: Based on the 2010-11 report to DESE: 80% of teachers use technology every day for teaching and learning:

- K-8 – Most technology use occurs in the computer labs, technology education and library media center. Integration that occurs with the use of Smart boards, laptops, document cameras and digital projectors is witnessed in approximately 20% of the classrooms.
- High School – Integration taking place with the use of Smart boards, document cameras and digital projectors in 100% of the classrooms.

### 2) Technology Literacy

a) At least 90% of eighth grade students will show proficiency in the entire *Massachusetts Technology Literacy Standards and Expectations* grade 8 if technology professional teaching staff returns to previous levels.

b) 100% of teachers are working to meet the proficiency level in technology, and by the school year 2014-2015, 90% teachers will have mastered 90% of the skills articulated *in* the *Massachusetts Technology Self Assessment Tool (TSAT)*. By the school year 2013-2014, 80% of teachers will have mastered 90% of the skills in the *Massachusetts Technology Self-Assessment Tool (TSAT).*

c) By the school year 2014-2015, 90% of teachers will have mastered 90% of the skills in the *Massachusetts Technology Self-Assessment Tool (TSAT).*

### 3) Staffing

a) The district aims to reestablish a district-level technology director/coordinator.

b) The district provides one FTE instructional technology specialist per 60-120 instructional staff to coach and model.

c) The district will have staff specifically dedicated to data management and assessment when staffing levels increase.

### *Teacher Technology Skill Benchmarks and Demonstration of Achievement*

*Teachers will understand and be able to:*

*1. Use basic functions of a computer operating system/file system.*

- *Identify components of a computer system and use appropriate terminology when speaking about them*
- *Identify and use basic features of a computer operating system and file saving options*

*2. Use a variety of software applications to develop new documents that support teaching and learning.*

- *Identify and use editing and formatting features of a word processing program including the insertion of images.*

*3. Create spreadsheet workbooks.*

- *Create an original spreadsheet including simple formulas.*

*4. Use a web browser to access and use Internet resources in applications.*

- *Use and identify features of a web browser.*
- *Bookmark a website.*
- *Capture and use an image from a web site.*

*5. Uses slide presentation programs.*

- *Create a slide show that includes proper formatting, text, graphics and sound to share information with a target audience.*

*6. Understand safe and ethical behavior when accessing technology resources.*

- *Write correct citations for text and images from electronic resources.*
- *Demonstrate awareness of ergonomics and how to use equipment safely.*
- *Demonstrate awareness of classroom/school rules governing the use of technology.*

## *Action Goals Related to Benchmark 2*

### *FY 2012-2013*

**Expect that teachers use technology every day in their lesson planning and collaborations.Improve the use of appropriate technology in research and application, multimedia material creation and interpretation of data.**

***FY 2013-2014 -*** **80% of teachers will have reached the competencies aligned in the proficiency level of the Massachusetts Technology Self-Assessment Tool (TSAT) or similar tool as approved by the District. The results shall be the tool in planning our professional development to meet or exceed this goal.**

***FY 2014-2015*** ***- 90 % of teachers will have reached the competencies aligned in the proficiency level as defined by the Massachusetts Technology Self-Assessment Tool (TSAT) or similar tool as approved by the District. Staff will continue to work to meet 100%proficiency level by 2016.***

***To reach these action goals, we must:***

- ***Establish what the District expectations are for technology proficiency***
- ***Prioritize the areas of weakness as identified by our survey***
- ***Prioritize technology professional development within the district so that this plan's goals are achieved.***

# Benchmark 3
## Technology Professional Development

Technology Professional Development continues in Amesbury Public Schools in response to district-wide survey results (November 2011), as well as state or national driven mandates (Common Core Standards). District teacher and support staff workshops/trainings are offered yearly, in addition to more specific building- based trainings (ASPEN-FOLLETT Grade book, Lexia, Spelling City, Study Island). We continue to offer mentor trainings, co-teaching support, onsite, online and hybrid graduate-level courses, as well as on-going training with administrative reporting tasks (ASPEN-FOLLETT Aspen/Follett) or web site management (School world). All offerings are designed to assist staff members meet identified national technology standards. We strive to incorporate emerging new literacies (such as digital and print sources) for research and communication, in addition to using analytics to identify effective strategies and practices to strengthen instruction. We are committed to supporting 21st Century Skills district-wide. Professional development will address skills necessary to help students achieve the Massachusetts Recommended Instructional Technology Standards for Students PreK-12 and the newly adopted Common Core Standards that aim to prepare them for success in postsecondary education and the workforce.

## *Action Goals Related to Benchmark 3*

***FY 2012-2015 -*** **All teachers will meet or exceed the Amesbury Public Schools Teacher Technology Skill Benchmarks and demonstration of achievement.**

**To meet this goal the following professional development opportunities will be made available during FY 2012-2015:**

- **Continue *Aspen/Follett/Cognite* trainings in feature enhancement at Middle/High;**
- **Upgraded software and Microsoft *Office 2007/2010* training;**
- **On-going *Thinkfinity* training to improve and refine teacher resources and vetted web sites.**

**FY 2012-2015 - Ongoing Professional Development**

- **District-wide staff peer-peer mentoring and professional learning communities**
- **Teachers will avail themselves of graduate regional and online college courses as well as district course offerings.**
- **In-service courses in accordance to survey results**
- **Continued training with online reading and math curriculum and assessment tools for students including: *Reading Street*, *Read Naturally*, *Lexia*, *Spelling City* (gr2-4), *Study Island* (gr3-4), *BrainPop* , *SRI*, and *Accuplacer* (Early College)**
- **Training and support with *Aspen* Gradebook and Parent Portal (Middle /High)**
- **Access to online webinars for strengthening 21st century technology tools in the classroom**
  **Pilot: *Simple K-12***

- **Interactive technology trainings, as needed**

# Benchmark 4
## Accessibility of Technology

1) Hardware Access

a) The district has an average ratio of fewer than five students per high-capacity, Internet-connected computer. In 2008 the district had an average ratio of 27.57 students per high-capacity, Internet connected computer. The goal was that by now (2012) we would have brought that down to 5 students per type A computer and 2-3 students per type A/B computer. Through scheduled upgrades and newly leased type A machines, as of 2010 the district reported a 5.06 District ratio per type A computer, 3.60 ratio of students per type A/B computer and a ratio of 2.6 students per any type of computer

b) The district provides students with emerging technologies appropriate to their grade level. In 2008, because of almost constant use of the one open lab at AMS there were hopes of adding a fourth. That was achieved through donated equipment and a *PAG* grant provided for both a projector and interactive whiteboard; however, due to the loss of one computer teacher, another lab is available to which teachers can now take students. The goal to install student response systems in each building has not been successful. Cashman Elementary School remains the only school so equipped. Suggest revisiting or revising this goal.

c) The district will continue to improve access to the general education curriculum for all students, including students with disabilities, using technology in classrooms with Universal Design for Learning principles and assistive technology devices. More teachers are incorporating UDL in their teaching, and the district strives to provide tools required to best service students. It is hoped, for the purposes of better management practices, that future planning can be coordinated in the spring rather than in the fall.

d) The district has procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability. Between the use of software control solutions such as School Dude, and the aggressive, thorough job done to inventory and catalog both software and hardware, we have been successful. Additionally, by restricting donations to designated specifications the district has moved toward more uniformity of access and interoperability. It is, however, a constant struggle to keep up with changes, such as the new iOS devices requiring separate management databases.

e) The district provides classroom access to devices such as digital projectors and electronic whiteboards. In 2008 each school had at least one projector and interactive whiteboard. As of fall 2011, all schools have multiple projectors, primarily acquired through grant funding. The biggest issue at this point, is the lack of projectors, so their procurement should be a district goal going forward. We strive for K-12 interactive technology ability at each classroom and continue to research a variety of funding sources to achieve this goal.

f) The district has established a computer replacement cycle of five years or less. Due to funding limitations, this goal has not been completely realized. It is our intention to fund this going forward. The plan in 2009 was to use leasing programs to replace desktops in labs and libraries every 3 years, and to replace most teacher, administrator and classroom, student computers every 5-6 years. Replacing old CRT monitors is also part of this plan's cycle.

2) Internet Access

a) The district provides connectivity to the Internet in all classrooms in all schools including wireless connectivity, if possible. All classrooms do have access for both student and teacher computers. Installing wireless is an ongoing goal but has been complicated, in some cases with physical plant restrictions, as well as dealing with the security and bandwidth issues.

b) The district provides bandwidth of at least 100Mb or 1 Gb to each classroom. At peak, the bandwidth at each computer is at least 100 kbps. The network card for each computer is at least 100 kbps and almost all are 1 Gb. The district has met the goal, however increasing demand due to the use of videos in the classroom is drawing down network capabilities. A goal should be to look at prioritizing the funding of greater bandwidth for the City of Amesbury.

3) Networking (LAN/WAN)

a) The district provides a minimum 100 Mb Cat 5 switched network and/or 802.11b/g/n wireless network.

b) The district provides access to servers for secure file sharing, backups, scheduling, email, and web publishing, either internally or through contracted services. With shared drives on our own servers, Schoolworld, and Aspen/Follett, we have met this goal.

4) Access to the Internet Outside the School Day

a) The district maintains an up-to-date Website that includes information to parents that can be found at http://www.amesburyma.gov. The interactivity of the new site has resulted in far more teachers maintaining current, relevant, information for students and our community.

b) The district works with community groups to ensure that students and staff have access to the Internet outside of the school day. Community groups that have access to the Internet outside of the school day include: Parent Advisory Group, Parent Teacher organizations, Amesbury Adult Learning Center, Northern Essex Community College GED and Adult Basic Education programs, New England League of Middle Schools, Massachusetts Destination Imagination, Lesley University Off Campus Masters Programs, Salem State College Graduate School, Northeast Consortium, Town of Amesbury After School Program.

c) The district disseminates an up-to-date list of places where students and staff can access the Internet after school hours. We offer use of school computers after school

at AMS and AHS. We promote the use of computers at the Amesbury Public Library, in addition to the district Website, please note the chart below:

| | | |
|---|---|---|
| Amesbury Public Library | Monday & Wednesday | 2:30-9:00pm |
| | Tuesday, Thursday and Friday | 2:30-5:00pm |
| | Saturday | 10:00am -5:00pm |
| AHS Library Media Center | Monday - Friday | 7:00am to 3:30pm |
| AMS Library Media Center | Monday-Thursday | 7:00am to 3:30pm |
| | Friday | 7:00am to 2:30pm |
| AES Library Media Center | Not Staffed | |
| CES Library Media Center | Not Staffed | |

5) Staffing

a) The district provides staff or contracted services to ensure that its network is functioning at all times. District staff consists of a shared MIS director, a network administrator, and two technical specialists. There are 3 ½ staff members providing network, hardware and administrative software support in addition to database management functions. A significant goal would be to either seek secretarial staff with database skills or add a database specialist to the staff, given the dramatic recent increase in database demands.

b) The district provides timely in-classroom technical support with clear information about how to access the support, so that technical problems will not cause major disruptions to curriculum delivery. From in-person tutoring, training and customized help sheets to remote assistance the help provided is timely and exemplary.

c) The district provides at least one FTE person to support 400 computers. Technical support can be provided by dedicated staff or contracted services. As of 2009, the number was 308, so despite the fact that it was unlikely that the number would drop given the increase in the number of computers in place, the DESE moved the target by doubling the number expected to be managed, so we are very much at the same place as then.

## *Action Goals Related to Benchmark 4*

***FY 2012-2013 -*** **Continue our district-wide deployment of digital projectors. Complete the implementation of school hardware inventory and software licensing management system. Ensure that each classroom in the district is equipped with some type of remote device that will allow a teacher to control his/her computer while moving around within the room.**

***FY 2013-2014 -*** **Provide each school in the district with two classroom-size sets of interactive hand- held learning devices. Ensure that each elementary school in the district has at least one interactive whiteboard/projector setup per grade level; and that the middle and high schools have at least two per grade level.**

***FY 2014-2105 -*** **Commit to a ratio of 5 students per Type A computer, and 2-3 students per Type A/B computer by replacing lab and library lab computers every 3 years. Work toward the goal of 1-1 computing through all available technologies including tablet computers.**

## Benchmark 5
### E-Learning and Communications

A. Amesbury Public Schools continues its mission to provide every student and staff member with an assortment of technology to enrich and expand the learning environment. These technologies include:

- a "Parent Portal" to increase communication between teachers and parents
- software to help assess and improve a student's reading ability and recommend appropriate literature
- Increased amount of open source software used in the district. This includes software for 3-D modeling, programming, communications, and open source text books.
- Software to give teachers the ability to create and maintain their own websites
- software to improve math skills
- online presentation software
- closed loop video systems at all schools
- *eSPED* to manage Individualized Education Plan documentation

B. The district deploys IP-based connections for access to web-based materials on all levels, from local to international.

C. Classroom applications for students and teachers include the following on and offline resources: multimedia projects, fine arts, language arts, finance, mathematics, science, social studies, databases, research, communication, collaboration and access to college level online courses via the dual enrollment program.

For staff, there is a determination to increase and expand their technology skills beyond the basic skill level by incorporating new and emerging technologies in the classroom. By using their own websites, teachers are able to post materials and improve interactions in and out of the classroom.

D. The district maintains an up-to-date website that includes information for parents and community members. Over the past few years our website has been upgraded with more interactive elements, teacher websites and an easier user interface. To further increase communications with the community, we are using automatic messaging and email systems.

E. The district complies with federal and state law and local policies for archiving electronic communications. The district informs staff and students that any

information distributed over the district or school network may be a public record. (See Technology and Email Policy included in Appendix.)

### *Action Goals Related to Benchmark 5*

***FY 2012-2013 -*** **Have more than 90% of the staff place information on their websites.**

**- Increase student and parent usage of the Aspen portal to keep track of progress.**

***FY 2013-2014 -*** **Have 100% of staff place information on their websites and increase the usage of the advanced webpage features. (blogs, calendars, forms, and podcasts)**

***FY 2014-2015-*** **Increase the amount of cloud computing. (using the utilities available in *Aspen* and *SchoolWorld* for online submission of completed projects and file storage)**

## Benchmark 6
### Safety, Security, and Data Retention

A. The district has a CIPA-compliant Acceptable Use Policy (AUP) regarding Internet and network use. The policy is updated as needed to help ensure safe and ethical use of resources by teachers and students. All staff must agree to the AUP each time they log on, and the School Committee Policy is that teachers are required to sign it.

B. The district educates teachers and students about appropriate online behavior. Topics include cyber bullying, potential risks related to social networking sites and chat rooms, and strategies for dealing with these issues. Amesbury had been very proactive on this, being one of the first districts in the state to have a policy in place. Through the Integration Specialists in the district, students receive age appropriate education on appropriate use of and the dangers relating to Internet use. Additionally, during new teacher training the MIS staff provides information on correct use.

C. The district has a plan to protect the security and confidentiality of personal information of its students and staff. Through specified protocols, and careful handling of data by way of restricted access to data, password protected pages etc. student confidentiality is regarded seriously.

D. The district complies with federal and state law and local policies for archiving electronic communications produced by its staff and students. The district informs staff and students that any information distributed over the district or school network may be a public record. All mail that comes through the district email server, both inbound and outbound, is archived.


## Welcome to the Massachusetts Technology Self-Assement Tool

The technology instrument has been designed for:

**1. Teachers:** to determine their own levels of technology proficiency and to identify personal technology professional

**2. Schools/Districts**: to asses their professional development needs and to plan professional development activities that will help all teachers become proficient in technology.

**3. The State:** to gather and report data on technology competencies and technology professional development.

## Using the Technology Self-Assesment Tool

There are two ways you can use the TSAT. You can read through the entire documents, checking off skills that you have attained, or you can complete one level at a time, stopping when you reach a level you have not yet mastered. Although some levels do not require that you complete all of the skills to attain mastery, you can go back at any time to check off new skills when you learn them.

## Mastery Levels

The  TSAT has four mastery levels, as shown in the table below. The table show the percentage of skills that you should complete in order to move to the next level. Although some levels do not require that you complete all of the skills, you can go back at any time to check off new skills you have learned

| | Technology Operations & Concepts | Ethics & Safety | Teaching & Learning with Technology |
|---|---|---|---|
| Early Technology | 100% | 100% | 100% |
| Developing Technology | 80% | 100% | 80% |
| Proficient | 80% | 100% | 80% |
| Advanced | 80% | 100% | 80% |

If this is the first time you are taking this assessment, you should begin at Early Technology. The assessment presents a list of skills with check boxes. Check a skill if you are able to do all of the examples given. You can take the assessment as many times as you wish. When you have completed a skill level, proceed to the next higher level. For example, once you master the skills in Early Technology, you should begin working on the Developing Technology level**.**

| | | **A. Early Technology** |
|---|---|---|
| **I Know How To** | | **Standard 1 – Technology Operations and Concepts** |
| | A1.1 | Identify components of a computer system and its operating system (e.g., drives, memory, window). Explain the functions of the components, and use appropriate terminology in speaking about them. |
| | A1.2 | Connect the cables and cords correctly so that a computer is functional. Reduce the risk of hardware failure through proper care of the components. |
| | A1.3 | Demonstrate basic skills for using hardware and applications (e.g., start up and shut down computer system and peripherals, open and close a file, start an application and create a document). |
| | A1.4 | Follow the proper district/school procedures in the event of technical difficulties. |
| | A1.5 | Navigate using scroll bars, arrow keys, special keys, trackpads/touchpads, and mice. |

| | | |
|---|---|---|
| | A1.6 | Save/backup and retrieve a file to/from local hard drive, portable disk/device, and/or online storage location. |
| | A1.7 | Select a printer and print a document with appropriate resolution and orientation (portrait or landscape). |
| | A1.8 | Use basic editing and formatting features of a word processing program (e.g., centering, spacing, fonts, enter text, edit, copy and paste, and insert graphics). |
| | A1.9 | Explain the concept of a database, and provide examples from everyday life (e.g., library catalogs, school records, telephone directories). |
| | A1.10 | Use correct terminology in speaking about Internet communications (e.g., browser, search engine, website, URL, domain, links). |
| | A1.11 | Explain terms related to the use of networks (e.g., username, password, network, server, domain). |
| | A1.12 | Select a strong (secure) password and keep it safe. |
| | A1.13 | Access the Web and identify and use navigation features of an Internet (e.g., “home,” “back,” “forward,” hyperlinks, and multiple tabs). |
| | A1.14 | Add a website to *Favorites* or *Bookmark* it for future reference. |
| | A1.15 | Create and send a message using email. Retrieve and read email. Reply to sender and forward an email and attach a file. Save, print and delete an email. Differentiate between “reply” and “reply to all." |
| | A1.16 | Send an email attachment. Receive an attachment, open it, and save it to an appropriate location. |
| | | |
| **I Know How To** | | **Standard 2 – Ethics and Safety** |
| | A2.1 | Explain and comply with the Acceptable Use Policy in your district and describe the consequences of failing to comply. |
| | A2.2 | Explain and apply classroom/lab rules for responsible and equitable use of technology. |
| | A2.3 | Explain potential problems viruses and other malware create and practical methods of prevention (including exercising caution in opening email attachments and installing software). |

| | | |
|---|---|---|
| | A2.4 | Identify key intellectual property issues that apply to technology use in education, the workplace and society (e.g., fair use, copyright, software licensing, plagiarism). |
| | A2.5 | Follow appropriate licensing for all software and content used. |
| | A2.6 | Discuss the basic concept of assistive technologies and Universal Design for Learning (UDL). |
| | A2.7 | Evaluate the proper physical setting for technology use (ergonomics). |
| | A2.8 | Explain how media and technology can be used to distort or exaggerate information. |
| | | |
| **I Know How To** | | **Standard 3 – Teaching & Learning with Technology** |
| | A3.1 | Discuss current best practices on teaching and learning with technology in order to plan rich learning environments and experiences. |
| | A3.2 | Use technology to gather curriculum-specific information from online and/or local digital sources. |
| | A3.3 | Integrate technology into the curriculum of one's subject and/or grade level with assistance of a coach, mentor or other staff member. |
| | A3.4 | Use digital and online tools to communicate with teachers, parents, and other stakeholders and to create/distribute classroom materials. |
| | A3.5 | Identify your personal technology professional development needs. |
| | | |
| | | |
| | | **B. Developing Technology** |
| | | |
| **I Know How To** | | **Standard 1 – Technology Operations and Concepts** |
| | B1.1 | Connect a computer to peripheral equipment(e.g., scanner, printer, projector). |
| | B1.2 | Identify and use a variety of storage media (e.g., CD/DVD, flash drives, network servers, online storage spaces). Explain why a particular medium is or is not suited for a particular storage task. |

| | | |
|---|---|---|
| | B1.3 | Resolve basic technical difficulties (e.g., reboot computer, clear paper jam, replace ink cartridge replacement). |
| | B1.4 | Use built-in help and other available support resources to learn about hardware and software features and to troubleshoot problems. |
| | B1.5 | Use proper terminology to communicate commonly occurring technology problems (e.g., frozen screen, disk error, printing problems). |
| | B1.6 | Use editing and formatting features (margins, spelling, and tabs) in a word processing application.. Insert images (e.g., downloaded from the Web or copied from a removable device) into documents. |
| | B1.7 | Create a report or newsletter using word-processing or desktop publishing software. |
| | B1.8 | Describe the structure and function of spreadsheet (e.g., cells, rows, columns, and formulas). |
| | B1.9 | Create an original spreadsheet, entering simple formulas (various number formats, equations, percentages,). Reposition columns and rows; apply formatting features. |
| | B1.10 | Interpret spreadsheet information, and produce simple charts from data. |
| | B1.11 | Perform basic searches (including multiple key words) on digital and online databases (e.g., library card catalog, encyclopedia). Use available tools to refine and limit the results of a search. |
| | B1.12 | Create and manipulate graphics using a drawing or painting program (e.g., adjust scale, size, shape, resolution). |
| | B1.13 | Create a simple multimedia presentation and explain the terminology (e.g., slide, transition, build.) |
| | B1.14 | Organize *Bookmarks* or *Favorites* into folders for future reference. |
| | B1.15 | Identify and use basic search strategies on the Internet. |
| | B1.16 | Create an address book in an e-mail program. |
| | | |
| **I Know How To** | | **Standard 2 – Ethics and Safety** |
| | B2.1 | Ensure equitable access to technology resources for all students in the class. |

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| | B2.2 | Use basic assistive technology features of operating systems and applications. For example, change text size in a word processor, use text-to-speech features, change mouse controls, use on-screen calculators. |
| | B2.3 | Cite electronic sources correctly in accordance with academic standards (e.g., APA); explain and model this in the classroom. |
| | B2.4 | Explain and demonstrate ethical and legal behavior (including fair use guidelines) in copying/downloading files, applications, and media. |
| | B2.5 | Evaluate a website's validity as a source of information (e.g., find site sponsor, author, date the site was last updated, etc.). |
| | B2.6 | Explain the safe, responsible use of email, instant messaging, chat rooms, and other electronic communications (including strategies for avoiding and responding to cyberbullying and for avoiding malware/phishing schemes). |
| | | |
| **I Know How To** | | **Standard 3 – Teaching & Learning with Technology** |
| | B3.1 | Design and develop lessons and activities that integrate technology in a variety of instructional settings for all students. |
| | B3.2 | Use appropriate technology to differentiate instruction (e.g., multimedia presentations, concept maps) for all learners. |
| | B3.3 | Identify and locate technology resources including online curriculum resources (Massachusetts Curriculum Frameworks and/or district curriculum guides) for planning. |
| | B3.4 | Manage student technology activities to optimize learning with available resources (e.g., in a one-computer classroom, a computer lab, or with portable/wireless technology). |
| | B3.5 | Use applications (spreadsheets, databases, etc.) to organize curriculum-specific information into charts, tables and diagrams. |
| | B3.6 | Create multimedia presentations to communicate curriculum content. |
| | B3.7 | Integrate results of electronic research into classroom instruction with proper citations as appropriate to the grade level. |

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| | B3.8 | Locate and participate in appropriate technology professional development activities offered by the district, local college/university, or online provider. |
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| | | **C. Proficient** |
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| **I Know How To** | | **Standard 1 – Technology Operations and Concepts** |
| | C1.1 | Recognize and work with a variety of different multimedia and document formats (e.g., jpg, html, mp3, pdf, doc, odt). |
| | C1.2 | Determine the size and format of files, to identify the storage space remaining on drives, and to identify the version of an application in use. |
| | C1.3 | Install new software from a variety of sources (e.g., CD, DVD and the Internet) per district policies. |
| | C1.4 | Resolve commonly occurring technology problems (e.g., frozen screen, disk error, printing problems). |
| | C1.5 | Demonstrate intermediate word processing skills (e.g., indents, headers and footers, end notes, bullets and numbering, tables, track changes, insert comments). |
| | C1.6 | Use built-in calculating functions (e.g., sum, average) in a spreadsheet application. |
| | C1.7 | Customize formatting of charts or graphs created in spreadsheet. Define and use built-in data functions of a spreadsheet such as sort, filter, find. |
| | C1.8 | Differentiate between formulas with absolute cell references and relative cell references in a spreadsheet. |
| | C1.9 | Use multiple sheets within a spreadsheet and link cells together across sheets. |
| | C1.10 | Define terms (field, table, record, query, etc.) and functions related to databases. |
| | C1.11 | Perform simple operations in a database (e.g., browse, sort, search, delete, add data, define field formats). |
| | C1.12 | Create a multimedia presentation that includes a design template, tables, imported audio, and graphics. |

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| | C1.13 | Demonstrate advanced search strategies to locate and retrieve electronic information (e.g., use syntax and Boolean logic operators such as “and/or”) correctly. |
| | C1.14 | Share links among users via a variety of technologies (e.g., email, instant messaging, social networks, message boards). |
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| **I Know How To** | | **Standard 2 – Ethics and Safety** |
| | C2.1 | Use assistive technology software (e.g., text-to-speech, word prediction, voice recognition, word-symbol, communication software). |
| | C2.2 | Address situations where inappropriate technology use occurs, and contact proper district personnel to take action. |
| | C2.3 | Demonstrate and teach students the principals of ergonomics (e.g., avoiding repetitive stress injuries maintaining proper posture) as well as how to use equipment safely. |
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| **I Know How To** | | **Standard 3 – Teaching & Learning with Technology** |
| | C3.1 | Plan for the management of technology resources within the context of learning activities (e.g., schedule use of computer lab, wireless laptops, whiteboard). |
| | C3.2 | Evaluate technology resources, including online resources for accuracy and suitability for your curriculum area and the students you teach. |
| | C3.3 | Identify and discuss the technology proficiencies needed in the workplace, as well as strategies for acquiring these proficiencies. |
| | C3.4 | Use appropriate technology tools to enhance your curriculum (e.g., digital projectors, wireless laptops, handhelds, environmental probes). |
| | C3.5 | Facilitate technology-enhanced lessons that address content standards and student technology literacy standards, while addressing a variety of learning styles. |
| | C3.6 | Use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning. |
| | C3.7 | Identify and evaluate developing technologies as they relate to your subject area, grade level and student population. |

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| | C3.8 | Assess student learning using a variety of district, school or individual technology tools and strategies (e.g., the state Data Warehouse, progress spreadsheets, or commercial gradebook applications). |
| | C3.9 | Provide assistance to colleagues in using multimedia presentations, WebQuests, and other technology-rich lessons in the classroom. |
| | C3.10 | Manipulate data using charting tools and graphic organizers (e.g., concept mapping, and outlining software) to connect ideas and organize information. |
| | C3.11 | Use electronic communication tools (e.g., message boards, email, virtual classrooms) to enhance teaching and learning. |
| | C3.12 | Use the Internet to network with other teachers and learn about effective use of technology in teaching your subject(s). |
| | C3.13 | Explain and correctly use terms related to online learning (e.g., upload, download, forum, journal, post, thread, intranet, drop box, account). |
| | C3.14 | Facilitate student use of online tools (e.g., blogs, wikis, message boards) to gather and share information collaboratively. |
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| | | **D. Advanced** |
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| **I Know How To** | | **Standard 1 – Technology Operations and Concepts** |
| | D1.1 | Install and troubleshoot new hardware. |
| | D1.2 | Understand the differences between common file types, and identify the appropriate use of each. Identify methods of converting one file to another type. Use different graphic file formats where appropriate (e.g., jpg to png, wav to mp3). |
| | D1.3 | Import/export and link data between spreadsheet, databases and other applications, including presentation applications. |
| | D1.4 | Explain and demonstrate effective strategies for backing up and restoring personal computer data. |
| | D1.5 | Design, create, modify and manipulate an original database. |

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| | D1.6 | Be able to do queries and create reports from a database. |
| | D1.7 | Explain and properly use terms related to networks and Internet infrastructure (e.g., LAN, WAN, DSL, T1, router, firewall, IP address, DHCP, DNS, POP, IMAP). |
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| **I Know How To** | | **Standard 2 – Ethics and Safety** |
| | D2.1 | Manage assistive technology equipment and install peripherals for diverse learners (e.g., alternative keyboards, point devices, and scanners with OCR software). |
| | D2.2 | Explain basic practices that contribute to a website's accessibility to people with disabilities (e.g., use of alternative text to describe graphics, providing captions for audio, maintaining consistency in the interface). |
| | D2.3 | Discuss how copyright law and fair use is affected by, and affects, the use of the Internet. |
| | | |
| **I Know How To** | | **Standard 3 – Teaching and Learning with Technology** |
| | D3.1 | Routinely and rigorously identify, evaluate, and apply emerging technologies as they relate to teaching and learning. |
| | D3.2 | Use specialized technology tools for problem solving, decision-making, and creativity (e.g., simulation software, geographic information systems, dynamic geometric software, art and music composition software). |
| | D3.3 | Develop tools and online content (e.g., web pages, blogs, wikis, mailing lists) for instruction and communication among students and faculty. |
| | D3.4 | Use technology (e.g., applets that require the use of logic to solve problems) to challenge students to develop higher order thinking skills and creativity. |
| | D3.5 | Plan and implement collaborative projects with other classrooms or schools using interactive tools (e.g., email, discussion forums, groupware, interactive websites, VoIP, videoconferencing). |
| | D3.6 | Present ideas using the most appropriate communications technologies (e.g., multimedia presentations, web pages, desktop-published documents). |

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| | D3.7 | Distinguish between effective and ineffective design and presentation in electronic format (e.g., websites, multimedia, charts). |
| | D3.8 | Explain and demonstrate the use of metadata (e.g., tagging, EXIF) to help students and teachers organize information on their computers and/or the Internet. |
| | D3.9 | Design and deliver effective staff development in technology and its integration into the curriculum. |


# Massachusetts Technology Literacy Standards and Expectations

April 2008

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*Jeffrey Nellhaus*
*Acting Commissioner of Education*


April 2008

Dear Colleagues,

I am pleased to present the *Massachusetts Technology Literacy Standards.* This document updates and defines what K–12 students should know and be able to do in order to use technology for learning. The Board of Elementary and Secondary Education voted to approve these standards on April 29, 2008.

I want to thank the Massachusetts Technology Leadership Council (MTLC) for convening a group of educators and business leaders to help the Department review and update our 2001 technology standards and expectations. I also want to thank the many educators across the state who provided their expertise and guidance.

In this revised document we have

- grouped specific technology skills under four grade spans;
- focused on 21st century skills; and
- devoted more attention to digital citizenship, ethics, society, and safety.

The goal of this document is to help students develop technology literacy skills to learn the content of the curriculum, as well as to be able to succeed and thrive in their adult lives. These skills will help them function effectively in a world where new technologies continue to emerge and information grows ever more abundant.

The teaching and learning of these skills should be integrated into the general curriculum, not taught in isolation. As students develop technology skills, they should apply these skills in their classroom, school, and life so that they will understand why these skills are important. An essential benefit of integrating the appropriate use of technology into the curriculum is that it can enhance the learning of the content without overburdening an already full curriculum.

We will continue our work with schools and districts to prepare students for the world of work, higher education, and lifelong learning using multiple technology tools. Thank you for your ongoing support and for your commitment to achieving the goals of education reform.

Sincerely,

Jeffrey Nellhaus
Acting Commissioner of Education

# Contents

# Massachusetts Technology Literacy Standards

## Introduction

In announcing our participation in the Partnership for 21st Century Skills, a national network of states, Governor Deval Patrick said, "Throughout its history, the Commonwealth has been a leader in education. But our world is changing and so we, too, must change in order to ensure our place at the top for the next generation. The vision our administration has laid out will guarantee that Massachusetts students graduate with the tools to allow them to compete not just on the national stage, but with their peers across the globe."[1]

The Partnership for 21st Century Skills states in its *Policymakers' Guide*, "To thrive in the world today, students need higher-end skills, such as the ability to communicate effectively beyond their peer groups, analyze complex information from multiple sources, write or present well-reasoned arguments about nuanced issues and develop solutions to interdisciplinary problems that have no one right answer. In this light, technology is a powerful springboard to higher-level learning."[2]

This publication is designed to help today's students take advantage of the power of technology. It provides a set of guidelines for schools, describing what students should know and be able to do in order to use technology effectively for learning. These guidelines represent realistic, attainable activities that link to the content standards of the *Massachusetts Curriculum Frameworks*.

The Massachusetts Technology Literacy Standards incorporate the Information and Communication Technology (ICT) Literacy skills developed by the Partnership for 21st Century Skills; the National Educational Technology Standards for Students (NETS•S) developed by the International Society for Technology in Education (ISTE); as well as ISTE's 2007 draft NETS Refresh.[3] The Massachusetts Technology Literacy Standards fall into three broad categories:

***Standard 1. Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.***

This standard includes:

- proficiency in basic productivity tools such as word processing, spreadsheet, database, electronic research, e-mail, and applications for presentations and graphics;
- conceptual understandings of the nature and operation of technology systems; and
- learning and adapting to new and emerging technology tools.

[1] The announcement is available online at http://www.21stcenturyskills.org/index.php?option=com_content&task=view&id=328&Itemid=64

[2] *The Road to 21stCentury Learning: A Policymaker's Guide to 21stCentury Skills* (2003) is available online at http://www.21stcenturyskills.org/images/stories/otherdocs/p21up_Policy_Paper.pdf

[3] See Appendix C and Appendix D.

***Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.***

This standard

- relates to social, ethical, and human issues. It promotes positive attitudes toward the uses of technology, as well as responsible use of information. This standard also includes recognition of technology's impact on civic participation, the democratic process, and the environment;
- aims to ensure that students understand general rules for safe Internet practices, including how to protect their personal information on the Internet;
- is to help students develop an awareness of the personal image that they convey through the information they post on the Internet;
- aims to ensure that students understand federal and state laws regarding computer crimes; and
- supports students in exhibiting leadership for digital citizenship.

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

This standard:

- focuses on applying a wide range of technology tools to student learning and everyday life;
- aims to ensure that students will be able to use technology to process and analyze information;
- is to help students develop skills for effective technology-based communication;
- includes the use of technology to explore and create new ideas, identify trends, and forecast possibilities; and
- aims to provide students with an awareness of how technology is used in the real world.

## Overview of Grade Spans

Although technology opens up exciting avenues for learning, computers should complement, rather than replace successful methods that teachers use to help students develop basic skills and understanding. The Massachusetts Department of Elementary and Secondary Education encourages the use of a wide range of tools, both traditional and technological, to help students gain those understandings. For example, although students may become fluent in keyboarding on a computer, they need to continue developing legible handwriting. By the same token, even though students might become highly skilled in electronic research, they should know how to find a book in the library. Throughout their school years, students will grow to regard technology as one of the many tools they can use to help them solve problems and improve their productivity and their capacity to learn as they move through life.

In this publication, specific technology skills are listed for each grade span. Although these proficiency expectations are recommended by the Department, local school districts make their own decisions about their students' technology proficiency. Local decisions should be based on the accessibility and availability of technology, as well as the developmental readiness of a district's students.

Based on the developmental readiness of the students, this document groups the technology skills in four grade spans:

- Grades K–2
- Grades 3–5
- Grades 6–8
- Grades 9–12

### Skills/Knowledge Acquisition

Students can acquire the skills/knowledge enumerated in this document in a variety of ways:

- everyday classroom activities (gaining technology skills while learning the content of the curriculum – see page 18 to page 22)
- specific course work (e.g., taking a Web design course)
- independent study (e.g., supporting a specific project)
- an after-school activity (e.g., publishing a school newsletter)
- peer tutoring (e.g., a high school student coaching a middle school student)
- work at home (Although concerns regarding access to technology by less affluent families are well founded, Department surveys indicate a much higher presence of computers in the homes of low income and limited English proficient families than many educators presume; such surveys at the classroom and school level can be instructive.)

The teaching of technology literacy skills should not be separate from the curriculum. Integrating the appropriate use of technology into the curriculum should enhance the learning of the content. The example on page 23 is a good demonstration of how a school district provides students the technology skills they need, not as a discrete subject, but as "flowing through the curriculum."

In this document, we focus on educational/instructional technology rather than on computer science or engineering standards.

## Massachusetts Technology Literacy Standards

## Grades K through 2 – Technology Exploratory Skills and Expectations

In the early grades, technology should not replace the manipulatives, pencil-and-paper, and other manual methods through which children acquire basic skills. The *Mathematics Curriculum Framework*, for example, stresses the importance of understanding basic arithmetic operations in elementary school. Given this context, the technology literacy standards for the earliest grade span allow the teacher flexibility in deciding when students are ready to use technology. For this reason, the competencies listed for K–2 are described as exploratory concepts and skills. These are skills that will be introduced and, in some cases, developed in elementary grades and mastered in middle and high school.

***Standard 1. Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.***

### *Exploratory Skills and Expectations*

*Basic Operations*

K-2: 1.1 Demonstrate beginning steps in using available hardware and applications (e.g., turn on a computer, launch a program, use a pointing device such as a mouse).

K-2: 1.2 Explain that icons (e.g., recycle bin/trash, folder) are symbols used to signify a command, file, or application.

K-2: 1.3 Identify, locate, and use letters, numbers, and special keys (e.g., space bar, Shift, Delete) on the keyboard.

K-2: 1.4 Recognize the functions of basic file menu commands (e.g., New, Open, Close, Save, Print).

*Word Processing and Desktop Publishing*

K-2: 1.5 Use a word processing application to write, edit, print, and save simple assignments.

K-2: 1.6 Insert and size a graphic in a word processing document.

*Database and Spreadsheet (Tables/Charts and Graphs)*

K-2: 1.7 Explain that computers can store and organize information so that it can be searched.

K-2: 1.8 Use a simple computer graphing application to display data.

*Internet and Multimedia*

K-2: 1.9 Explain that the Internet links computers around the world, allowing people to access information and communicate.

K-2: 1.10 Demonstrate the ability to use tools in painting and/or drawing programs.

***Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.***

***Exploratory Skills and Expectations***

*Ethics*

K-2: 2.1 Follow classroom rules for the responsible use of computers, peripheral devices, and resources.

K-2: 2.2 Explain the importance of giving credit to media creators when using their work in student projects.

*Classroom/Society*

K-2: 2.3 Explain why there are rules for using technology at home and at school.

K-2: 2.4 Identify the purpose of a media message (to inform, persuade, or entertain).

K-2: 2.5 Describe how people use many types of technologies in their daily lives.

*Health and Safety*

K-2: 2.6 Follow the school rules for safe and ethical Internet use. (Use of Internet in this grade span is determined by district policy.)

K-2: 2.7 Demonstrate knowledge of ergonomics and electrical safety when using computers.

K-2: 2.8 Explain that a password helps protect the privacy of information.

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

***Exploratory Skills and Expectations***

*Research (Gathering and Using Information)*

K-2: 3.1 Use various age-appropriate technologies to locate, collect, and organize information.

K-2: 3.2 Review teacher-selected Internet resources and explain why each resource is or is not useful.

*Problem Solving*

K-2: 3.3 Use age-appropriate technologies (e.g., a simple graphing application) to gather and analyze data.

*Communication & Collaboration*

K-2: 3.4 Use a variety of age-appropriate technologies (e.g., drawing program, presentation software) to communicate and exchange ideas.

## Massachusetts Technology Literacy Standards

## Grades 3 through 5 – Technology Standards and Expectations

By the end of fifth grade, all students should have the opportunity to become familiar with the tools they will be expected to use with proficiency. Through this exposure, they will have gained a positive view of technology as a tool for learning. For example, electronic sources such as multimedia encyclopedias and teacher-previewed Web sites can be used to gather information for a report. Additionally, there are many developmentally appropriate applications for children: interactive books, graphic organizers, and writing assistants, as well as mathematical and scientific tools. Such tools can enhance learning for all children, including those with disabilities; for example, multimedia reading software reinforces literacy skills by providing visual and auditory feedback to early readers. These tools can be integrated appropriately in an effective lesson plan.

***Standard 1. Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.***

*Basic Operations*

G3-5: 1.1 Demonstrate basic steps in using available hardware and applications (e.g., log into a computer, connect/disconnect peripherals, upload files from peripherals).

G3-5: 1.2 Select a printer, use print preview, and print a document with the appropriate page setup and orientation.

G3-5: 1.3 Use various operating system features (e.g., open more than one application/program, work with menus, use the taskbar/dock).

G3-5: 1.4 Demonstrate intermediate[4] keyboarding skills and proper[5] keyboarding techniques.

*Word Processing/Desktop Publishing*

G3-5: 1.5 Use menu/tool bar functions in a word processing program (i.e., font size/style, line spacing, margins) to format, edit, and print a document.

G3-5: 1.6 Copy and paste text and images within a document, as well as from one document to another.

G3-5: 1.7 Proofread and edit writing using appropriate resources (e.g., dictionary, spell-checker, grammar resources).

*Database*

G3-5: 1.8 Define the term “database” and provide examples from everyday life (e.g., library catalogues, school records, telephone directories).

G3-5: 1.9 Define terms related to databases, such as “record,” “field,” and “search.”

G3-5: 1.10 Do simple searches of existing databases (e.g., online library catalog, electronic encyclopedia).

[4] By the end of eighth grade, students should have keyboarding skills between 25-30 wpm with fewer than 5 errors. In this grade span, districts determine the intermediate level so that students will reach this standard by the end of eighth grade.
[5] It is a district’s decision to determine whether touch-typing skills are needed. However, students should know the proper ergonomics when using the keyboard.

*Spreadsheet*

G3-5: 1.11 Demonstrate an understanding of the spreadsheet as a tool to record, organize, and graph information.

G3-5: 1.12 Identify and explain terms and concepts related to spreadsheets (i.e., cell, column, row, values, labels, chart, graph).

G3-5: 1.13 Enter/edit data in spreadsheets and perform calculations using simple formulas (+, -, *, /), observing the changes that occur.

*Internet, Networking, and Online Communication*

G3-5: 1.14 Explain and use age-appropriate online tools and resources (e.g., tutorial, assessment, Web browser).

G3-5: 1.15 Save, retrieve, and delete electronic files on a hard drive or school network.

G3-5: 1.16 Explain terms related to the use of networks (e.g., username, password, network, file server).

G3-5: 1.17 Identify and use terms related to the Internet (e.g., Web browser, URL, keyword, World Wide Web, search engine, links).

G3-5: 1.18 Use age-appropriate Internet-based search engines to locate and extract information, selecting appropriate key words.

*Multimedia and Presentation Tools*

G3-5: 1.19 Create, edit, and format text on a slide.

G3-5: 1.20 Create a series of slides and organize them to present research or convey an idea.

G3-5: 1.21 Copy and paste or import graphics; change their size and position on a slide.

G3-5: 1.22 Use painting and drawing applications to create and edit work.

***Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.***

*Ethics*

G3-5: 2.1 Explain and demonstrate compliance with school rules (Acceptable Use Policy) regarding responsible use of computers and networks.

G3-5: 2.2 Explain responsible uses of technology and digital information; describe possible consequences of inappropriate use.

G3-5: 2.3 Explain Fair Use Guidelines for the use of copyrighted materials (e.g., text, images, music, video) in student projects.

*Society*

G3-5: 2.4 Identify ways in which technology is used in the workplace and in society.

G3-5: 2.5 Work collaboratively online with other students under teacher supervision.

G3-5: 2.6 Analyze media messages and determine if their purpose is to inform, persuade, or entertain.

G3-5: 2.7 Explain that some Web sites and search engines may include sponsored commercial links.

G3-5: 2.8 Explain how hardware and applications can enable people with disabilities to learn.

*Health and Safety*

G3-5: 2.9 Recognize and describe the potential risks and dangers associated with various forms of online communications.

G3-5: 2.10 Identify and explain the strategies used for the safe and efficient use of computers (e.g., passwords, virus protection software, spam filters, popup blockers).

G3-5: 2.11 Demonstrate safe e-mail practices, recognition of the potentially public exposure of e-mail and appropriate e-mail etiquette (if the district allows student e-mail use).

G3-5: 2.12 Identify cyber bullying and describe strategies to deal with such a situation.

G3-5: 2.13 Recognize and demonstrate ergonomically sound and safe use of equipment.

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

*Research*

G3-5: 3.1 Locate, download, and organize content from digital media collections for specific purposes, citing sources.

G3-5: 3.2 Perform basic searches on databases (e.g., library card catalogue, encyclopedia) to locate information, using two or more key words and techniques to refine and limit such searches.

G3-5: 3.3 Evaluate Internet resources in terms of their usefulness for research.

G3-5: 3.4 Use content-specific technology tools (e.g., environmental probes, sensors, measuring devices, simulations) to gather and analyze data.

G3-5: 3.5 Use online tools (e.g., e-mail, online discussion forums, blogs, and wikis) to gather and share information collaboratively with other students, if the district allows it.

*Problem Solving*

G3-5: 3.6 With teacher direction, use appropriate technology tools (e.g., graphic organizer) to define problems and propose hypotheses.

G3-5: 3.7 Use spreadsheets and other applications to make predictions, solve problems, and draw conclusions.

*Communication*

G3-5: 3.8 Create projects that use text and various forms of graphics, audio, and video (with proper citations) to communicate ideas.

G3-5: 3.9 Use teacher-developed guidelines to evaluate multimedia presentations for organization, content, design, presentation, and appropriate use of citations.

G3-5: 3.10 Communicate with other students and other classes using appropriate technology, including e-mail if the district allows it.

## Massachusetts Technology Literacy Standards

## Grades 6 through 8 – Technology Standards and Expectations

By the completion of eighth grade, students should demonstrate competencies in using tools such as word processing, database, spreadsheet, Web browser, presentation, and graphics applications. Students should be familiar enough with the purpose and function of these technologies to enable them to select the appropriate tool for a task. Students should be able to identify various components of a computer system and be able to explain basic concepts of networking. Students should practice good file management skills and operate peripheral equipment independently.

Students should understand the legal, ethical, and safety issues concerning the use of e-mail, the Internet, and other online tools. Students should understand how to protect their personal identification and information on the Internet and be knowledgeable about general rules for safe Internet practices. In addition, students should develop an awareness of how they present themselves on the Internet.

By the end of eighth grade, students should have had ample opportunity to become fluent in the use of technology tools for research, problem solving, and communication across all curriculum areas. They should know how to communicate their learning with peers and other audiences through multimedia presentations, desktop-published reports, and other electronic media. They should have learned effective strategies for locating and validating information on the Internet. Moreover, students should understand why it is important to use multiple Web sites for their research, rather than relying on a single site for information.

In summary, when students enter the ninth grade, they should be able to use technology to learn and enhance their understanding of academic subjects and the world around them. Technology should be incorporated into their everyday learning activities, both inside and outside the classroom.

***Standard 1. Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.***

*Basic Operations*

G6-8: 1:1 Use features of a computer operating system (e.g., determine available space on local storage devices and remote storage resources, access the size and format of files, identify the version of an application).

G6-8: 1.2 Identify successful troubleshooting strategies for minor hardware and software issues/problems (e.g., “frozen screen”).

G6-8: 1.3 Independently operate peripheral equipment (e.g., scanner, digital camera, camcorder), if available.

G6-8: 1.4 Identify and use a variety of storage media (e.g., CDs, DVDs, flash drives, school servers, and online storage spaces), and provide a rationale for using a certain medium for a specific purpose.

G6-8: 1.5 Demonstrate keyboarding skills between 25-30 wpm with fewer than 5 errors. (For students with disabilities, demonstrate alternate input techniques as appropriate.)

*Word Processing/Desktop Publishing*

G6-8: 1.6 Demonstrate use of intermediate features in word processing applications (e.g., tabs, indents, headers and footers, end notes, bullet and numbering, tables).

G6-8: 1.7 Create, save, open, and import a word processing document in different file formats (e.g., RTF, HTML).

*Database*

G6-8: 1.8 Describe the structure and function of a database, using related terms appropriately.

G6-8: 1.9 Create a simple database, defining field formats and adding new records.

G6-8: 1.10 Perform simple operations in a database (i.e., browse, sort, filter, search on selected criteria, delete data, enter data).

G6-8: 1.11 Plan and develop database reports to organize and display information.

*Spreadsheet*

G6-8: 1.12 Describe the use of spreadsheets to calculate, graph, organize, and present data in a variety of real-world settings.

G6-8: 1.13 Create an original spreadsheet, using formulas.

G6-8: 1.14 Use various number formats (e.g., scientific notation, percentages, exponents) as appropriate.

G6-8: 1.15 Produce simple charts and graphs from a spreadsheet.

G6-8: 1.16 Distinguish among different types of charts and graphs, and choose the most appropriate type to represent given data.

G6-8: 1.17 Apply advanced formatting features to customize tables, charts, and graphs.

*Internet, Networking, and Online Communication*

G6-8: 1.18 Use Web browsing to access information (e.g., enter a URL, access links, create bookmarks/favorites, print Web pages).

G6-8: 1.19 Identify probable types and locations of Web sites by examining their domain names, and explain that misleading domain names are sometimes created in order to deceive people (e.g., .edu, .com, .org, .gov, .au).

G6-8: 1.20 Explain and correctly use terms related to networks (e.g., LANs, WANs, servers, and routers) and Internet connectivity (e.g., DSL, T1, T3).

G6-8: 1.21 Explain and correctly use terms related to online learning (e.g., IP address, post, thread, Intranet, discussion forum, drop box, account, password).

G6-8: 1.22 Explain that some Web sites require the use of plug-ins and specific browser versions to access content.

G6-8: 1.23 Use e-mail functions and features (e.g., replying, forwarding, attachments, subject lines, signature, and address book.) The use of e-mail is at the school district's discretion and may be a class-wide activity if students do not have individual accounts.

*Multimedia*

G6-8: 1.24 Create a multimedia presentation using various media as appropriate (e.g., audio, video, animations, etc.).

G6-8: 1.25 Use a variety of technology tools (e.g., dictionary, thesaurus, grammar-checker, calculator) to maximize the accuracy of work.

***Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.***

*Ethics*

G6-8: 2.1 Explain ethical issues related to privacy, plagiarism, spam, viruses, hacking, and file sharing.

G6-8: 2.2 Explain how copyright law protects the ownership of intellectual property, and explain possible consequences of violating the law.

G6-8: 2.3 Explain fair use guidelines for using copyrighted materials (e.g., images, music, video, text) in school projects.

G6-8: 2.4 Describe appropriate and responsible use of communication tools (e.g., chats, instant messaging, blogs, and wikis).

*Society*

G6-8: 2.5 Identify and discuss the technology proficiencies needed in the workplace, as well as ways to prepare to meet these demands.

G6-8: 2.6 Identify and describe the effect technological changes have had on society.

G6-8: 2.7 Explain how technology can support communication and collaboration, personal and professional productivity, and lifelong learning.

G6-8: 2.8 Analyze and explain how media and technology can be used to distort, exaggerate, and misrepresent information.

G6-8: 2.9 Give examples of hardware and applications that enable people with disabilities to use technology.

*Health and Safety*

G6-8: 2.10 Explain the potential risks associated with the use of networked digital information (e.g., Internet, mobile phones, wireless, LANs).

G6-8: 2.11 Provide examples of safe and unsafe practices for sharing personal information via e-mail and the Internet.

G6-8: 2.12 Explain why computers, networks, and information need to be protected from viruses, intrusion, and vandalism.

G6-8: 2.13 Explain terms associated with the safe, effective, and efficient use of telecommunications/Internet (e.g., password, firewalls, spam, security, Acceptable Use Policy).

G6-8: 2.14 Describe how cyber bullying can be blocked.

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

*Research*

G6-8: 3.1 Explain and demonstrate effective searching and browsing strategies when working on projects.

G6-8: 3.2 Collect, organize, and analyze digital information from a variety of sources, with attribution.

G6-8: 3.3 Use a variety of computing devices (e.g., probeware, handheld computers, digital cameras, scanners) to collect, analyze, and present information for curriculum assignments.

*Problem Solving*

G6-8: 3.4 Independently use appropriate technology tools (e.g., graphic organizer) to define problems and propose hypotheses.

G6-8: 3.5 Use and modify databases and spreadsheets to analyze data and propose solutions.

G6-8: 3.6 Develop and use guidelines to evaluate the content, organization, design, use of citations, and presentation of technologically enhanced projects.

*Communication*

G6-8: 3.7 Plan, design, and develop a multimedia product to present research findings and creative ideas effectively, citing sources.

G6-8: 3.8 Identify differences between various media and explain issues associated with repurposing information from one medium to another (e.g., from print to the Web).

G6-8: 3.9 Use a variety of telecommunication tools (e.g., e-mail, discussion groups, Web pages, blogs, Web conferences) to collaborate and communicate with peers, experts, and other audiences (at district's discretion).

## Massachusetts Technology Literacy Standards

## Grades 9 through 12 – Technology Standards and Expectations

Throughout high school, as students take courses to prepare themselves for college and the world of work, they should acquire increasingly sophisticated technology skills. Depending on the pathways and courses they choose to take, high school students will become more adept with certain technology tools than others. Moreover, as the curriculum demands more complicated learning tasks, students will discover advanced capabilities in tools such as database and spreadsheet applications.

Starting in high school, students are selecting specific courses to prepare themselves for college and/or entry into the world of work. To accommodate the needs of high school students and teachers better, this publication lists technology skills for all the high school years together, rather than listing the skills by individual grade levels. Teachers should integrate the appropriate technology skills into their courses to help their students learn those subject areas and/or prepare for those careers.

During high school, students should have the opportunity to use more specialized technology tools that enhance their learning. These might include simulation software, geographic information systems, computer-aided design software, or any of a wide variety of content-specific tools. In addition, students should have the opportunity to learn how to write code in a commonly used programming language.

By the completion of high school, students should have developed an appreciation for the capabilities and capacities of technology, as well as an understanding of how these tools can be used for lifelong learning. In addition, students should be knowledgeable about the role technology plays in various fields of work, enabling them to better plan for their careers in the 21st century.

***Standard 1. Demonstrate proficiency in the use of computers and applications, as well as an understanding of the concepts underlying hardware, software, and connectivity.***

*Basic Operations*

G9-12: 1.1 Identify the platform, version, properties, function, and interoperability of computing devices including a wide range of devices that compute and/or manage digital media.

G9-12: 1.2 Use online help and other support to learn about features of hardware and software, as well as to assess and resolve problems.

G9-12: 1.3 Install and uninstall software; compress and expand files (if the district allows it).

G9-12: 1.4 Explain effective backup and recovery strategies.

G9-12: 1.5 Explain criteria for evaluating hardware and software appropriate for a given task (e.g., features, versions, capacity).

G9-12: 1.6 Demonstrate keyboarding techniques,[6] including the use of keyboard shortcuts, to complete assignments efficiently and accurately. (For students with disabilities, demonstrate alternate input techniques as appropriate.)

G9-12: 1.7 Identify and assess the capabilities and limitations of emerging technologies.

[6] By the end of eighth grade, students should have keyboarding skills between 25-30 wpm with fewer than 5 errors.

*Word Processing/Desktop Publishing*

G9-12: 1.8 Apply advanced formatting and page layout features when appropriate (e.g., columns, templates, and styles) to improve the appearance of documents and materials.

G9-12: 1.9 Use editing features appropriately (e.g., track changes, insert comments).

G9-12: 1.10 Identify the use of word processing and desktop publishing skills in various careers.

*Database*

G9-12: 1.11 Explain the importance of designing the structure of a database to meet its intended goals.

G9-12: 1.12 Duplicate the structure of a database without data.

G9-12: 1.13 Save database files in various formats.

G9-12: 1.14 Manipulate non-alphanumeric digital data (e.g., geospatial data from MassGIS[7], images, audio) within a database.

G9-12: 1.15 Define the term "metadata," and explain how metadata describes the structure and workings of an organization's use of information.

G9-12: 1.16 Use database features to create mailing labels, form letters, and perform mail merges.

G9-12: 1.17 Identify the use of database skills in various careers.

*Spreadsheet*

G9-12: 1.18 Define and use functions of a spreadsheet application (e.g., sort, filter, find).

G9-12: 1.19 Enter formulas and functions; use the auto-fill feature in a spreadsheet application.

G9-12: 1.20 Explain and use advanced formatting features of a spreadsheet application (e.g., reposition columns and rows, add and name worksheets).

G9-12: 1.21 Differentiate between formulas with absolute and relative cell references.

G9-12: 1.22 Use multiple sheets within a workbook, and create links among worksheets to solve problems.

G9-12: 1.23 Import and export data between spreadsheets and other applications.

G9-12: 1.24 Create and use pivot tables.

G9-12: 1.25 Explain how various formatting options are used to convey information in charts or graphs.

G9-12: 1.26 Identify the use of spreadsheet skills in various careers.

*Internet, Networking, and Online Communication*

G9-12: 1.27 Use search engines and online directories. Explain the differences among various search engines and how they rank results.

G9-12: 1.28 Explain and demonstrate effective search strategies for locating and retrieving electronic information (e.g., using syntax and Boolean logic operators).

G9-12: 1.29 Describe good practices for password protection and authentication.

G9-12: 1.30 Demonstrate a basic understanding of addressing schemes (e.g., IP addresses, DHCP, DNS).

G9-12: 1.31 Identify career options in network technologies.

[7] For more information, see MassGIS's Web page, GIS in Education, at http://www.mass.gov/mgis/gisedu.htm.

*Multimedia*

G9-12: 1.32 Identify technology tools (e.g., authoring tools) that can be used to create a multimedia product.

G9-12: 1.33 Use a variety of applications to plan, create, and edit multimedia products (e.g., slide presentations, videos, animations, simulations, podcasts).

G9-12: 1.34 Link information residing in different applications (e.g., linking a chart in a word-processing document to the spreadsheet where it was created).

G9-12: 1.35 Identify career options in multimedia and software development.

*Web Authoring*

G9-12: 1.36 Distinguish between effective and ineffective Web site designs; explain the reasons.

G9-12: 1.37 Explain terminology related to Web page authoring (e.g., HTML, URL, links, browsers, plug-ins, Web servers).

G9-12: 1.38 Use HTML or Web-authoring tools to create, edit, and publish well organized Web sites with effective navigation.

G9-12: 1.39 Explain basic practices that contribute to a Web site's accessibility to people with disabilities (e.g., using alternative text, captioning, consistent structure).

G9-12: 1.40 Explain how to test and debug Web files for quality assurance.

G9-12: 1.41 Identify career options in Web design, development, and management.

***Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.***

*Ethics*

G9-12: 2.1 Demonstrate compliance with the school's Acceptable Use Policy.

G9-12: 2.2 Explain issues related to the responsible use of technology (e.g., privacy, security).

G9-12: 2.3 Explain laws restricting the use of copyrighted materials.

G9-12: 2.4 Identify examples of plagiarism, and discuss the possible consequences of plagiarizing the work of others.

G9-12: 2.5 Write correct in-text citations and reference lists for text and images gathered from electronic sources.

G9-12: 2.6 Give examples of the appropriate and responsible use of communication tools (e.g., chats, instant messaging, blogs, wikis).

G9-12: 2.7 Discuss misuse of technology for personal and commercial reasons (e.g., software piracy, unauthorized file sharing/downloading, virus spreading, and hacking); explain possible consequences.

*Society*

G9-12: 2.8 Design and implement a personal learning plan that includes the use of technology to support lifelong learning goals.

G9-12: 2.9 Evaluate the authenticity, accuracy, appropriateness, and bias of electronic resources, including Web sites.

G9-12: 2.10 Analyze the values and points of view that are presented in media messages.

G9-12: 2.11 Describe devices, applications, and operating system features that offer accessibility for people with disabilities.

*Health and Safety*

G9-12: 2.12 Evaluate school and work environments in terms of ergonomic practices.

G9-12: 2.13 Describe and use safe and appropriate practices when participating in online communities (e.g., discussion groups, blogs, social networking sites).

G9-12: 2.14 Explain and use practices to protect one's personal safety online (e.g., not sharing personal information with strangers, being alert for online predators, reporting suspicious activities).

G9-12: 2.15 Explain ways individuals can protect their technology systems and information from unethical users.

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

*Research*

G9-12: 3.1 Devise and demonstrate strategies for efficiently collecting and organizing information from electronic sources.

G9-12: 3.2 Compare, evaluate, and select appropriate electronic resources to locate specific information.

G9-12: 3.3 Select the most appropriate search engines and directories for specific research tasks.

G9-12: 3.4 Search for information within an electronic source (e.g., using the find command).

*Problem Solving*

G9-12: 3.5 Explain and demonstrate how specialized technology tools can be used for problem solving, decision making, and creativity in all subject areas (e.g., simulation software, environmental probes, computer-aided design, geographic information systems, dynamic geometric software, graphing calculators, art and music composition software).

*Communication*

G9-12: 3.6 Use a variety of media to present information for specific purposes (e.g., reports, research papers, presentations, newsletters, Web sites, podcasts, blogs), citing sources.

G9-12: 3.7 Demonstrate how the use of various techniques and effects (e.g., editing, music, color, rhetorical devices) can be used to convey meaning in media.

G9-12: 3.8 Use online communication tools to collaborate with peers, community members, and field experts as appropriate (e.g., bulletin boards, discussion forums, listservs, Web conferencing).

G9-12: 3.9 Plan and implement a collaborative project with students in other classrooms and schools using telecommunications tools (e.g., e-mail, discussion forums, groupware, interactive Web sites, videoconferencing).

G9-12: 3.10 Complete at least one online credit or non-credit course or tutorial; discuss the benefits and disadvantages of this method of learning.

## Gaining Technology Skills
## While Learning the Content of the Curriculum

Anyone who has taken a training course in the use of a spreadsheet, for example, knows how quickly we forget the skills unless we can apply them in our work on a regular basis. Whether technology instruction takes place in the classroom or in the computer lab, it is important that students be able to apply their newly acquired skills to subject matter learning. For example, a student who has gathered data for a science project and needs to organize the data in a database will see a reason for learning about the features and function of a database. This is context-sensitive learning in which technology skills instruction is centered on the curriculum.

Initial technology skills instruction needs to be provided by someone who is proficient in the use of that technology tool. Although some teachers are skilled enough with technology to teach their students to use the tools within the context of the curriculum content, other teachers may not be prepared to do this. A possible solution is for a staff person with technology expertise (such as an instructional technology specialist, library teacher, or another classroom teacher acting as a mentor) to provide mentoring or to co-teach alongside the teacher.

As technology tools become an integral part of the learning environment, and as students gain the knowledge and skills to use them appropriately, new opportunities for learning open up. Dynamic geometric applets, for example, can help students visualize and understand complex mathematics concepts. Simulation software enables students to investigate models of real-world problems such as climate change and population growth. Basic tools such as spreadsheet and database applications can be applied across the curriculum to analyze and solve problems. Even basic word processing software can encourage students to organize their thoughts and revise their work.

The following scenarios show how technology can be applied in the classroom so that students acquire these skills while addressing the standards of the curriculum frameworks. The scenarios, which were originally published by the Massachusetts Department of Elementary and Secondary Education in its technology toolkit, were drawn from school districts that participated in Project MEET, from districts that received instructional technology grants from the Department, and from award-winning teachers.

Each scenario features a lesson unit on a specific curriculum topic. Several criteria were used to select these lesson units. First, the lesson needed to have a clear curriculum focus that was aligned with the state's *Curriculum Frameworks*. Second, the lesson had to integrate learning technology skills with learning the curriculum content. Third, the lesson also had to address the fact that students have varying abilities, backgrounds, and interests. Finally, the lesson needed to have a way to evaluate how much students had learned.

All of these scenarios, plus more, are available on the Department's Web site (http://www.doe.mass.edu/edtech/practices/). The online version includes links to sample student work, classroom photographs, videos, multimedia presentations, and digital artwork.

## Integrated Learning Scenario #1

### Reciprocating Art[8]
**Grades 1-4 Art**

**Instructional objective:** The student will be able to use the principles and elements of design to create artwork collaboratively with students in another country.

**Project description:** In this art project the teacher worked with a school in Japan so that American and Japanese students could collaborate to create unique artwork. A translator helped the teacher use e-mail and language translation software to communicate with the Japanese principal and determine the exchange process. Thirty-nine Japanese students and thirty-nine American students each created a background for a painting. They then exchanged artwork through regular mail and finished each other's paintings. The American students used technology to communicate with the Japanese students, creating a video to send messages in English and Japanese. The teachers communicated through e-mail. The completed artwork was sent back to the original schools through regular mail.

**Evaluation:** To evaluate the students' work, the teacher used peer review, artwork critique, and evaluation of the finished products.

**Evidence of effectiveness:** The students were deeply involved in the process of critiquing, comparing, and contrasting the artwork. Their families also valued the students' participation in the project. Many American families framed their child's work from this art exchange project. In fact, some have framed the correspondence from this project as well as the artwork and have placed them next to each other. Of course, all of the vocabulary had to be translated. The Japanese writing next to the American writing is a piece of art onto itself. Many families thought so as well. The idea of accepting cultural differences and knowing that one culture is not better than the next but can be learned from is important for the students to understand. This was accomplished through discussion and student activities.

***Technology standards addressed***

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity and innovation.***

K-2: 3.4 Use a variety of age-appropriate technologies (e.g., drawing program, presentation software, etc.) to communicate and exchange ideas.

[8] Robert Wilson at the Floral Street School in Shrewsbury Public Schools developed Reciprocating Art.

## Integrated Learning Scenario #2

## Becoming Scientists[9]
### Grade 4 Science and Technology/Engineering

**Instructional objective:** At the conclusion of this unit, students will be able to demonstrate their understanding of the properties of light and sound through classroom instruction and authentic data collection activities.

**Project description:** This project involved the development of two science units that address the curriculum standards for the study of light and sound. Each unit followed the same format, integrating the use of science probes with the teaching unit. To ensure that students were highly motivated to conduct the investigations, the students were given fictitious scenarios presenting problems that could only be solved after sound and light data had been collected and analyzed. The result of integrating technology in this way was that students became deeply engaged in this authentic learning experience.

**Evaluation:** Student learning of the science content standards was evaluated using classroom quizzes and rubric scoring of their works. The technology benchmarks were evaluated by observation of student use of Palm handhelds and sensor use, the accuracy and organization of graphed information, and the use of word processing tools.

**Evidence of effectiveness**: The integration of data collection into the study of physics brings authenticity to the learning experience. The teachers and students have expressed overwhelming enthusiasm for these learning activities. At the conclusion of both units it became clear to the teaching staff that when learning becomes authentic, deeper understanding of the content is achieved.

***Technology standards addressed***

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

G3-5: 3.4 Use content-specific technology tools (e.g., environmental probes, sensors, measuring devices, simulations) to gather and analyze data.

G3-5: 3.6 Use spreadsheets and other applications to make predictions, solve problems, and draw conclusions.

G3-5: 3.8 Create projects that use text and various forms of graphics, audio, and video (with proper citations) to communicate ideas.

[9] Becoming Scientists was developed by a team of educators at the Bernardston Elementary School in the Pioneer Valley Regional School District: Mary Leyden, Marge Bruno, Chris Hershiser, and Wendy Abramson.

## Integrated Learning Scenario #3

### SELECT Math[10]
### Grade 7 Mathematics

**Instructional objective:** Students will be able to identify and distinguish between part-to-part and part-to-whole ratios and recognize situations in which ratios are a useful form of comparison.

**Project description:** This investigation focused on the part-to-part and part-to-whole meaning of fractions. Students informally explored rates and ratios using proportional reasoning to determine how to combine orange juice concentrate and water to make enough orange juice for a given number of people. The students used virtual manipulatives, such as online fraction circles and visual models, to help them solve problems and check their solutions.

**Evaluation:** To evaluate students' progress in meeting the mathematics standards, the teacher assessed the students' ability to represent a ratio graphically and to write part-to-part and part-to-whole ratios from a graphical representation. To evaluate the students' progress in meeting the technology standards, the teacher checked whether the students were able to independently access the Web site, use the mouse, and enter the data. The teacher also evaluated how efficiently the students were able to use Microsoft Word's drawing tools to represent each given mixture.

**Evidence of effectiveness:** The students were excited about using the technology, and they were focused on how they could use the technology to evaluate the orange juice recipes. In their minds the technology was doing the work for them. The teacher made references throughout the year to the orange juice problems because the strategies students used truly stayed with them. Every student felt successful solving these problems when they used the technology.

***Technology standards addressed***

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

G6-8: 3.3 Use a variety of computing devices (e.g., probeware, handheld computers, digital cameras, scanners) to collect, analyze, and present information for curriculum assignments.

[10] SELECT Math was developed by Susan Young and Jim Coffey of Boston Public Schools.

## Integrated Learning Scenario #4

### Africa[11]
### Grade 6 Social Studies

**Instructional objective:** The students will be able to determine, through research and comparison, which African countries are developed and which are developing.

**Project description**: This Africa unit integrated research, technology, art, and music to reach its goals. After studying the continent of Africa, each student chose a country to study in depth. Students researched their countries and entered their data into a shared spreadsheet, which the class used to sort and rank the countries by various attributes. The students used what they learned to create PowerPoint projects, which were shared using SMARTBoard technology. During the time that students were researching Africa, the art and music teachers provided activities to help make students more aware of African customs. In art class, students discussed and constructed African masks, while in music class they explored African drumming.

**Evaluation:** The PowerPoint presentations and spreadsheets were graded first as rough copy outlines and later as finished products. The teacher informally assessed each student's ability to judge which stage of development a country was in and used data to argue the case for the country he or she studied. The teacher also evaluated each student's ability to collect data on a specific country, add the data to a spreadsheet, and sort the data across several fields.

**Evidence of effectiveness:** The use of technology for this unit allowed students to produce higher quality work in a shorter period of time. Having computers available at virtually any time allowed the students to work on their projects during periods of down time. The fact that the projects would be presented to the class motivated the students to do their most careful work. Some of the PowerPoint presentations were shared with parents as well. Having the ability to burn CDs and take digital pictures allowed teachers to share the students' works with their parents.

**Technology standards addressed**

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

G6-8: 3.2 Collect, organize, and analyze digital information from a variety of sources, citing sources.

G6-8: 3.5 Use and modify databases and spreadsheets to analyze data and propose solutions.

G6-8: 3.7 Plan, design, and develop a multimedia product to effectively present research findings and creative ideas, citing sources.

[11] Africa was developed by a team of educators in the Manchester-Essex Regional School District: Paul B. Clark, Becky Baun, Anne Wood, and Kathleen Lorenzo.

## Integrated Learning Scenario #5

### The Greyhound® Bus Depot[12]
### Grades 10-12 English Language Arts

**Instructional objective:** Students will use the Web to research the historical and cultural contexts for the literature they are studying and then write a travelogue or travel brochure presenting their findings.

**Project description:** In this online lesson, students were asked to take an imaginary bus trip to the time and place in which the story, poem, or play they were studying was written. When the students read a Kabuki play, for example, they ventured back to seventeenth-century Japan; when they read the stories of Isaac Bashevis Singer, they toured late nineteenth- and early twentieth-century Poland. Students were first asked to find as much information online as they could on their own; however, search sites were provided for students who were having trouble finding the information. Students were asked to look for historical events, cultural events, and movements, and to pay attention to the food and fashions of the time. The students were then asked to write a travelogue or travel brochure to present their findings and make a connection to the work of literature the class was reading. The unit also included a short lesson on assessing the validity of Web sites and online information.

**Evidence of effectiveness:** Students often commented that this assignment helped them understand the literature a bit more deeply and that it added to their appreciation of the text. In their written analysis of the literature, the teacher found references to details learned in this assignment and an appreciation for nuances in the text that required an understanding of the historical and cultural contexts.

**Technology standards addressed**

***Standard 2. Demonstrate the responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society.***

G9-12: 2.5 Write correct in-text citations and reference lists for text and images gathered from electronic sources.

G9-12: 2.9 Evaluate the authenticity, accuracy, appropriateness, and bias of electronic resources, including Web sites.

***Standard 3. Demonstrate the ability to use technology for research, critical thinking, problem solving, decision making, communication, collaboration, creativity, and innovation.***

G9-12 3.1 Devise and demonstrate strategies for efficiently collecting and organizing information from electronic sources.

G9-12 3.3 Select the most appropriate search engines and directories for specific research tasks.

G9-12: 3.6 Use a variety of media to present information for specific purposes (e.g., reports, research papers, presentations, newsletters, Web sites, podcasts, blogs), citing sources.

[12] The Greyhound Bus Depot was developed by J.W. Wilson of Wareham High School and Virtual High School.

## District-Wide Implementation of the Standards

### Teaching the Technology Standards[13]
**Grades PreK-12**

**District Goals**: Nauset does not view technology as a separate subject, but “flowing through the curriculum.” The district's goal is to provide students the skills they need to be able to determine and use the appropriate technology for the task at hand, to be able to locate and evaluate information that targets the purpose of their task, and to be able to communicate effectively both the process and content of their research to a specific audience.

**Standards Implementation and Assessment:** Nauset teachers use a unit-design process called an "Effective Teaching Unit Design" to develop their curriculum units. The Instructional Technology Specialists (ITS) in the district select units that target the age-appropriate technology standards, develop project-based assessments, and plug them into the unit-design format. The classroom teacher then has access to a unit with the technology and information literacy standards already populated, the learning experiences outlined, resources identified, and both an exemplar and a rubric for assessment of the project-based assessment included. In this way, Nauset is moving towards its goal of having an appropriate technology component in each unit. Doing so helps ensure that students are attaining the technology and information literacy skills they need in the content areas.

Nauset is comprised of four elementary school districts and one grade 6-12 regional school district. Each elementary school has an ITS, who co-plans with the classroom teacher and co-delivers the technology-infused portion of the lesson. Students meet either once a week or once every two weeks formally with the two teachers. Also, there are open computer lab times in which classroom teachers can provide additional enhancements to the lesson. At the middle school, students in each grade receive technology instruction from the ITS for one full term each school year. At the high school, there are required courses in electronic research in the freshman year, a tech-investigation class during sophomore year, and a variety of other technology-specific courses, as well as the widespread use of technology to support the subject areas.

Grades K-8 ITS have traditionally reported student’s mastery of the standards using a spreadsheet. In the 2007-2008 school year, because of the draft update of the Massachusetts technology standards, Nauset has implemented three student self-assessments. There will be more formal assessment of the technology skills for students in grades 5, 8, and 12 by the ITS.

[13] This piece was written by Kathleen Schrock, Administrator for Technology in Nauset Public Schools.

# Appendix A

## Acknowledgments

This document was developed with the support of many experts.

| Technology Standards Update Committee | | |
|---|---|---|
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The following organizations and educators provided input to this document:

- CAST, Inc.
- Educational Technology Advisory Council (ETAC)
- Educators from Massachusetts Public Schools who attended the roundtable meetings on January 16, 2007 at Blackstone Valley Regional Vocational High School
- Educators from Massachusetts Public Schools who attended the roundtable meeting on January 19, 2007 at the Meline Kasparian Professional Development Center, Springfield
- MassCUE, Inc. (Massachusetts Computer Using Educators)
- BATEC (Boston Area Advanced Technological Education Connections)
- Representatives from the Board of the Massachusetts Technology Leadership Council

# Appendix B

## Development of this Document

In October 2001, the Massachusetts Department of Education published the *Massachusetts Recommended PreK-12 Technology Literacy Standards* to define what Massachusetts K-12 students should know and be able to do in order to use technology for learning. Since then, continuing technological advances have led to new opportunities, new challenges, and new risks. As a result, the Department has updated the original document to include the knowledge and skills that students are likely to need now and in the future.

Another reason the Department has revised the document is that, under No Child Left Behind's Title IID, Enhancing Education Through Technology Program, every state is required to include the following performance measure in its data collection from local school districts:

> "The percentage of eighth-grade students that meet their state's technology literacy standards." (According to Sec. 2402 of NCLB)

Beginning in 2007, Massachusetts reported the number of students who have met the technology standards as part of the Annual Mandatory Collection of Elementary and Secondary Education Data for the Education Data Exchange Network (EDEN).

In May 2006, the Massachusetts Technology Leadership Council (MTLC) brought together a group[14] of educators from higher education, K-12 school districts, and educational organizations to help the Department review and update the original document.

The working group reviewed, compared, and evaluated a number of national, state, and local standards documents in order to ensure that the Massachusetts standards would be as comprehensive as possible. The group first looked at the 2001 Massachusetts standards, which were based on those published in 1998 by the National Educational Technology Standards (NETS) Project.[15] Next the group examined standards from other states. The group also studied the newly updated standards developed by the Boston and Springfield Public Schools. Because technology and media are closely intertwined, the group looked at recommendations from the Center for Media Literacy and the Massachusetts School Library Association. A draft of the revised *Massachusetts Technology Literacy Standards* was developed in September 2006.

In October 2006, the Department shared the draft of the updated standards with a small number of business representatives from the Massachusetts Technology Leadership Council. In addition, educators across the Commonwealth had an opportunity to review and comment on the draft at two roundtable discussion meetings in January of 2007. Educators also submitted additional comments and suggestions to the Department using electronic feedback forms and e-mail. The Massachusetts Department of Elementary and Secondary Education has incorporated these recommendations into this current version.

In January 2007, ISTE announced a draft of its updated NETS standards, called the "Refreshed ISTE NETS for Students,"[16] which describes "what students should know and be able to do to learn effectively and live productively in an increasingly digital world." The Department has incorporated the new NETS standards into the state standards.

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[14] See Appendix A for a list of the members of the working group and other contributors, e.g. CAST.
[15] NETS is an initiative of the International Society for Technology in Education (ISTE) and the U.S. Department of Education
[16] See Appendix C for the alignment of the *Massachusetts Technology Literacy Standards* with Refreshed ISTE NETS Draft.

# Appendix C

## Comparing the Updated K-12 State Standards to the Refreshed ISTE NETS•S

As a general frame of reference for developing these standards, we continue to use the *Technology Foundation Standards for Students*, developed by the National Educational Technology Standards (NETS) Project. In January 2007, ISTE announced a draft revision of the NETS. We have incorporated the "Refreshed ISTE NETS" into this document.

The goal of the NETS Project is to develop national standards for educational technology. The framework for the Refreshed ISTE NETS includes:

1. Creativity and Innovation
2. Communication and Collaboration
3. Research and Information Fluency
4. Critical Thinking, Problem Solving, and Decision Making
5. Digital Citizenship
6. Technology Operations

In 2001, the Massachusetts Department of Education collapsed the six NETS standards into three standards. In this document, the Department once again incorporated the new NETS•S standards into the three standards of the *Massachusetts Technology Literacy Standards and Expectations* as follows:

| UPDATED MASSACHUSETTS TECHNOLOGY LITERACY STANDARDS | CORRESPONDING NETS FOUNDATION STANDARDS | CORRESPONDING REFRESHED ISTE NETS |
|---|---|---|
| **Standard 1** | **Standards 1 and 3** | **Standards 1, 2, 3, and 4** |
| **Standard 2** | **Standard 2** | **Standard 5** |
| **Standard 3** | **Standards 3, 4, 5, and 6** | **Standard 6** |

# Appendix D

## 21st Century Skills

In addition to the *National Educational Technology Standards (NETS*) and the models of other states, this updated version of the Massachusetts K-12 Technology Literacy Standards also incorporates the recommendations of the Partnership for 21st Century Skills.[17] The Partnership's *Framework for 21st Century Learning* includes six key elements:

1. Core subjects as identified by the No Child Left Behind Act of 2001.

2. 21st century content that includes global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; and health and wellness awareness.

3. Learning and thinking skills that include critical thinking and problem solving, communication skills, creativity and innovation skills, collaboration skills, contextual learning skills, and information and media literacy skills.

4. Information and communications technology (ICT) literacy, enabling students to learn, think critically, solve problems, use information, communicate, innovate, and collaborate.

5. Life skills that include leadership, ethics, accountability, personal productivity, personal responsibility, people skills, self-direction, and social responsibility.

6. 21st century assessments that measure the core subjects, 21st century content, learning and thinking skills, ICT literacy, and life skills. The use of modern technologies in assessment is recommended to "increase efficiency and timeliness."

[17] The Partnership for 21stCentury Skills (http://www.21stcenturyskills.org/index.php) is a tax-exempt 501 (c) 3 organization that includes approximately 26 member organizations. The Partnership's original work was supported by a two-year grant from the U.S. Department of Education.

AMESBURY PUBLIC SCHOOLS

**TECHNOLOGY AND EMPLOYEE EMAIL POLICY IJNDB**

## TECHNOLOGY USE

### Introduction

The Amesbury Public Schools shall provide access for employees, students and others to the District's electronic networks, including connections to external networks, for limited educational purposes. Educational purposes shall be defined as classroom activities, career and professional development, and high quality self-discovery activities of an educational nature. The purpose of the network is to assist in preparing students for success in life and work by providing access to a wide range of information and the ability to communicate with others. The network will also be used to improved productivity and to increase communication among staff, parents, the community, governmental organizations, and businesses.

The Superintendent or designee shall implement, monitor, and evaluate the district's network for instructional and administrative purposes.

Access to the network is a privilege, not a right. All users shall be required to acknowledge receipt and understanding of all regulations and procedures governing acceptable use of the network and shall agree, in writing, to comply with such regulations. Noncompliance with these policies and procedures may result in suspension or termination of user privileges and may be subject to restitution for costs associated with hardware, software, and system restoration, as well as other disciplinary actions consistent with the policies of the Amesbury Public Schools. Violations of law may result in criminal prosecution as well as in disciplinary action by the Amesbury Public Schools.

### ACCEPTABLE USE

As members of a networked community, users have specific responsibilities with regard to the efficient, ethical and legal utilization of computer devices, as well as all networked and Internet resources. All users must strictly adhere to the following guidelines and conditions of use.

### Security

- Users are responsible for the proper use of accounts issued to them, such as email, internet or access to software, and must not provide or display their passwords and login information to anyone, nor leave an application open when unattended.
- Users should change their passwords regularly and make efforts to use passwords that are unique and not easily guessed.
- Users are responsible for all activity under their account.
- Attempts to compromise the security, integrity, or functionality of the system, or possession of tools, while on school or district property, designed to do so, is a violation of this policy. This includes, but is not limited to:
    - intentional uploading or creation of computer viruses
    - unauthorized use of another user’s credentials
    - deletion or alteration of another user’s files or applications
    - removing protection to gain access to restricted areas
    - unauthorized blocking of access to information, applications, or areas of the network
- Any user identified as a security risk may be subject to severe restriction of, or cancellation of, privileges.

- It is a federal offense to break into any security system. Financial and legal consequences of such actions are the responsibility of the user.
- If you feel you have identified a security problem on the network, notify the MIS Department. Do not demonstrate the problem to other users.
- It is a violation of this policy to introduce or attach any software or hardware that is not owned by the Amesbury Public Schools, or specifically authorized by the MIS Department, to technology used in the Amesbury Public Schools.
- No modification to any hardware or software owned or managed by Amesbury Public Schools may be made without specific authorization by the MIS Department.

**System Resources**

System resources are limited and are intended to support the educational objectives of the Amesbury Public Schools.

- The use of technology systems must be consistent with and support educational objectives. Therefore activity on the network, such as internet sites accessed, communications via email, listservs, forums or chat rooms must support the District's objectives.
- File space has its limits and users should regularly review and delete unnecessary files and email messages on the network.
- Users should make a conscientious effort to conserve district resources. Use of high-bandwidth resources, such as video-conferencing, online music, or streaming video must be related to educational goals and authorized by the MIS Department at the school or district level.
- Users are responsible for backing-up copies of documents that are important to their jobs. The District will not be responsible for loss of data.

**Privacy**

Communications, including voicemail messages, email, attached documents and images are not private. In theory, all records (except those specifically excluded by law), whether in electronic or hardcopy form, are subject to the Freedom of Information Act and open to public inspection.

- Amesbury Public Schools reserves the right to examine, restrict, or remove any material that is on or passes through its communication systems.
- Users are asked to use judgment and caution in communications concerning students and staff to ensure that personally identifiable information remains confidential.
- Users may not reveal home addresses, personal e-mail addresses or personal phone numbers of colleagues or students.

**Internet**

The Internet provides access to schools, people and informational sites all over the world. The educational potential is limitless; however, users must understand that neither the Amesbury Public Schools nor any Amesbury Public Schools employee controls the content of the information available on the systems. The school district does not condone the use of controversial or offensive materials and cannot be held responsible for such use. The Amesbury Public Schools is in compliance with the Children's Internet Protection Act (CIPA). Filtering services are in use on all computers with access to the Internet.

- Users are expected to take individual responsibility for their appropriate use of the Internet
- Student use of the Internet must be supervised and adults must be aware that filtering does not guarantee that students will not access inappropriate sites
- All communications must be polite and use appropriate language. Swearing and vulgar language are considered inappropriate and are a violation of this agreement.
- Messages relating to, or in support of, illegal activities may be reported to local law enforcement authorities.

- Employees and students, under the direction of a teacher, may publish materials on the Internet on District approved sites that support the school district's objectives and are relevant to school-related activities. In publishing information on the Internet, users must adhere to all previously stated conditions and guidelines as well as the following:
    - An Internet web page may include pictures of students or items of student work, provided that (a) the students are not identifiable or (b) if permission from the students' parents/guardians have been received.
    - No web page will be linked to a personal web address on another server without permission from the respective employee's or student's principal.
    - Copyright laws must be adhered to. Permission to copy or use materials must be obtained from the copyright owner and must be cited. The failure of a site to display a copyright notice may not be interpreted as permission to copy the materials.
    - The unauthorized installation, use, storage, or distribution of copyrighted software or materials on district systems is prohibited.
- Some examples of unacceptable use of district systems include:
    - Conducting commercial activities, product advertisement, political lobbying, or unethical/illegal solicitation.
    - Supporting illegal activities, such as the illegal sale or use of drugs or alcohol, criminal gang activity or threats, intimidation or harassment of any other person or for any activity prohibited by district policy.
    - Accessing, distributing or selling files or web sites that contain pornographic or obscene pictures, videos, stories, or other material; or exposing others to such material.
    - Purchasing goods or services, without authorization, that requires one to submit a credit card number, or obligates the school or district to another party. The School District will not be held responsible for any financial obligations for goods or services purchased over the Internet or via telephone conversation without appropriate authorization.
    - Responding to any messages, files, or web sites that solicit personal information about you or someone else, or request a personal contact with you or another user.

**Email**

The Amesbury Public School District (*Amesbury Public Schools*) provides electronic mail resources (*email system*) to its staff members. Email is defined as any document created, transmitted and/or received through the Amesbury Public Schools' email system using either a personally-owned electronic device or a device owned by the school district. It is the intent of the Amesbury Public School District to maintain the privacy and integrity of email created using the email system. However, employees should be aware that any and all email transmitted or received by any staff member is considered public record, and subject to the Massachusetts Public Records law, M.G.L. Chapter 66. (For more information, go to: http://www.sec.state.ma.us/arc/arcrmu/rmubul/bul199.htm)

Email correspondence may be subject to public inspection and may be requested during evidentiary discovery in legal actions. Employees should also know that while every attempt will be made to secure the email system, Amesbury Public Schools does not guarantee the privacy of email sent, received, or stored.

**Acceptable Use of the Email System**

The purpose of the email system is to provide Amesbury Public Schools' authorized users with the ability to communicate through email for educational purposes and other school business. Communication with peers for academic or school-related business purposes is acceptable, as well as email to students, parents, and the community. Employees should be aware, however, that any written communication is considered to be a legal document and is subject to M.G.L. Chapter 66 above.

**Unacceptable Use of the Email System**

- Allowing an unauthorized user to access the system. This includes sharing of email passwords that allows another person to access your account.
- Using email for personal monetary gain.
- Harassing other authorized users or generating harassing email to anyone.
- Sending information that violates copyright laws, such as copied images, documents and music files.
- On-line gambling, including sports pools.
- Distribution of pornographic or other offensive materials or images.
- Advocating for products or services
- Advocating for political issues and/or candidates
- Generation of email using a false identity, or pretending to be someone else (spoofing).
- Generation of junk emails, chain letters, or SPAM.
- Forwarding of jokes, prayers, etc.
- Any unauthorized use of the system, including but not limited to, attempt of disruption of services, interception of other users' emails, or attempt to breach the security of the mail system.

**Rights of Amesbury Public School District**

The Amesbury Public School District, as owner of the email system, has the right to obtain, copy, and archive all documents or communications created using the system. These documents may be subject to public inspection under the Massachusetts Public Records Law. Deleting a document from a personal mailbox only removes the electronic pointer to the document stored on the server. Even if documents are deleted from users' mailboxes, they continue to be stored on the mail system and are retrievable from the archive.

Amesbury Public Schools may also monitor any email communication at any time for the purpose of maintaining the integrity and continued operation of the email system without providing notification to the employee. To the extent of the law, Amesbury Public Schools also retains the right to disclose the contents of an employee's mail without the consent of the employee. Disclosure of email would occur if requested by authorized personnel or law enforcement officials, as a response to a request for information in an investigation of unacceptable use or misconduct. All users should be aware that the content of their email is subject to review at any time by authorized personnel.

**Confidentiality**

Notwithstanding the Amesbury Public Schools' right to retrieve and read any electronic mail or Internet messages or material, such messages or material should be treated as confidential by other users and accessed only by the intended recipient. Users are responsible for maintaining the confidentiality of material on the systems. Certain departments may have additional confidentiality obligations regarding records, for which additional policies will be implemented. Without prior management authorization, users are not permitted to retrieve or read email messages that are not sent to them; with prior management authorization, the contents of such electronic mail, Internet access, voicemail messages or materials are subject to being accessed and/or disclosed to others.

**Warranty**
The Amesbury Public Schools makes no warranties of any kind, whether expressed or implied, for the service it is providing. The Amesbury Public Schools will not be responsible for any damages you suffer. This includes loss of data resulting from delays, non-deliveries, misdirected deliveries, or service interruptions caused by system upgrade or repair, its own negligence, or your errors or omissions. Use of any information obtained via the Internet is at your own risk. The Amesbury Public Schools specifically denies any responsibility for the accuracy or quality of information obtained through its services.

The guidelines and conditions outlined in this policy in no way limit the school district's prerogative to manage its technology systems as it sees fit, or restrict its authority to take any actions it deems necessary to adequately supervise, protect, and, if necessary, discipline its users. The district reserves the right to revise this policy at any time, and all revisions will take effect immediately as per district governance.

The signing of this Acceptable Use Policy indicates the party who has signed has read the terms and conditions carefully and understands their significance.

**Signature**
I have read and understand the Amesbury Public Schools Technology Systems Acceptable Use Policy. I am aware that district technology, including the Internet and network access, is designed for educational purposes. However, I also recognize it is impossible for the Amesbury Public Schools to restrict access to all controversial materials, and I will not hold the District responsible for materials acquired on the network. I further understand that the provisions of this policy are subordinate to local, state and federal statute and that violations are unethical and may constitute a criminal offense. Should I commit a violation my access privileges may be revoked and I may be subject to other disciplinary actions prescribed by law or other school policies.

| **Name** | **Position/Building** | **Date** |
|---|---|---|

Revised: 2009