



Danvers Public Schools

EDUCATIONAL TECHNOLOGY PLAN 2010-2015

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**Danvers Public Schools
64 Cabot Road
Danvers Massachusetts 01923**

Introduction

The Danvers Public Schools Technology Plan is intended to be a living document that delineates the use of technology over the next five years. The plan proposes a technology infrastructure and culture that will aid our educators in guiding students to the achievement of the learning outcomes as accepted by our community, by the Curriculum Frameworks as articulated by the Commonwealth of Massachusetts, and the Massachusetts Instructional Technology Standards. The accomplishment of successful applications of technology to teaching and learning requires access to hardware and software, professional development for educators, and on-going support.

The planning process followed that of the Department of Education Local Technology Plan Guidelines for 2010-2015, the state's plan for educational technology.

Mission Statement

The Danvers Public Schools technology mission is to enhance and enrich student learning, teacher instruction, and communication throughout our district. By providing equal access to current technology resources, the Danvers Public Schools will foster a community of creative, critical and ethical users of information. We will fulfill this mission by:

- Providing training and support to inspire the Danvers Public Schools community to become self-directed, life-long learners.
- Integrating technology skills seamlessly throughout the academic curriculum.
- Utilizing technology for effective information management.
- Encouraging the use of technology as a tool for problem solving, collaboration, evaluation, critical thinking and communication.

Community Profile

Danvers is situated approximately 17 miles north of Boston, at the junctions of Routes 1 and 95/128, and has both business and industry. Incorporated in 1757, Danvers prospered in the trades of brick making, shipping, shipbuilding and the manufacture of leather goods in the period following the Revolutionary War.

Over the past decade, the town has maintained a stable population of 24,000 people within its nearly 14 square miles. Local legislative decisions are made by a representative town meeting consisting of over 100 residents. A five-member school committee formulates school policies. There is a high level of community involvement with the school. The Danvers Educational Enrichment Partnership (DEEP) is the district's school business alliance. Each school has its own Parent Advisory Council (PAC) and the President of each forms PACE, or Parents and Administrators Communicate for Education. PACE meets monthly with the superintendent of schools.

Children are educated in five elementary schools, the Great Oak, Highlands, Riverside, Ivan G. Smith and Willis E. Thorpe Schools, the Holten Richmond Middle School and Danvers High School. The Danvers Public Schools is also a member of the North Shore Educational Consortium for special needs services. Additionally, students may choose to attend the North Shore Regional Vocational School for grades 9-12. The K-12 school population is approximately 3,600.

Vision

This plan is built on a vision of education in which students and educators have full access to appropriate technologies for meeting both the school system's and the state's curriculum standards. In this vision, Danvers' students are not passive learners, but are creative, collaborative and adaptive users of technology.

This vision is one in which technology is used to connect Danvers' students and staff to each other and to the global community to make learning, assessment, and educational management more relevant and efficient. At all times, it is expected that technology is used in ways that are equitable and ethical.

Benchmark 1

Commitment to a Clear Vision and Mission Statement

- A. The district's technology plan contains a realistic and clearly stated set of goals and implementation strategies that align with the district-wide school improvement plan. It is committed to achieving its vision by the end of the school year 2009-2010.

System-Wide Goals

1. Networking and Infrastructure

Goal
Upgrade all server software to the latest OS
Improve the network infrastructure in schools as needed
Provide wireless network access points as needed
Deploy new authentication and data servers as needed in the new school project
Maintain CIPA compliant filtering at all schools
Provide a new Intel server for the updated SIMS program
Provide a server for the nursing software, Student Health Manager program and all district databases
Improved server/software for monitoring network traffic activity for diagnostics
SIF compliance as per DESE requirements
Relocate network core from town location to the new high school
New VOIP telephone system for all phases of the new high school project
Upgrade appropriate network equipment and provide 10 GB core as part of the new high school project
Upgrade all servers to mactel
Provide a Meal Magic server as part of the new high school project
Provide Meal Magic service to the new high school and the elementary schools
Provide a television distribution system at the new high school

2. Hardware

Goal
Replace all computers on a five year cycle
Upgrade computers of all secretaries and nurses
Provide adaptive hardware as it is needed
Replace and upgrade admin laptops as needed
Provide Smart Boards for elementary labs

Provide LCD projectors for all high school teachers
Provide Smart Boards for high school teachers
Upgrade all high school library computers
Provide additional mobile laptop carts
Upgrade all library patron computers at the elementary schools
Replace and add printers in each building
Provide electronic white board systems for the new high school
Provide computers for a language lab for the new high school

3. Administration

Goal
Purchase the latest upgrade for PowerSchool, the student information management system for state reporting requirements
Provide ongoing training for administrators in appropriate applications
Provide updated computers for administrators to facilitate leadership in the school district
Incorporate all staff who create purchase orders into the town purchase order system
Integrate all district databases
Continue to expand the district web site
Provide hardware, software and all tools to improve the technological efficiency of the Central Office
Provide time sensitive notification to the Danvers community with Connect Ed, utilizing telephone and email features
Introduce elementary schools to standards based report cards, including scheduling and parent access
Utilize and support My Learning Plan for tracking professional development activities for K-12 staff
Utilize and support Tech Paths for curriculum mapping for K-12 staff
Explore the use of the state data warehouse for analysis of Standardized test scores

4. Software Acquisition

Goal
Update student applications to native OS X
Continue subscriptions for plagiarism prevention software
Upgrade the library automation software in all schools
Continue subscriptions for Curriculum Mapping software to document teacher lessons, goal and activities
Continue to update existing software packages for teacher/student productivity
Continue to purchase appropriate software titles for students and staff
Provide subscriptions to services like ALEKS and Study Island, for self-directed learning

5. Professional Development

Goal
Continue to assist teachers in the development of strategies and activities in the use of technology to support the needs of all students
Provide professional development opportunities for the acquisition of technology skills
Provide training for all staff in appropriate applications
Continue training in Curriculum Mapping at all schools
Continue training for staff in the OS X operating systems and its applications
Provide training of staff on the ethical use of technology, including issues such as copyright and plagiarism
Support the creation of teacher web pages, including wikis, blogs and podcasts
Conduct assessment of teacher technology competencies utilizing the Massachusetts Technology Self-Assessment Tool
Provide training to all staff in the student and teacher Acceptable Use Policies
Continue to promote email as the standard communication method
Train staff in using all features of the PowerSchool and

PowerGrade
Expand the use of e-learning in the area of online course offerings, with training in services like Moodle
Implement My Learning Plan, a web based service for tracking professional development
Continue training in the use of SmartBoard software for lesson development.
Provide training for teachers in emerging technologies, such as Web 2.0, Google Apps, Moodle, cloud computing, and electronic collaboration.
Provide training for staff on Internet safety issues, including social networking and cyber-bullying.

6. Student Outcomes

Goal
Students will achieve competencies consistent with the Massachusetts instructional technology standards
Align student technology outcomes with the Massachusetts instructional technology standards
Develop integration activities that are aligned with the Massachusetts instructional technology standards
Align information literacy outcomes with the Massachusetts School Library Media Association Standard
To improve student performance in all academic areas through the use of technology
Continue to update and expand student curriculum for online safety
Utilize skills assessment management software to track student progress.
Promote the use of emerging technologies, such as mobile and handheld computing, and GPS navigation.
Promote the effective and responsible use of online collaboration with Web 2.0 technologies, such as Google Apps, wikis, podcasts and blogs.
Provide opportunities for students to earn certifications in appropriate technology courses.
Provide opportunities for students to take on-line courses through our membership in Virtual High School.

- B. The district has a technology team with representatives from a variety of stakeholder groups, including school committee members, administrators, and teachers. The technology team has the support of the district leadership team.**

Technology Team

Susan Ambrozavitch	Assistant Superintendent
Nancy Blanchette	Library Aide
Linda Carroll	Grade 5 Teacher
Jorge Chavier II	Network Manager
Priscilla Costigan	Reading Teacher
Lisa Dean	Computer Paraprofessional
Mark Ekster	Instructional Technology Specialist
Kathryn Gadzera	Business Technology Teacher
Andrea Kupps	Instructional Technology Specialist
Nathan Lamar	English Teacher
Nancy McLaughlin	Math Teacher
Diane Morey	Social Studies Teacher
Ronald Parsons	Music Teacher
Stephanie Paugels	Science Teacher
Michelle Polys	Math Teacher
Sharon Rinaldi	Computer Teacher
Carolann Scherer	Computer Paraprofessional
Ann Tricca	Grade 2 Teacher
Karen Sekiguchi	Elementary Librarian

C. Needs Assessment

- 1. The district assesses the technology products and services that will be needed to improve teaching and learning.**

All hardware, software, subscriptions, licenses, professional development, grading and management programs, and databases go through a thorough analysis before acquisition. This includes participation and input from the stakeholders, cost analysis, and impact on teaching and learning.

- 2. The technology plan includes an assessment of the services and products that are currently being used and that the district plans to acquire.**

The services, products and system-wide goals are under yearly review by the technology team and the administration.

D. 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.

Our CIPA compliant Acceptable Use Policy is posted on the Danvers Public Schools web site, and is included in all student handbooks. Students and staff are required to sign an AUP in order to use computers.

Internet safety instruction is provided to all students. We utilize curriculum materials from Netsmartz, i-Safe, the Olweus bullying prevention program, and other appropriate resources to provide our students with training in Internet safety. Appropriate online behavior relating to cyber bullying, social networking websites, and chat rooms are some of the issues covered with students.

E. Budget

- 1. The district has a budget for its local technology plan with line items for technology in its operational budget.**
- 2. The budget includes staffing, infrastructure, hardware, software, professional development, support, and contracted services (including telephone services).**

The Danvers Public Schools has an operational budget with line items for technology.

Account	2010
Technology Staff	404,302
Software	76,150
Supplies	15,500
Technology Equipment	29,000
Total	524,952
Telephone	27,953

In addition to the school's operational budget, the Town of Danvers has passed technology warrant articles over the past few years that have provided the opportunity to purchase much needed computer hardware.

Technology Warrant 2010

Desktop Computers	87,600
Printers	3,000
Laptop Cart	22,000
Total	112,600

2. The district leverages the use of federal, state, and private resources.

In the past, our district has benefited from a variety of federal, state and private resources to improve technology. These included Schools and Libraries Program/erate reimbursements, grants from DPS business partners, Tower Grant and Carol W. White PEP Grant. We will continue to actively pursue all opportunities for funding, including but not limited to:

DEEP grants and grants provided by local business and service organizations.

State grant opportunities, including Electronic Portfolios for MCAS alternative assessment.

Federal grant opportunities, including Title IID

Schools and Libraries E-rate Program

It is our goal to procure a variety of materials and services from multiple sources, including the E-rate Program. Some of the items to be procured through E-rate include:

Telephone services and Internet access. Our goal is to add enhanced phone services to our district. Our plans include adding Centrex and VOIP services to our schools. If erate funds become available, we would apply for internal connections including servers, switches, routers, wiring and additional drops. While E-rate funds have not been available to our district in the Internal Connections category for several years, we will pursue those funds if they do become available.

3. For districts that plan to apply for E-rate reimbursement, the technology plan specifies how the district will pay for the non-discounted portion of their costs for the services procured through E-rate.

The Danvers Public Schools applies for E-rate reimbursement each year, for Internet Services from the Merrimack Education Center, and for telephone costs from a variety of providers, including AT&T and Verizon for land lines, and Nextel and Verizon and AT&T for cellular lines. The non-discounted portion of these e-rated services is included in our regular budget. This can be seen above, in Section E – Budget, items 1 and 2.

F. Evaluation

1. The district evaluates the effectiveness of technology resources toward attainment of educational goals on a regular basis.

We will continue our ongoing evaluation of the district's technology resources, to determine their effectiveness in helping to achieve our educational goals. We will also continue to use our established budgeting process to carefully assess hardware, software and consulting needs prior

to committing funds. The technology planning committee members represent a wide array of subjects, grade levels and stakeholders, and will be utilized in this process. In addition, input from all staff is provided informally and through surveys.

- 2. The district's technology plan includes an evaluation process that enables the district to monitor its progress in achieving its technology goals and to make mid-course corrections in response to new developments and opportunities as they arise.**

The Technology Planning Committee will meet each year in order to monitor the progress we are making in achieving our technology goals and to implement any corrections or adjustments needed.

Benchmark 2

Technology Integration and Literacy

A. Technology Integration

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

Daily use of technology by teachers includes attendance, grading, lesson planning, technology integration, and other areas. Our staff does collaborate and assist one another in all areas of technology. A web based service, My Learning Plan, notifies staff of professional development offerings, allows staff to enroll in courses, and tracks all professional development for participants.

2. For teaching and learning - At least 85% of teachers use technology appropriately 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 (See the Massachusetts Recommended K-12 Instructional Technology Standards¹).

Our staff uses technology with their classes in areas such as research, multimedia presentations, to communicate with students in other countries, webquests, as well as a multitude of projects. We are utilizing on-line subscriptions like Study Island, ALEKS and other services. We are utilizing video and audio streaming with services like Discovery Education. We are providing students and staff with content specific software. Online textbooks and textbook related software have enhanced the curriculum. Use of Google Apps, Moodle and cloud computing in general are some of the tools we are using to improve student learning.

B.

1. At least 85% of eighth grade students show proficiency in all the Massachusetts Recommended PreK-12 Instructional Technology Standards for grade 8.

We will continue to strive towards achieving the state benchmarks for the grade 8 Technology Standards.

2. 100% of teachers are working to meet the proficiency level in technology, and by the school year 2010-2011, 60% of teachers will have reached the proficiency level as defined by the Massachusetts Technology Self-Assessment Tool (TSAT)².

All of our teachers are working towards meeting the proficiency level in technology. Our goal is to have teachers meet the designated proficiency levels by the 2010-2011 school year.

C. Staffing

- 1. The district has a district-level technology director/coordinator.**
- 2. The district provides one FTE instructional technology teacher per 60-120 instructional staff.**
- 3. The district has staff dedicated to data management and assessment.**

Danvers has a technology coordinator. Our staff includes instructional technology specialists and computer paraprofessionals. The technology teacher ratio of one for 60-120 teachers is close to being met, with this staff. The network manager and the data manager are staff dedicated to data management and assessment.

Our staff currently includes 1 FTE technology manager, a 1 FTE network administrator, 1.5 FTE technology support technicians, 1 FTE network technician, 1.5 FTE Instructional Technology Specialists, and a .5 FTE Data Manager. Technology coordinator duties are the responsibility of the Superintendent, and the technology manager. There are 3.5 computer paraprofessionals that assist elementary teachers in technology integration. Existing office staff and the network administrator also provide data management support.

Benchmark 3

Technology Professional Development

- A. At the end of three years, at least 85% of district staff will have participated in 45 hours of high-quality professional development that includes technology skills and the integration of technology into instruction.**

Technology professional development is offered throughout the year. Under this Technology Plan, the areas of primary focus for staff training will be in technology integration, the use of PowerSchool - our SIMS program, and the use of Tech Paths, our curriculum mapping program. Training will also be conducted in the use of My Learning Plan, the online system to track professional development, and Spiceworks, the new help desk support system. Training will also be provided in the use of wikis, blogs, podcasts, Moodle and Google Apps.

We will be training Student Services staff in the use of e-SPED, the Special Education reporting program. We also hope to increase and encourage the use of online courses, taught from within and outside the district.

The integration of electronic white boards, LCD projectors and wireless mobile labs will also be areas for professional development.

Staff training is available from a variety of sources, including:

Danvers Public Schools Staff Development
Training by qualified staff
Northeast Consortium
Salem State and other Local Colleges
On-line offerings
Framingham State College – Moodle training

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

Staff development has been implemented via:

Spring/Fall technology staff development workshops and courses in technology integration and teacher utilities.

Summer technology professional development offerings.

Special staff training days the weeks before and after the school year.

Release Days

Elementary math software training in the Investigations series of applications.

Curriculum Mapping (ongoing)

OS X system training, including Universal Access (Design) features (ongoing)

OS X applications training (ongoing)

Use of PowerSchool

New teacher orientation in technology

Apple Computer Corporation

On-line training in Moodle
Training on all new operating systems on Mac and PC

All new teachers in Danvers are matched with a mentor in September, and work together throughout the year. Each academic department has a 'Teacher Leader' whose responsibility is to support teachers in lesson planning, classroom management, organization, and curriculum resources.

- C. Professional development planning includes an assessment of district and teachers' needs. The assessment is based on the competencies listed in the Massachusetts Technology Self-Assessment Tool.**
- D. Administrators and teachers consider their own needs for technology professional development, using the technology self-assessment tools provided by the Massachusetts Department of Education or similar tools.**

Teachers and administrators have participated in a variety of surveys. All staff have participated in the Department of Education's, Massachusetts Technology Self-Assessment Tool, with annual reviews of staff competencies. The results of these surveys and tools assist in our planning of technology professional development.

Benchmark 4

Accessibility of Technology

A. Hardware Access

- 1. The district has an average ratio of fewer than five students per high-capacity, Internet-connected computer. The Department will work with stakeholders to review the capacity of the computers on an annual basis. (The ultimate goal is to have a one-to-one, high-capacity, Internet-connected computer ratio.)**

The purchase of over 130 Intel iMacs in the past two years has brought our average ratio to 3.4 students per computer.

700 high capacity G4 and G5 computers in the past five years has brought our average ratio to 3.4 students per computer. Over 800 computers are in the state's A category, with the remainder in the B category. The addition of new labs at Danvers High School will also lower our student to computer ratio.

As of June 30, 2009

	Computers for Student Use	Students	Ratio
Danvers High School	310	1024	3.3
Holten Richmond	355	921	2.6
Great Oak	97	363	3.7
Highlands	106	397	3.7
Riverside	103	336	3.3
Ivan G. Smith	88	278	3.2
Willis E. Thorpe	96	322	3.4
TOTALS	1155	3641	3.3

- 2. The district provides students with access to portable and/or handheld electronic devices appropriate to their grade level.**

We are currently utilizing handheld electronic calculators in many of our secondary math classes. Laptops and Alphasmarts are available to students on an as needed basis.

- 3. The district maximizes access to the general education curriculum for all students, including students with disabilities, using technology in classrooms with universal design principles and assistive technology devices.**

The district is fortunate to have a team of teachers who received training in assistive technology. They assist in helping teachers identify needs and prescribe solutions. We have a variety of software and devices for students in need. There are also some outstanding universal design features built into the Apple OS X operating system.

4. The district has procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability.

The district has a policy that all technology related purchases should be made in consultation with the technology department, in order to insure usability as well as compatibility.

5. The district provides classroom access to devices such as digital projectors and electronic whiteboards.

The district has purchased many LCD projectors and Smart Boards for all seven schools. Our current budget will allow us to purchase up to 12 LCD's and 12 Smart Boards next year. We plan similar purchases over the next few years.

6. The district has established a computer replacement cycle of five years or less.

We have a long-standing goal of replacing computers on a five-year cycle.

B. Internet Access

1. The district provides connectivity to the Internet in all classrooms in all schools including wireless connectivity, if possible.

All classrooms in all schools are connected to the Internet. Wireless connections exist where appropriate, for example, the middle school and high school mobile carts. As we add mobile carts to some schools, wireless connectivity will be expanded. The district utilizes a broadband line capable of 8 Mbs, that is distributed through the town's I-Loop.

2. The district provides bandwidth of at least 10/100/1 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 10/100/1 Gb

All classrooms have a minimum of 10/100/1 Gb. All computers are capable of 10/100/1 Gb.

C. Networking (LAN/WAN)

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

All computers are connected to a minimum 10/100 MB Cat 5 switched network. As we implement the goals of our technology plan, we hope to install equipment that allows us to surpass the stated minimums.

2. The district provides access to servers for secure file sharing, backups, scheduling, email, and web publishing, either internally or through contracted services.

Email and web publishing services are provided by the Merrimack Education Center. All servers are on a scheduled back-up scheme. Student, staff and administration documents are saved to a central location and secured with multiple backups. All grades, staff and administration have access to secure file sharing.

D. Access to the Internet outside the School Day

1. The district works with community groups to ensure that students and staff have access to the Internet outside of the school day.

The district provides Internet access outside of the school day. The high school and middle school have computer access both before and after the regular school day. Several elementary schools have 'Fun Clubs' after school, which include a variety of activities, including computer use. Elementary students are able to use computers before and after school, as needed. The Peabody Institute Library has Internet access available to students and staff, after school and on weekends.

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

Students and staff can access the Internet in any of our buildings after school hours, and at the Peabody Institute, our town library. This information is posted on our web site.

E. Staffing

- **The district provides a network administrator.**
- **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.**
- **The district provides at least one FTE person to support 200 computers. Technical support can be provided by dedicated staff or contracted services.**

Our staff currently includes a 1 FTE network administrator. Existing policies provide directions for technology users who are in need of technical support. We are proud of our short response time, in meeting all users' technology needs. We will be adding an on-line ticketing system for technology issues can be resolved in a prompt and efficient manner. The district does provide one FTE person to support 200 computers.

Benchmark 5

E-Learning and Communications

A. The district encourages the development and use of innovative strategies for delivering specialized courses through the use of technology.

The district will continue to deliver specialized courses and content through the use of technology. We have had students and teachers take on-line courses in the past. We have had subscriptions to services that deliver video content to classrooms. Teachers have received training in developing on-line courses, using Moodle.

In 2010, Danvers High School had ten students working in the Virtual High School program. They were taking courses in criminology, AP English Language and Composition, Personal Finance and Screenwriting Fundamentals. In the coming years, we expect to use our full allotment of fifty seats per year for a wide variety of VHS offerings. We currently have one staff member that is offering on-line course in AP Music Theory through VHS.

B. The district deploys IP-based connections for access to web-based and/or interactive video learning on the local, state, regional, national, and international level.

We participate in online training and webinars. We hope to continue to expand the use of web-based and interactive learning.

C. Classroom applications of e-learning include courses, cultural projects, virtual field trips, etc.

These types of activities are frequently used by teachers, and will continue in all subject areas. Teachers utilize the many virtual field trip sites in their curriculum. Foreign language teachers have conducted cultural exchanges with classes in other countries. One such exchange resulted in students traveling to France to visit their e-partners.

D. The district maintains an up-to-date web site that includes information for parents and community members.

The Danvers Public Schools web site, www.danvers.mec.edu, is updated regularly. Information includes monthly school calendars, lunch menus, school newsletters and notices, an archive of agendas and minutes of many school related meetings, and other important district information. We have contracted the services of a web company that has improved our site in the areas of content and appearance.

- E. 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.**

Danvers is in compliance with all legal requirements for the archiving of electronic communications.

Our acceptable use policy informs staff and students that all information distributed over the network is a public record. With the new laws regarding the archiving of electronic communication, this information will be clearly emphasized to students and staff each year.

Technology Initiatives

1. Danvers High School Building Project

The Danvers Public Schools will be undergoing some important technology changes, starting in the 2010-2011 school year. Due to the renovation of Danvers High School, students and staff will be moving into temporary quarters in September, 2010. This building, formerly known as the Dunn Middle School, will require a complete technology overhaul. The network infrastructure, including switches, routers, cabling, wireless points, and network drops will have to be installed. New servers, computers, and software may be purchased at this time.

We will be making decisions knowing that the initial move is temporary, and that we will want the design and acquire materials to synchronize with the needs of the new high school after its renovation. The first move to the old Dunn Middle School is called Phase 1 and will last from September, 2010 to September 2012. Phase 2 refers to the work to be done on the renovated Danvers High School.

Phase 1 Technology

Upgrade technology infrastructure to include new switches, routers, cabling, wireless, and network drops.

Purchase servers as needed.

Purchase new computers, laptops and software licenses as needed.

New VOIP telephone system

Phase 2 Technology

Install technology infrastructure including switches, routers, cabling, drops, and wireless points. Move all phones and servers needed for VOIP telephone system from Dunn and purchase additional equipment as needed.

Set up servers purchased in Phase 1 and purchase additional servers as needed.

Purchase appropriate equipment for the school lunch program for Meal Magic.

Provide IP television for video distribution.

Setup new computers, laptops and software purchased in Phase 1. New technology will also include:

computers for staff and labs

mobile carts

provide new electronic white board systems

lcd projectors

document cameras

scanners

The new high school design includes a teacher computer as well as a presentation computer connected to the classroom electronic board. Nine laptop carts will be available to all

classrooms. Other technology rich locations will be:

business classrooms
media center
midi/music center
television/video center
language lab
CAD Robotics
graphic arts center

2. GRANTS

Physical Education

The district's eleven PE teachers were provided intel based Macbooks with software installed that is specific to tracking and monitoring student progress on their health related fitness. Also, all secondary teachers are being trained to use Polar Heart Rate monitor technology. With this technology, students track their heart rate throughout exercise or activity and attempt to maintain a heart rate that falls into their target range. Teachers are also using PE Manager, a software program utilizing Palm technology, for grading students.

Data Collection

The district is training teachers in each building to utilize a data processing protocol, with the overall goal of better analysis of MCAS data. These teachers were provided with intel based Macbooks. This process includes:

- a Survey of Enacted Curriculum - examination of what teachers are teaching.
- comparing the SEC data with the intended curriculum - what the state requires.
- examination of the DESE frameworks, and analysis of the what teachers are teaching in relation to the frameworks.
- retrofitting the curriculum to the frameworks.

Pre-K

Speech technology for younger learners, including linguist software and Boardmaker.

3. Standards Based Elementary Report Cards

Currently, the elementary schools use of PowerSchool is primarily for attendance. We will be expanding this to include scheduling of elementary school classes. This will be of great benefit in terms of scheduling specialists in single or multiple buildings. It will improve student safety by being able to identify their exact location at all times. It will allow teachers to enter student grades in PowerSchool, and to align the report card evaluation to the DESE standards. It will also be possible to open web portal access to elementary school parents.

4. Naviance

Naviance is an on-line product used for college counseling. This web-based solution provides guidance counselors and students with detailed data to assist in choosing and applying for colleges.

	Goal Assessment	
	Goal	Completed
l 1: astructure and working	Upgrade all server software to the latest OS	
l 1: I and N	Improve the network infrastructure in all schools	
l 1: I and N	Provide wireless network access points as needed	
l 1: I and N	Deploy new authentication and data servers in all needed schools over a three year period	
l 1: I and N	Maintain CIPA compliant filtering at all schools	
l 1: I and N	Provide a new server for the updated SIMS program	
l 1: I and N	Provide a server for the nursing software, Student Health Manager program and all district databases	
l 1: I and N	Improved server/software for monitoring network traffic activity for diagnostics	
l 1: I and N	SIF compliance as per DESE requirements	
l 1: I and N	Relocate network core from town location to the new high school	
l 1: I and N	New VOIP telephone system for all phases of the new high school project	
l 1: I and N	Upgrade appropriate network equipment and provide 10 GB core as part of the new high school project	
l 1: I and N	Upgrade all servers to mactel	
l 1: I and N	Provide a Meal Magic server as part of the new high school project	
l 1: I and N	Provide Meal Magic service to the new high school and the elementary schools	
l 1: I and N	Provide a television distribution system at the new high school	
l 2: Hardware	Replace all computers on a five year cycle	
l 2: Hardware	Upgrade computers of all secretaries and nurses	
l 2: Hardware	Provide adaptive hardware as it is needed	
l 2: Hardware	Replace and upgrade admin laptops as needed	
l 2: Hardware	Provide Smart Boards for elementary labs	
l 2: Hardware	Provide LCD projectors for all high school teachers	
l 2: Hardware	Provide Smart Boards for high school teachers	
l 2: Hardware	Upgrade all high school library computers	
l 2: Hardware	Provide additional mobile laptop carts	
l 2: Hardware	Upgrade all library patron computers at the elementary schools	
l 2: Hardware	Replace and add printers in each building	
l 2: Hardware	Provide electronic white board systems for the new high school	
l 2: Hardware	Provide computers for a language lab for the new high school	
l 3:	Purchase the latest upgrade for PowerSchool, the student	

Administration	information management system for state reporting requirements	
l 3: Administration	Provide ongoing training for administrators in appropriate applications	
l 3: Administration	Provide updated computers for administrators to facilitate leadership in the school district	
l 3: Administration	Incorporate all staff who create purchase orders into the town purchase order system	
l 3: Administration	Integrate all district databases	
l 3: Administration	Continue to expand the district web site	
l 3: Administration	Provide hardware, software and all tools to improve the technological efficiency of the Central Office	
l 3: Administration	Provide time sensitive notification to the Danvers community with Connect Ed	
l 3: Administration	Provide time sensitive notification to the Danvers community with Connect Ed, utilizing telephone and email features	
l 3: Administration	Introduce elementary schools to standards based report cards, including scheduling and parent access	
l 3: Administration	Utilize and support My Learning Plan for tracking professional development activities for K-12 staff	
l 3: Administration	Utilize and support Tech Paths for curriculum mapping for K-12 staff	
l 4: Software Acquisition	Update student applications to native OS X	
l 4: Software	Continue subscriptions for plagiarism prevention software	
l 4: Software	Upgrade the library automation software in all schools	
l 4: Software	Continue subscriptions for Curriculum Mapping software to document teacher lessons, goal and activities	
l 4: Software	Continue to update existing software packages for teacher/student productivity	
l 4: Software	Continue to purchase appropriate software titles for students and staff	
l 4: Software	Provide subscriptions to services like ALEKS and PLATO, for self-directed learning	
l 5: Professional Development	Continue to assist teachers in the development of strategies and activities in the use of technology to support the needs of all students	
l 5: PD	Provide professional development opportunities for the acquisition of technology skills	
l 5: PD	Provide training for all staff in appropriate applications	
l 5: PD	Continue training in Curriculum Mapping at all schools	
l 5: PD	Continue training for staff in the OS X operating system and its applications	

l 5: PD	Provide training of staff on the ethical use of technology, including issues such as copyright and plagiarism	
l 5: PD	Support the creation of teacher web pages, including wikis, blogs and podcasts	
l 5: PD	Conduct assessment of teacher technology competencies utilizing the Massachusetts Technology Self-Assessment Tool	
l 5: PD	Provide training to all staff in the student and teacher Acceptable Use Policies	
l 5: PD	Continue to promote email as the standard communication method	
l 5: PD	Train staff in using all features of the PowerSchool and PowerGrade	
l 5: PD	Expand the use of e-learning in the area of online course offerings, with training in services like Moodle	
l 5: PD	Implement My Learning Plan, a web based service for tracking professional development	
l 5: PD	Continue training in the use of SmartBoard software for lesson development.	
l 5: PD	Provide training for teachers in emerging technologies, such as Web 2.0, Google Apps, Moodle, cloud computing, and electronic collaboration.	
l 5: PD	Provide training for staff on Internet safety issues, including social networking and cyber-bullying.	
l 6: Student comes	Students will achieve competencies consistent with the Massachusetts instructional technology standards	
l 6: Student comes	Align student technology outcomes with the Massachusetts instructional technology standards	
l 6: Student comes	Develop integration activities that are aligned with the Massachusetts instructional technology standards	
l 6: Student comes	Align information literacy outcomes with the Massachusetts School Library Media Association Standard	
l 6: Student comes	To improve student performance in all academic areas through the use of technology	
l 6: Student comes	Continue to update and expand student curriculum for online safety	
l 6: Student comes	Utilize skills assessment management software to track student progress.	
l 6: Student comes	Promote the use of emerging technologies, such as mobile and handheld computing, and GPS navigation.	
l 6: Student comes	Promote the effective and responsible use of online collaboration with Web 2.0 technologies, such as Google Apps, wikis, podcasts and blogs.	
l 6: Student comes	Provide opportunities for students to earn certifications in appropriate technology courses.	
l 6: Student	Provide opportunities for students to take on-line courses	

comes	through our membership in Virtual High School.	
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Appendix

- A. Danvers Public Schools Acceptable Use Policy**
- B. Parent PowerSchool Acceptable Use Policy**
- C. Student PowerSchool Acceptable Use Policy**
- D. Employee Telecom Policy**
- E. Danvers Public Schools K-5 Technology Competencies**
- F. Massachusetts Recommended PreK-12 Instructional Technology Standards**
- G. National Education Technology Standards for Teachers**

Appendix A

Danvers Public Schools

Internet Acceptable Use Policy

As more students gain access to Internet use in Danvers it is essential that we have a policy in place that promotes the appropriate use of this technology. **To utilize these services, all students must obtain parental permission through this form.**

The Internet is an electronic highway connecting thousands of computers all over the world, and millions of individuals. Connecting to this network expands our students' access to resources, information, collaboration and innovation. We hope to utilize these resources to assist students in achieving curriculum goals and outcomes.

Computer learning can provide tremendous motivation for students. However, the use of this resource must be in support of the educational objectives of the Danvers Public Schools. It is important to note that the Internet is an open system that contains material that many people might find offensive. It is possible to encounter pictures or text that are objectionable. We ask for your assistance in developing responsible student attitudes and behaviors on the Internet.

Student use of the Internet is to be conducted under faculty supervision. However, faculty members are not able to monitor student use at every moment. We expect students to become responsible users of the Internet.

While the benefits of Internet access are enormous, it is important for students to realize that there is no guarantee that information they obtain is accurate. Users must use good judgment in determining the reliability of content.

The use of the Internet is a privilege, not a right, and inappropriate use will result in a cancellation of those privileges. Students are expected to follow the guidelines stated below, as well as those given orally by the staff, and to demonstrate ethical behavior that is of the highest order in using the Internet.

Each school will incorporate the user guidelines into its respective discipline codes and handbooks.
USER GUIDELINES

1. Student use of the Internet must be in support of education and research consistent with the objectives of the Danvers Public Schools.

2. Students may not post personal information such as their home address, telephone number or the name and location of their school without teacher permission.

3. Students are prohibited from making prejudicial, harassing, threatening, obscene or hateful remarks and other anti-social behavior.

4. Students are prohibited from using the Internet to access or process pornographic material, inappropriate text files, information that advocates illegal acts, or information that lacks any educational value.

5. Students should immediately tell a teacher or other school employee about any material that you feel is not appropriate or that makes you feel uncomfortable.

6. Students should be aware that no communications are guaranteed to be private. Internet use is monitored. Illegal activities may be reported to the authorities.

7. Students should note that plagiarism is the taking of material created by others and presenting it as if it were one's own. It will not be acceptable to plagiarize material from the Internet.

8. Students should note that all communications and information accessible via the Internet should be assumed to be private property.

9. Students may not use the Internet for commercial purposes, product advertisement or political lobbying. Products or services may not be purchased or offered. The student and his/her parents will be responsible for any liabilities stemming from such unauthorized uses of the Internet.

10. Students may not use the Internet for illegal purposes or for the support of illegal activities.

11. Student use of the Internet must not serve to disrupt its use by other individuals or connecting networks.

12. Student passwords are confidential. All passwords shall be protected by the user and not shared or displayed. Individual users shall, at all times, be responsible for the proper use of accounts issued in their name.

13. Students who violate district policy or administrative procedures will be subject to suspension or termination of system/network privileges and will be subject to appropriate disciplinary action and/or prosecution.

This form must be signed by students for Internet access to be granted.

STUDENT SECTION

I understand and will abide by the terms and conditions for Internet access in the Danvers Public School System. Should I commit any violation, my access privileges will be revoked and or appropriate school disciplinary action will be taken.

Student Name _____ Grade _____
Please Print

Students Signature _____

School _____ Date _____

PARENT OR GUARDIAN SECTION

As the parent or guardian of this student, I have read the terms and conditions for Internet access in the Danvers Public School System, as contained in the Acceptable Use Policy. I understand that this access is designed for educational purposes. However, I also recognize that it is impossible to prevent access to all inappropriate materials and I will therefore not hold the Danvers Public School System or its employees responsible for materials viewed, acquired or communicated on the Internet. I understand that if my son/daughter should commit any violation, his/her access privileges will be revoked and/or school disciplinary action will be taken. I hereby give permission for my son/daughter to access the resources of the Internet in the Danvers Public School System.

Parent/Guardian Name _____

Please Print

Signature _____

Child's Name _____

Date _____

Home Address _____

Phone _____

Danvers Public Schools

Appendix B

Danvers High School PowerSchool Acceptable Use Policy

Affix Username/Password Label Here

PARENT

Access to your student's grades and attendance through PowerSchool is being provided to you as another form of communication with teachers and administrators. More importantly, it is to help all of us in our efforts to support your student's education. Please read these guidelines carefully and fill out the "Request for PowerSchool Access" form. Usernames and passwords will be distributed following a brief orientation held by DHS faculty. **Students will be given their own usernames/passwords. Do not share your username/password with your student.**

Please read the following Acceptable Use Guidelines:

1. Username and passwords are to be kept confidential.
 - a. The district accepts no responsibility in the event the username and password is shared, given, stolen, or in any other way, becomes the possession of a person other than the parent/guardian.
 - b. In the event a username/password is compromised, the parent/guardian can contact the school to have the password changed.
 - c. If you forget your username and/or password, you will be required to fill out a written request form that can be obtained in the high school office or downloaded from the school website.
2. Only **ONE** parent(s)/guardian(s) username and password will be issued per student when the signed parent(s)/guardian(s) agreement is returned to the school. It is your responsibility to determine which parent(s)/guardian(s) will be able to access records.
3. All technical concerns about PowerSchool should be addressed to Lisa Zaia by phone (978) 777-8925 ext. 2216 or by email at lisazaia@danvers.org.
 - a. The school district does not provide technical support for your home and/or work computer system.
 - b. Users must realize that email and other communications via the Internet are not guaranteed to be private.
4. All parent access to PowerSchool is monitored. The Parent Access Log lists date of login, time accessed, and duration of login (in minutes).
5. Even though you will be able to check your student's progress 24 hours a day/7 days a week, teachers will generally post their grades within 10 school days of the assignment due date. Please realize that some assignments may take much longer to grade. ***Please be patient. Do not contact teachers requesting a grade sooner than 10 school days.***
6. You must adhere to the following protocol in the order listed before contacting any teacher about concerns regarding your student's progress and/or grades:
 - a. Speak with your student.
 - b. Have your student talk to his/her teacher for clarification.
 - c. Check teacher's grading policy posted on his/her course page.
 - d. Parent(s)/guardian(s) may send ONE email or call the teacher. You can expect a response by the end of the following school day.
 - e. Parent(s)/guardian(s) may request a meeting through the Guidance Department.
 - f. After all of the above, parent(s)/guardian(s) may contact school administration by phone or by email.
7. Final quarter grades will be posted on the day report cards are sent home.
8. Attendance concerns should be addressed to Debra White by phone at (978) 777-8925 ext. 2203 or by email at debrawhite@danvers.org.

Terms of Use:

1. I understand that the school district is providing this access as a privilege, and if it is abused, my account will be suspended and/or terminated.
2. I understand that the Danvers Public Schools is not liable for any damages to my personal equipment incurred when connected to the PowerSchool System.
3. In consideration of using the Danvers Public School District network and having access to my student's grades and attendance, I hereby release the Danvers Public School District and its officers, employees, and agents from any claims and damages from my use of the system.

4. I understand that the school will continue to send report cards home at the end of each quarter; however, the school will no longer issue progress reports via hardcopy.

Disclaimer: This system is provided only as an educational support for you and your child. The information provided by the PowerSchool Parent Portal is not an official record. For official student records contact your school. Neither this institution nor Pearson Education accepts any responsibility for information provided by this system and/or for any damages resulting from information provided by this system.

Appendix C

Danvers High School PowerSchool Acceptable Use Policy

Affix Username/Password Label Here

STUDENT

Access to your grades and attendance through PowerSchool is being provided to you as another form of communication with your teachers. More importantly, it is to help all of us in our efforts to support your education. Please read these guidelines carefully and fill out the "Request for PowerSchool Student Access" form. Usernames and passwords will be distributed following a brief orientation.

Please read the following Acceptable Use Guidelines:

9. Username and passwords are to be kept confidential. **Do not share your username/password with anyone.**
 - a. The district accepts no responsibility in the event the username and password is shared, given, stolen, or in any other way, becomes the possession of a person other than the student.
 - b. In the event a username/password is compromised, the student can contact the school to have the password changed.
 - c. If you forget your username and/or password, you will be required to fill out a written request form that can be obtained in the high school office or downloaded from the school website.
10. All technical concerns about PowerSchool should be addressed to Lisa Zaia in person or by email at lisazaia@danvers.org.
 - a. The school district does not provide technical support for your home computer system.
 - b. Users must realize that email and other communications via the Internet are not guaranteed to be private.
11. All student access to PowerSchool is monitored. The Student Access Log lists date of login, time accessed, and duration of login (in minutes).
12. Even though you will be able to check your progress 24 hours a day/7 days a week, **checking your progress and/or grades during class time is unacceptable, unless a teacher has specifically directed you to do so.** If needed, you may use a school computer to check your progress and/or grades before or after school.
13. Teachers will generally post their grades within 10 school days of the assignment due date. Some assignments may take much longer to grade. **Please be patient. Do not contact teachers requesting a grade sooner than 10 school days.**
14. Averages may seem low or high at the beginning of a quarter; averages in the early part of a term can fluctuate greatly when even a minor assignment is entered. As more assignments are entered, the quarter average will be closer to the final grade. If you are missing an assignment or if an assignment is not yet entered into the gradebook, then your quarter grade in PowerSchool may not accurately reflect your progress. You should take this into consideration as you monitor your progress and/or grades.
15. You must adhere to the following protocol in the order listed before contacting any teacher about concerns regarding your grades as they appear in PowerSchool:
 - a. Make sure 10 school days have passed from an assignment's due date.
 - b. Make sure you have checked the teacher's grading policy posted on his/her course page.
 - c. Set up a time with your teacher to discuss your concern.
 - d. If errors are suspected in any assignment scores, the student must show the assignment to the teacher for review.
16. PowerSchool portal should not be used as the only tool to determine missing assignments or missed classwork since:
 - a. the length of time allotted for a teacher to enter grades is longer than the length of time a student is allotted to makeup work
 - b. some class assignments will not be recorded in the gradebook
17. Final quarter grades will be posted on the day report cards are sent home.

Terms of Use:

5. I understand that the school district is providing this access as a privilege, and if I abuse my access, my account will be suspended and/or terminated.
6. I understand that the Danvers Public Schools is not liable for any damages to my personal equipment incurred when connected to the PowerSchool System.
7. In consideration of using the Danvers Public School District network and having access to my student's grades and attendance, I hereby release the Danvers Public School District and its officers, employees, and agents from any claims and damages from my use of the system.
8. I understand that the school will continue to send report cards home at the end of each quarter; however, the school will no longer issue progress reports via hardcopy.

Disclaimer: This system is provided only as an educational support for you. The information provided by the PowerSchool Student Portal is not an official record. For official student records contact your school. Neither this institution nor Pearson Education accepts any responsibility for information provided by this system and/or for any damages resulting from information provided by this system.

Appendix D

TELECOMMUNICATIONS POLICY

I. PURPOSE

To ensure the proper use of the Danvers Public Schools telecommunications systems which includes the telephones, personal computers, including electronic mail (e-mail) and the Internet. These facilities are under the control of the Technology Department.

II. POLICY

The Danvers Public Schools provides staff with the ability to send messages and information through voice mail, fax mail, electronic mail (e-mail) and, in some cases, through the Internet. The purpose of this technology is to allow the schools to serve the public more effectively. Therefore, it is the Danvers Public Schools policy that use of these technologies are subject to the same management oversight as any other employee resource. The telecommunication systems are the property of the Danvers Public Schools and should be used for appropriate educational purposes.

III. PROCEDURES

Electronic Communication and Storage Systems:

1) Electronic Communication and Storage Systems are the property of the Danvers Public Schools and should be used for educationally related purposes. While sending and receiving personal messages is not expressly prohibited, any personal use of the system must be at a level that will not interfere in any way with the system's ability to serve its intended official purpose, nor detract in any way from the employee's performance of duties. Employees should use discretion in utilizing this resource. Abuse of the Danvers Public Schools technology resources could result in loss of the privilege for the individual and possibly others throughout the organization.

2) The Danvers Public Schools reserves the right to retrieve and read any electronic communication messages or other data stored on school-owned equipment for any purpose without prior notice or limitation including systems maintenance and compliance monitoring. Employees should not assume that voice mail, fax mail, e-mail messages, Internet postings, or accessing Internet Web sites are personal or confidential. In fact, the opposite is true. Electronic communications may be discoverable even though the messages have been deleted. Subject to certain exceptions in the law, electronic communications may also be considered public records.

3) Data and messages should be treated as confidential by other employees and should be accessed only by the intended recipient, except as otherwise provided herein. Employees are not authorized to retrieve or read any messages or data that are not sent to them unless

the intended recipient gives express permission. In addition, employees should not use another employee's user identification and/or password to access or retrieve any information unless authorized to do so.

Security

- 1) The telecommunications systems may not be used to create any offensive or disruptive messages or images. Among those which are considered offensive are any messages or images which contain sexual implications, racial slurs, gender-specific comments, or any other comment which might constitute intimidation, hostile or offensive material based on sex, race, color, national origin, age, religion, sexual orientation or physical or mental disability.
- 2) The telecommunications systems may not be used for any illegal activity, including, but not limited to, the transmission of copyrighted or trade secret material, the transmission of obscene, defamatory, or threatening material, or the propagation of any type of criminal activity.
- 3) The Danvers Public Schools retains the right to monitor computer and telecommunications systems as may be necessary. Reasons for monitoring include, but are not limited to, review of employee productivity, investigations into claims of possible criminal activity, and investigations into violations of this policy.
- 4) Executable programs imported from other sites to school computers must not be used unless they have been authorized by the Technology Department. The Department may from time to time impose additional restrictions or regulations on the importing of remote files and such restrictions or regulations shall be considered part of this policy.
- 5) Public record laws guarantee citizen access to governmental processes and require governmental accountability. However, they do not require unlimited access to governmental databases, or require governmental employees to use their time responding to specialized data requests free of charge. Raw computer data and specialized analyses and reports do not fall within the traditional definition of public records. The Town has established standard and reasonable charges for such electronic products and services.
- 6) Electronic communication users shall not give the impression that they are representing, giving opinions, or otherwise making statements on behalf of the Danvers Public Schools. Neither should they construct a communication so it appears to be from someone else (false identity).

IV. ENFORCEMENT

The use of the Town's telecommunications system constitutes employee consent to the town, its agents, servants, and employees to enforce this policy in any reasonable way, including taking disciplinary actions in enforcement hereof.

Appendix E

	K	1	2	3	4	5
Fundamental Computer Skills						
Identify the parts of a computer, including the monitor, keyboard, disk drive, mouse, CD-ROM and printer	I	D	A	A	A	A
Operate input devices (mouse, keyboard)	I	D	A	A	A	A
Follow the correct procedure for turning a computer on and off	I	A	A	A	A	A
Launch and quit programs and applications	I	A	A	A	A	A
Demonstrate the ability to log in using the network security system	I	A	A	A	A	A
Demonstrate appropriate behavior when using a computer	I	D	A	A	A	A
Utilize software appropriately	I	D	D	A	A	A
Understand technology vocabulary including log in and cursor	I	A	A	A	A	A
Understand technology vocabulary including edit, word processor, hardware and software		I	A	A	A	A
Understand technology vocabulary including network, electronic mail, Internet, telecommunication and multimedia					I	D
Use pull-down menus	I	D	A	A	A	A
Use the special function keys (return, space bar, arrow keys, escape, control, caps lock and shift	I	D	D	D	A	A
Saving a file	I	D	A	A	A	A
Print a file	I	D	A	A	A	A
Use of technology resources to support, reinforce, or enhance existing curriculum objectives						
Use grade appropriate software to strengthen or extend the understanding of subject area content	I	I	D	D	D	D
Use simulation software (i.e., Oregon Trail)				I	I	D
Use grade appropriate software that promotes problem solving, critical thinking and decision making	I	I	I	D	D	D
Students should participate in a curriculum based project that integrates grade appropriate computer skills				I	D	D
Internet Skills						
Understand the concept of telecommunications as the electronic exchange of information across a distance using a computer and the Internet				I	D	D

Understand and use special telecommunication vocabulary related to the Internet (i.e., WWW, http, browser)		I	D	D	D
Connect to the Internet and use a browser		I	D	D	A
Use electronic research tools to access information (encyclopedias, WWW)		I	D	D	A
Access the WWW by entering a URL		I	D	D	A
Utilize bookmarks to store sites for further reference		I	D	D	A
Utilize search engines				I	D
Save information received via telecommunications				I	D
Print information received via telecommunications				I	D

Keyboarding Skills

Be able to recognize the layout of letters and numbers on the keyboard		I	D	A	A	A	A
Use software that practices locating the computer keys		I	D	D	A	A	A
Utilize software to learn keyboarding techniques					I	D	A

Word Processing

Understand the concept of a word processor		I	D	D	A	A
Enter, edit and delete text		I	D	D	A	A
Format text				I	D	D
Utilize the spell check feature					I	D
Add graphics to a document				I	D	A

Data Base

Understand the concept of a data base							I
Understand data base terminology							I
Create an original data base							I
Sort information in a data base							I

Spreadsheet

Understand the concept of a spreadsheet							I	D
Understand spreadsheet terminology (row, column, cell)							I	D
Create an original spreadsheet							I	D
Utilize formulas for addition, subtraction, division and multiplication							I	D

Multimedia

Identify the parts of a multimedia presentation (text, graphics, sound, video, animation)							I	D
Import graphics and clip art from other							I	D

applications

Create a slide show using a presentation program (Kid, Pix, Hyperstudio, Power Point)

I D D A A

Drawing and Painting

Understand paint/draw terminology

Utilize drawing and paint tools (brushes, eraser, spray can, pencil, color)

I D A A A A

I D A A A A

I = Introduce

D = Develop

A = Apply

Independently

Appendix F

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 intermediate³ keyboarding skills and proper⁴ 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).

³ 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.

⁴ 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.

- 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).

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,⁵ 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.

⁵ 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 MassGIS⁶, 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.

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.

Appendix G

ISTE National Educational Technology Standards for Teachers

NETS for Teachers

Educational Technology Standards and Performance Indicators for All Teachers

Building on the NETS for Students, the ISTE NETS for Teachers (NETS•T), which focus on preservice teacher education, define the fundamental concepts, knowledge, skills, and attitudes for applying technology in educational settings. All candidates seeking certification or endorsements in teacher preparation should meet these educational technology standards. It is the responsibility of faculty across the university and at cooperating schools to provide opportunities for teacher candidates to meet these standards.

The six standards areas with performance indicators listed below are designed to be general enough to be customized to fit state, university, or district guidelines and yet specific enough to define the scope of the topic. Performance indicators for each standard provide specific outcomes to be measured when developing a set of assessment tools. The standards and the performance indicators also provide guidelines for teachers currently in the classroom.

1 TECHNOLOGY OPERATIONS AND CONCEPTS.

Teachers demonstrate a sound understanding of technology operations and concepts. Teachers:

- demonstrate introductory knowledge, skills, and understanding of concepts related to technology (as described in the ISTE National Education Technology Standards for Students)
- demonstrate continual growth in technology knowledge and skills to stay abreast of current and emerging technologies.

2 PLANNING AND DESIGNING LEARNING ENVIRONMENTS AND EXPERIENCES.

Teachers plan and design effective learning environments and experiences supported by technology. Teachers:

- design developmentally appropriate learning opportunities that apply technology-enhanced instructional strategies to support the diverse needs of learners.
- apply current research on teaching and learning with technology when planning learning environments and experiences.
- identify and locate technology resources and evaluate them for accuracy and suitability.
- plan for the management of technology resources within the context of learning activities.
- plan strategies to manage student learning in a technology-enhanced environment.

3 TEACHING, LEARNING, AND THE CURRICULUM.

Teachers implement curriculum plans that include methods and strategies for applying technology to maximize student learning. Teachers:

- facilitate technology-enhanced experiences that address content standards and student technology standards.
- use technology to support learner-centered strategies that address the diverse needs of students.
- apply technology to develop students' higher order skills and creativity.
- manage student learning activities in a technology-enhanced environment.

4 ASSESSMENT AND EVALUATION.

Teachers apply technology to facilitate a variety of effective assessment and evaluation strategies. Teachers:

- apply technology in assessing student learning of subject matter using a variety of assessment techniques.
- use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.
- apply multiple methods of evaluation to determine students' appropriate use of technology resources for learning, communication, and productivity.

5 PRODUCTIVITY AND PROFESSIONAL PRACTICE.

Teachers use technology to enhance their productivity and professional practice. Teachers:

- use technology resources to engage in ongoing professional development and lifelong learning.
- continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning.
- apply technology to increase productivity.
- use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning.

6 SOCIAL, ETHICAL, LEGAL, AND HUMAN ISSUES.

Teachers understand the social, ethical, legal, and human issues surrounding the use of technology in PK-12 schools and apply those principles in practice. Teachers:

- model and teach legal and ethical practice related to technology use.
- apply technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.
- identify and use technology resources that affirm diversity
- promote safe and healthy use of technology resources.
- facilitate equitable access to technology resources for all students.