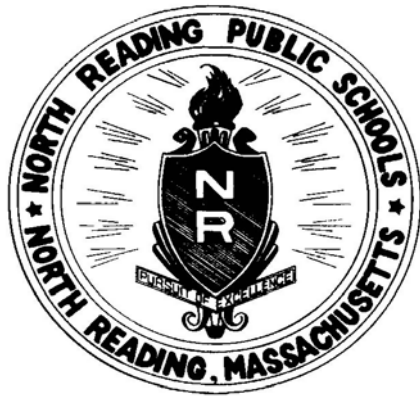# Technology Plan
2010-2015

North Reading Public Schools

Prepared by:
The Office of Academic Services
In Conjunction with the
Technology Advisory Committee

Updated January 31, 2011

North Reading
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North Reading Public Schools

District Technology Plan 2010-2015

Table of Contents

Technology Vision Statement

The North Reading Public Schools is committed to providing a technology rich learning environment that promotes the development of skills and understandings necessary for both students and staff to compete in the global workforce.

We will strive to meet the needs of our 21st century learners with a technologically infused and progressive curriculum. We will also endeavor to use technology to help us collect and analyze student, educator, and district achievement.

In support of our vision and the district mission, the North Reading Public Schools endeavors to meet the challenges of the State and National Education Technology Plan in the following areas:

- **Learning:** Change the learning process so it's more engaging and tailored to students' needs and interests.
- **Assessment:** Measure student progress on the full range of college and career ready standards and use real time data for continuous improvement.
- **Teaching:** Connect teachers to the tools, resources, experts and peers they need to be highly effective and supported. Support the integration and facilitate the use of technology throughout our professional learning community.
- **Infrastructure:** Provide broadband connectivity for all students, everywhere—in schools, throughout communities and in students' homes.
- **Productivity:** Use technology to help schools become more productive and accelerate student achievement while managing costs.

I: Current State of the Schools

Elementary Schools

In our elementary schools, students participate in weekly sessions in a networked computer lab, supported by a lab paraprofessional-educator. Each lab has Internet access, a basic software toolkit, and assorted curriculum-specific software. Teachers use the lab space as an extension and support for their standards-based classroom program. Student activities include, but are not limited to: keyboarding, word processing, skill development in the content areas, research, multimedia and virtual field trips.

Classroom technology permits further integration of technology skills with the curriculum. Many teachers are using interactive tools such as the SMARTboard to enhance their instruction. Many of these lessons are student-centered, allowing the students to use the technology. At least one networked computer is available for teacher and student use.

The common software toolkit includes: Microsoft Office, Inspiration, Kid Pix, Timeliner, Type to Learn and a web browser (Internet Explorer, Firefox, or Safari.)

A Technology Integration Specialist supports teachers, and also works with each lab paraprofessional-educator and students. Teachers are provided classroom integration support in the form of professional development courses, just-in-time support during the school day, consultations, co-teaching opportunities, web resources for student and teacher use, and training in district email, technology tools, and assistive resources.

Assistive technologies are available for students with disabilities to maximize access to the general education curriculum for all students.

Middle School

North Reading Middle School integrates technology both in a direct and indirect format. Students directly learn how to use applications and computers during the General Arts rotation in each grade level. During this time, students are introduced to the Microsoft Office Suite and each year learns more advanced features of the individual programs. Students also learn to apply various computer applications during their other scheduled classes. Such uses include:

- Using the Internet for Research;
- Using web based math tutorial software;
- Using online data bases to collect, compare, and contrast information;
- Using the Internet for virtual field trips;
- Learning ALICE and basic programming language;
- Creating podcasts, videos, and online newsletters.

Classroom technology permits further integration of technology skills with the curriculum. Many teachers are using interactive tools such as the SMARTboard to enhance their instruction. Many of these lessons are student-centered, allowing the students to use the technology. At least one networked computer is available for teacher and student use.

Assistive technologies are available for students with disabilities to maximize access to the general education curriculum for all students.

High School

North Reading High School's approach is the application and integration of technology knowledge and skills across the curriculum as well direct instruction in work place technology applications. There are several elective courses for students who want to know the basics of how to work with certain advanced programs such as Publisher, Web Design, Computer Programming, and CAD. First and foremost however, teachers and students integrate technology on a regular basis as they relate to curriculum, problem solving, and real life situations such as:

- Research;
- Interactive science programs;
- Electronic spread sheets for data analysis;
- Creating documents;
- Web based communications (e.g. podcasting and blogs);
- Data collection; and
- Assistive technologies.

Classroom technology permits further integration of technology skills with the curriculum. Many teachers are using interactive tools such as the SMARTboard to enhance their instruction. Many of these lessons are student-centered, allowing the students to use the technology. At least one networked computer is available for teacher and student use.

Assistive technologies are available for students with disabilities to maximize access to the general education curriculum for all students.

Current Skill Status Assessment

I. Percentage of instructional staff who use technology for professional activities, such as lesson planning, administrative tasks, communications, and collaboration.

91.9 % of staff use technology for professional activities nearly every day.
4.7% of staff use technology for professional activities about once a week.
0.7% of staff use technology for professional activities about once a month.
2.7% of staff rarely or never uses professional activities for instruction.

II. Instructional staff use of instructional technology with students, for activities such as research, multimedia, simulations, data interpretation, communications, and collaboration and to enhance instruction

49% of staff use technology for instruction nearly every day.
30.2% of staff use technology for instruction about once a week.
12.1% of staff use technology for instruction about once a month.
8.7% of staff rarely or never use technology for instruction.

III. Percentage of teachers who are at each level as defined by the Massachusetts technology Self-Assessment Tool (TSAT). (see appendix)

44% of teachers are at the **Early technology** level.
20% of teachers are at the **Developing technology** level.
17.5% of teachers are at the **Proficient** level.
19% of teachers are at the **Advanced** level.

III. Extent to which students have mastered the skills listed in the Recommended PreK to 12 Instructional Technology Standards.

Grade 4 *
33% of Grade 4 students have mastered all or nearly all the standards.
33% of Grade 4 students have mastered half or more than half of the standards.
34% of Grade 4 students have mastered less than half of the standards.
Grade 8 **
70% of Grade 8 students have mastered all or nearly all the standards.
20% of Grade 8 students have mastered half or more than half of the standards.
10% of Grade 8 students have mastered less than half of the standards.
Grade 12 *
50% of Grade 12 students have mastered all or nearly all the standards.
25% of Grade 12 students have mastered half or more than half of the standards.
25% of Grade 12 students have mastered less than half of the standards.

*2007-2010 figures
**2010-11 figures based upon course level assessment and student technology portfolios

II: District & Community Profile

The Town of North Reading is located 16 miles north of Boston and is bordered by Wilmington on the west, Andover and North Andover on the north, Middleton and Lynnfield on the east and Reading on the south.

Originally part of Lynn, North Reading was incorporated as a town in 1853. There are 13,000 people residing in this suburban community with approximately 2,700 students attending the public schools. It is forecasted that school enrollment will continue to be above 2,700 students over the next 10 years. There are three elementary schools (K-5), one middle school (6-8) and one high school (9-12). North Reading Public Schools is a member of the SEEM Collaborative for special education students.

The L. D. Batchelder Elementary School located at the corner of Peabody and Haverhill Street first opened in 1917 and remained the only school building in North Reading until 1957. The school was named posthumously in honor of Leland Dennis Batchelder, educator and school committee person for over 25 years. Two additions were made to the original building, one in 1927 and the other in 1950. There are 26 classrooms accommodating 536 students. A major renovation to the original building in 2006 introduced many opportunities for new technology integration.

The J. Turner Hood Elementary School, located on Haverhill Street, opened in 1960. The school was named in honor of J. Turner Hood, superintendent of schools from 1948 – 1960. One addition was made to the original building in 1970. There are 27 classrooms accommodating 396 students. A 1998 building project brought a library as well as art and music classrooms. New modular classrooms were added in 2003.

The E. Ethel Little Elementary School, located on Barberry Lane, opened in 1958. The school was named in honor of E. Ethel Little, a school committee member for 21 years, in advance of its opening by the school committee. One addition was made to the original building in 1970. There are 20 classrooms accommodating 413 students. New modular classrooms were added in 2001.

The North Reading Middle School, located on Sherman Road, opened in 1965. Prior to this date, junior high students (grades 6-8) attended the local elementary schools. There are 44 classrooms accommodating 622 students. The Office of the Superintendent and Pupil Personnel offices are housed in this school. New modular classrooms were added in 2004 and 2007.

The North Reading High School, located on Park Street opened in 1957. Prior to this date high school students attended Reading Memorial High School. There are 40 classrooms accommodating 708 students. The high school was completely renovated in 1989 with modular classrooms added in 2003 and 2004.

The process used to develop this technology plan has involved a number of activities and individuals. It is also a process which reflects the commitment of the school committee and the North Reading community at large.

Benchmark 1
Commitment to a Clear Vision and Implementation Strategies

A. The district's technology plan contains a clearly stated and reasonable set of goals and implementation strategies that align with the district-wide school improvement plan. The district is committed to achieving its vision by the end of the school year 2014-2015.

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 full support of the school superintendent to implement the plan.

C. Needs Assessment

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

D. Budget

1. The district recognizes that technology plays a critical role in achieving its goals. The district has a budget that will ensure the implementation of its long-range technology plan.

2. The budget includes staffing, infrastructure, hardware, software applications, professional development, support, and contracted services.

3. The district seeks funding for technology programs from federal, state, and private resources, as well as from academic departments that are supported by technology. The district explores ways that technology can reduce costs and create efficiencies in other areas of the district budget.

4. 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.

E. Evaluation

1. The district routinely consults with technology staff before purchasing technologies items, to ensure that the items are appropriate, cost-effective, and sustainable. The district will work to create a technology integration

procedure for all staff.

2. The district's technology plan includes an evaluation process that enables it to monitor its progress in achieving its goals and to make mid-course corrections in response to new developments and opportunities as they arise. The STaR Chart will be regularly used to assess our progress and to support district-wide and school-wide goals.

Benchmark 2
Technology Integration and Literacy

A. Technology Integration[1]

1. Outside Teaching Time - At least 90% of teachers use technology every day, including some of the following areas: research, lesson planning, organization, administrative tasks, communications, and collaboration. Teachers explore evolving technologies and share information about technology uses with their colleagues.

2. For Teaching and Learning - At least 90% 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 analysis, communications, and collaboration. Teachers integrate evolving technologies that enhance student interest, inquiry, analysis, collaboration, and creativity. As teachers move toward Advanced Tech on the STaR chart the instruction will gravitate toward student-centered learning where the students are using the technologies themselves.

B. Technology Literacy

1. At least 90% of eighth grade students show proficiency in all the *Massachusetts Technology Literacy Standards and Expectations* for grade eight[2]. Using the technology literacy standards we will address our plan to lead our students to this benchmark (Currently 70%)

2. 100% of teachers are working to meet the proficiency level in technology, and by the school year 2014-2015, 90% of teachers will have mastered 90% of the skills in the Massachusetts Technology Self-Assessment Tool

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[1] The Massachusetts Department of Elementary and Secondary Education defines technology integration as the daily use of technology in classrooms, libraries, and labs to improve student learning.

[2] The *Massachusetts Technology Literacy Standards and Expectations* are available on the Department's website (http://www.doe.mass.edu/edtech/standards.html).

(TSAT).[3] (Currently   40%）

C. Staffing

1. The district has a district-level technology director/coordinator.

2. The district provides one FTE instructional technology specialist per 60-120 instructional staff to coach and model. (Currently 1:191)

3. The district has staff specifically dedicated to data management and assessment.

Benchmark 3
Technology Professional Development

A. At the end of five years, at least 90% of district staff will have participated in high-quality, ongoing professional development that includes emerging technology issues, technology skills, universal design, and research-based models of technology integration.

B. Technology professional development is sustained and ongoing and includes coaching, modeling best practices, district-based mentoring, study groups, and online professional development.

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.[4]

D. Administrators and teachers consider their own needs for technology professional development.[5]

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[3] The *Technology Self-Assessment Tool* is available on the Department's website (http://www.doe.mass.edu/edtech/standards/sa_tool.html) .

[4] The *Technology Self-Assessment Tool* is available on the Department's website (http://www.doe.mass.edu/edtech/standards/sa_tool.html).

[5] A sample administrator technology self assessment tool is available on the Department's web site (http://www.doe.mass.edu/edtech/standards/tsat_sampadmin.html). Administrators may also want to refer to the *National Educational Technology Standards (NETS•A) and Performance Indicators for Administrators* published by the International Society for Technology in Education (http://www.iste.org/Content/NavigationMenu/NETS/ForAdministrators/2009Standards/NETS-A_2009.pdf).

Benchmark 4
Accessibility of Technology

A. Hardware Access

    1. By 2014-2015, the district has an average ratio of one high-capacity, Internet-connected computer for each student. (The Department will work with stakeholders on a regular basis to review and define high-capacity computers.)

    2. The district provides students with emerging technologies appropriate to their grade level.

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

    4. The district has procurement policies for information and instructional technologies that ensure usability, equivalent access, interoperability and SIF compliance[6].

    5. The district provides technology-rich classrooms, with access to devices such as digital projectors, electronic whiteboards, and student response systems.

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

B. Internet Access

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

    2. The district provides an external Internet connection to the Internet Service Provider (ISP) of 100 Mbps per 1,000 students/staff.[7]

    3. 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.

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[6] For more information, see the website for the SIF Association (http://www.sifinfo.org/us/index.asp).

[7] For more information, see the 2008 report *High-Speed Broadband Access for All Kids: Breaking through the Barriers* published by the State Educational Technology Directors Association (SETDA), available on SETDA's website (http://www.setda.org/web/guest/2020/broadband).

C. Networking (LAN/WAN)

1. The district provides internal wide area network (WAN) connections from the district to each school between schools of at least 1 Gbps per 1,000 students/staff.

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

D. Access to the Internet Outside the School Day

1. The district provides access to its computer labs before and after school to ensure that students and staff have adequate access to the Internet outside of the school day.

2. The district disseminates a list of up-to-date list of places where students and staff can access the Internet after school hours.

E. Staffing

1. The district provides staff or contracted services to ensure that its network is functioning at all times.

2. The district provides resolves technical problems within 24 hours, so that they do not cause major disruptions to curriculum delivery. The district provides clear information about how to access technical support, which can be provided in person or remotely.

3. The district provides at least one FTE person to support 400 computers. Technical support can be provided by dedicated staff or contracted services.

Benchmark 5
Virtual Learning and Communications

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

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.

C. Classroom applications of virtual learning include courses, collaborative projects, field trips, and discussions.

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

Benchmark 6
Safety, Security, and Data Retention

A. The district has a CIPA-compliant Acceptable Use Policy (AUP) regarding Internet and network use. The policy is updated as needed to help ensure safe and ethical use of resources by teachers and students.

B. The district educates teachers and students about appropriate online behavior. Topics include cyberbullying, potential risks related to social networking sites and chat rooms, and strategies for dealing with these issues.[8]

C. The district has a plan to protect the security and confidentiality of personal information of its students and staff.[9]

D. The district complies with federal and state law[10], 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.

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[8] To learn more about teaching students about safety and the Internet, see Net Cetera: Chatting with Kids About Being Online, a free guidebook produced through a partnership of federal agencies and the technology industry (http://www.edgovblogs.org/duncan/2009/12/online-safety-guidebook-for-parents/).

[9] To find out how state agencies in the Executive Branch must protect personal information, as well as to find training tools related to this effort, see the Commonwealth's website (http://www.mass.gov/?pageID=afsubtopic&L=6&L0=Home&L1=Research+%26+Technology&L2=IT+Policies%2c+Standards+%26+Guidance&L3=Legal+Guidance&L4=Privacy+%26+Security&L5=Executive+Order+504&sid=Eoaf).

[10] Information about state regulations is available from the state's Record Management Unit (http://www.sec.state.ma.us/arc/arcrmu/rmuidx.htm).

IV. Five Year Plan Goals

In accordance with the district mission and the guidelines provided by the Massachusetts School Technology Chart (see appendix) and District Technology Benchmarks 2010-2015 (see above), the Technology Committee has developed a five year plan designed to increase the level of proficiency with which the North Reading Public Schools addresses these standards.

As with any long-range plan the goal is to provide a road map for continual improvement.

BENCHMARK 1	COMMITMENT TO A CLEAR VISION AND IMPLEMENTATION STRATEGIES	
Goals	**Actions**	**Next Steps**
1A--Integrate with District-wide School Improvement Plan, School Improvement Plans, and Teacher Growth Plans for Professional Development	1. Create a common language to establish the information in this plan as the driving language for technology sections of other district and professional initiatives	1. Coordinate with Principals, Administrators, and Teacher Leaders to communicate this message.
1D--Increase technology budget to meet the state standard for advanced technology funding -	1. With support of Technology Advisory Committee investigate alternative funding sources for technology: grants; private/corporate donations; fundraising. 2. Establish operational budge line item for lab replacement cycle.	1. Establish goals and expectations of Technology Advisory Committee.
1E—Establish a Procedure for Technology Purchasing and Integration	1. Develop written guidelines for best practice in technology integration and information literacy. 2. Develop web-based videos of indicators/exemplars of best practice technology integration and information literacy.	1. Establish goals and expectations of Technology Advisory Committee

BENCHMARK 2	TECHNOLOGY INTEGRATION AND LITERACY	
Goals	**Actions**	**Next Steps**
2A,B--Increase teacher use of technology for research, lesson planning, multimedia and graphical presentation and simulation and shared technology uses with colleagues at least once a week from 79% to 90%	1. Deliver support and training for staff in multiple ways including just in time support, online support and application support including electronic gradebook a all levels. 2. Provide basic computer operations and concepts course. 3. Provide advanced computer operations and concept course (e.g. scanning, digital cameras, burning disks, etc.) 4. Continue to publish the Technology Newsletter which provides tech tips, resource suggestion, and article of best practice of teaching with technology. 5. Offer embedded professional development for faculty.	1. Use data from District Survey to improve technology PD offerings, including workshops and courses within the district. 2. Encourage teachers to explore online options for professional development. 3. Update and improve technology newsletter and web resources to provide video tutorials. 4. Allow for more "short bursts" of professional development during school
2A2-- Increase student use of technology in the classroom setting.	1. Encourage teachers, through demonstrations and training, to integrate technology into their lessons as part of the universal design process and project based learning. 2. Create an integrated technology curriculum guide for elementary teachers and paraprofessionals which includes a standards-based assessment.	1. Focus professional development offerings for all staff on the results of the technology survey with a focus on student-centered education. 2. Make all teachers aware of the Massachusetts Technology Literacy Standards
2B1--In student proficiency in Grade 4 to 90%	1. Create an integrated technology curriculum guide (exemplar lessons with assessment tools and rubrics / model lessons) for elementary teachers and paraprofessionals which includes a standards-based assessment.	1. Create integrated technology curriculum guide 2. Create standards-based 4th grade assessment 3. Encourage teachers, through demonstrations and training, to integrate technology standards into their lessons as part of the universal design process and project

		based learning.
2B1--Increase student proficiency in Grade 8 from 70% to 90%	1. Guide students to proficiency through reinforcement of Technology Literacy Standards in all classes, including Computer elective	1. Review the curriculum for the Computer course based on the Massachusetts 2. Create standards-based assessment Instructional Technology Standards. 3. Encourage teachers, through demonstrations and training, to integrate technology standards into their lessons as part of the universal design process and project based learning.
2B1—Increase student proficiency in Grade 12 to 90%	1. Guide students to proficiency through reinforcement of Technology Literacy Standards in all classes, including Computer elective	1. Work with Business/Technology to determine the best way to assess all students exiting North Reading High School 2. Create standards-based assessment. 3. Encourage teachers, through demonstrations and training, to integrate technology standards into their lessons as part of the universal design process and project based learning.
2B2--Increase the percentage of faculty proficient in the TSAT standards from 40% to 90%.	1. Institute TSAT for all faculty to inform professional development offerings and individual support/training guidance. 2. Work with faculty and administration to incorporate technology goals with regard to TSAT results into the "Professional Growth Plan" 3. Expand Technology training for new teachers to include two induction sessions fall / winter dedicated to technology integration.	1. Use 2010-11 to establish a baseline by administering the TSAT to all faculty. 2. Analyze teacher results by school 3. Encourage teachers to continue to complete TSAT to reach goal of 100% working to meet proficiency
2C3-- Dedicated staff at district level for data management and assessment.	1. Add additional position(s) to allow for the data technician to concentrate only on administrative support and data management. 2. Evaluate technology department staff	1. Create vision for technology department staffing needs for 2011-2015. 2. Update job descriptions for all technology department staff based upon evaluations, needs, and support.

	TECHNOLOGY PROFESSIONAL DEVELOPMENT	
BENCHMARK 3		
Goals	**Actions**	**Next Steps**
3--Provide professional development/training for technical staff to maintain currency.	1. Create a line item for professional development of technical staff. 2. Create a PD plan for providing training for technicians.	1. Work with technology staff to create goals and identify areas for Professional Development.
3B--Increase the interdisciplinary use of technology.	1. Utilize an integrated technology curriculum guide (exemplar lessons with assessments tools and rubrics / model lessons) for elementary teachers and paraprofessionals which includes a standards based assessment. 2. Utilize webinar/conferencing to link classrooms in multiple disciplines.	1. Work with administrators and curriculum leaders to encourage interdisciplinary technology sharing and the modeling of best practices during common meeting times.
3B--Increase administrative capacity to recognize and model high quality technology practice.	1. Use ISTE to create Admin Tech Inventory 2. Provide Professional Development in Data Warehouse; Rediker; Rediker Modules; SEMsNet, Moodle, and Social Networking 3. Consistent and regular use of technology for staff communication [email; web;]	1. Set staff expectation to check email three times per day. 2. Administrators work together to learn more about emerging technologies.

BENCHMARK 4	ACCESSIBILITY OF TECHNOLOGY	
Goals	**Actions**	**Next Steps**
4A2--Equip all classrooms with SMARTboards and other interactive technologies	1. Continue action plans in all schools to implement interactive technologies.	1. Review plans with all Administrators. 2. Troubleshoot known issues.
4A2—Provide students with emerging technologies appropriate to their grade level.	1. Develop pilot programs for increasing opportunities for students to access emerging technologies (ipads, ereaders, clicker systems). 2. Explore possibilities for developing opportunities for students to achieve 1:1 goals.	1. Create procedure for technology adoption of emerging technologies through pilot programs.
4A3—Provide access for all students, including students with disabilities, using assistive technology devices	1. Designate a point person for assistive technology across the district to assist the technology integration specialist.	`1. Work with Director of Pupil Personnel Services to determine the point person for assistive technology across the district and to design professional development opportunities for staff in using these assistive technologies.
4B--Provide expanded wireless access for students and teachers that complements a robust hard line network.	1. Perform wireless audit of *all schools* in the district	1. Meet with vendors and conduct wireless audit of entire district.
4B--Implement the three year replacement cycle model	1. Propose and implement replacement computers, hardware, and software.	1. Propose three year funding cycle plan.
4E3--Provide additional personnel to increase instructional technology and integration support.	1. Train and support computer lab paraprofessionals to increase their capacity to deliver integration support. 2.Add additional secondary integration specialist. 3. Add an elementary library/media specialist.	1. Create vision for technology department staffing needs for 2011-2015.

BENCHMARK 5	VIRTUAL LEARNING AND COMMUNICATIONS	
Goals	**Actions**	**Next Steps**
5A,B,C--Expand tech centric academic offerings	1. Develop and expand the computer science, technology and engineering strand. 2. Offer the "robotics experience" at the elementary level. 3. Introduce Virtual High School or other distance learning opportunities to the secondary environment 4. Include STEM courses which are focused on technical preparation. 5. Develop a TV/Media curriculum and launch a TV Production course.	1. Offer a professional development course to develop the standards. 2. Research distance learning opportunities including VHS, Moodle, Blackboard. 3. Partner with NORCAM to develop our AV Club and begin to investigate a TV/Media Curriculum

BENCHMARK 6	SAFETY, SECURITY, AND DATA RETENTION	
Goals	**Actions**	**Next Steps**
6B—Educate teachers and students about appropriate online behavior.	1. Design and implement curricular and extra-curricular programs for teachers and students that address appropriate online behavior. 2. Present professional development for teachers and student presentations which address appropriate online behavior.	1. Investigate program adoption for all levels, K-12 (isafe, etc.) 2. Evaluate recent presentations to staff and students. 3. Evaluate curriculum K-12 to identify areas for introducing these ideas (PE/Wellness, ELA, Technology courses)

APPENDIX - A
POLICIES

Acceptable Use Policy Regulations for Network and Electronic Communications

Philosophy
Access to Network resources through the North Reading Public Schools is a tremendous educational asset to the public school community. The network provides a wide array of resources and opportunities to enhance the educational program of our schools. Users are expected to use the network for educational purposes to support and extend the district mission.

Internet Safety
It is the policy of North Reading Public Schools to: (a) prevent user access over its computer network to, or transmission of, inappropriate material via Internet, electronic mail, or other forms of direct electronic communications; (b) prevent unauthorized access and other unlawful online activity; (c) prevent unauthorized online disclosure, use, or dissemination of personal identification information of minors; and (d) comply with the Children's Internet Protection Act [Pub. L. No. 106-554 and 47 USC 254(h)].

Access to Inappropriate Material
To the extent practical, technology protection measures (or Internet filters) shall be used to block or filter Internet, or other forms of electronic communications, and access to inappropriate information. Specifically, as required by the Children's Internet Protection Act, blocking shall be applied to visual depictions of material deemed obscene or child pornography, or to any material deemed harmful to minors. Subject to staff supervision, technology protection measures may be disabled or, in the case of minors, minimized only for bona fide research or other lawful purposes.

Acceptable Use Guidelines
1. Access to the network is contingent upon the return of an Acceptable Use Policy Regulations form signed by both the student and a parent or guardian. Students not fulfilling this requirement will not receive active accounts.

2. Network users consent to adhere to the North Reading Public Schools Acceptable Use Policy Regulations which includes the Internet Safety Policy.

3. Network access is a privilege, not a right. Use of the network is contingent upon responsible use.

4. Communications on the network, including email, have no guarantee of privacy. General school rules for behavior and communications apply.

5. Network administrators may review files and communications to maintain system integrity and insure that users are using the system responsibly.

6. Users should not expect that files stored on district servers remain private.

7. North Reading Public Schools does not guarantee the effectiveness of network services, including network filtering.

8. North Reading Public Schools disclaims responsibility for users' actions, including any financial obligations they incur while using network resources.

9. North Reading Public Schools disclaims all liability to users arising from their on-line activities or use of district network.

10. North Reading Public Schools disclaims all liability to third parties arising from users' online activities.

Unacceptable Use
The following are examples of inappropriate uses of North Reading Network and Electronic Communications. These examples are intended to clarify unacceptable use of the network and electronic communications. This is an illustrative list and does not include all possible misuses or violations of the policy.

Network Users agree to <u>NOT</u>

➢ Engage in any illegal activities.
➢ Interfere with another user's access, privacy or privileges.
➢ Violate copyright laws, including software piracy or unauthorized copying of content.
➢ Use another person's password.
➢ Log on another user under one's personal account.
➢ Alter another user's account without permission.
➢ Interfere with or disrupt network users, services, or equipment.
➢ Transmit threatening or harassing material.
➢ Send or display offensive messages.
➢ Intentionally waste limited resources.
➢ Download/install software without the approval of the system administrator.

Violation of Guidelines
Violations of the Acceptable Use Guidelines will be reported and reviewed.

Violations of guidelines will result in appropriate action, which may include but is not limited to (**1) loss of computer privileges, (2) loss of network privileges and/or (3) referral to appropriate local, state or federal authorities.**

Network & Electronic Communications System
STUDENT USER AGREEMENT

Student's Full Name: _____

Grade Level: _____

(Please Print Your Full Name – No Nicknames)

School: _____

I have read the district's Acceptable Use Policy Regulations and Administrative Regulations and Procedures and agree to abide by their provisions. I understand that violation of these provisions may result in disciplinary action including but not limited to suspension or revocation of privileges, suspension or expulsion from school, and prosecution.

Student Signature: _____   **Date:**

_____

Parent/Guardian Sponsor

I have read the attached district's Acceptable Use Policy Regulations. In consideration for the privilege of using the district's system/network, and in consideration for having access to the public networks, I hereby release the district, its operators, and institutions with which they are affiliated from any and all claims and damages of any nature arising from my child's use of, or inability to use, the system/network, including, without limitation, the type of damage identified in the district's policy and administrative regulations and procedures.

Please place your _INITIALS_ in the space provided to the left of the statement of your choice:

_____

(Initial above) I GIVE MY PERMISSION for my student to participate in the district's network and electronic communications system.

_____

(Initial above) I DO NOT GIVE MY PERMISSION for my student to participate in the district's network and electronic communications system.

Parent Permission Form for Internet Publishing

We understand that our daughter or son's work is under consideration for publication on the World Wide Web. No home address or telephone number will appear with such work.
We grant permission for the World Wide Web publishing as described above through September of 2011.

Print parent/guardian name _____ Date _____

I the student, also give my permission for such publishing.

Name _____ Date _____

Signature of parent/guardian: _____ **Date:** _____

(MM/DD/Y)

NOTE: We will not put a child's last name or photo on a web page without _additional_ written permission from the parent or guardian.

Please return only this page to your classroom/homeroom teacher or to the school office no later than September 17, 2010.   Keep all other pages for your future reference.

APPENDIX – B

**STaR Chart
2010-11 Technology Survey Results
Individual School Technological Improvements**

Massachusetts School Technology and Readiness Chart
(STaR Chart)

Massachusetts Education Technology Advisory Council's[i] (ETAC's) School Technology and Readiness Chart (STaR Chart) is designed to promote best practices in the use of technology in the Commonwealth's schools. Districts can use it to find suggested next steps along the technology continuum to improve teaching, learning, and educational management. It can also be used to inform decision/policy makers about the complexity of the issue and how multiple elements must be addressed simultaneously to ensure the effectiveness of technology implementation and use.

The STaR Chart is organized to address the impact of technology in four broad realms. Each realm contains multiple focus areas that describe a typical progression from early through advanced technology use. Each level builds upon the capabilities of the earlier level. The focus areas recommended for use in the Massachusetts Local Technology Plan Benchmarks are indicated below by an "*." For these identified focus areas, ETAC recommends the STaR Chart's "Proficient Tech" level as the targeted "Level of Progress."

1. Teaching and Learning

    - Impact of Technology on Teacher Role

    - Patterns of Teacher Use*

    - Design of Instructional Setting

    - Curriculum Areas

    - Patterns of Student Use*

2. Educator Preparation and Development

    - Content of Training

- Capabilities of Educators*

- Leadership of Principals, Teacher Leaders, and District Administrators

- Models of Professional Development

- Levels of Understanding

- Universal Access: Integration of Universal Design and Assistive Technology

3. Administration and Support Services

- Vision and Planning

- Technical Support (hardware, operating system, network)*

- Technology Integration Specialist*

- Budget Levels

- Budget Allocated for Technology (Total Cost of Ownership)*

4. Infrastructure for Technology

- Universal Design and Accessible Technology Considerations (e.g. Section 508)

- Students Per Instructional Computer*

- Internet Access Connectivity/Speed*

- E-learning Environments*

- LAN/WAN *

- Other Technologies

- Safety and Security*

The STaR Chart was derived from the Texas chart[ii] of the same name several years ago. The Massachusetts STaR Chart has subsequently been updated several times. This is the first update since November 2006.[iii] Note that the axes of the 2006 STaR chart have been transposed for the 2010 version.

WHY A STAR CHART

There are several reasons why ETAC maintains this chart:

1. ETAC believes that any strategic technology plan for the Commonwealth should reflect the best practices incorporated in the chart. All plans should consider these expectations for schools, teachers, students, and infrastructure as goals to strive for over time.

2. ETAC believes it is important to have clear standards for every school district. We recommend that Massachusetts Local Technology Plan Benchmarks be defined by the Proficient Tech level of the following focus areas:

   - Patterns of Teacher Use (Row B)
   - Patterns of Student Use (Row E)
   - Capabilities of Educators (Row G)
   - Technical Support (Row M)
   - Curriculum Integration Staffing (Row N)
   - Budget Allocated for Technology (Row P)
   - Students per Instructional Computer (Row R)
   - Internet Access (Row S)
   - E-Learning Environments (Row T)
   - LAN/WAN (Row U)

- Safety and Security (Row W)

3. The STaR chart provides a common set of goals for guidance to the Massachusetts Department of Elementary and Secondary Education when distributing technology grants. This guidance is part of ETAC's charge from the Commissioner.

STaR Chart Assumptions

There are several assumptions built into this work:

1. Technology should be integrated into teaching and learning so that its use extends opportunities and potential for all students.

2. The effective use of technology involves the many elements specified by the focus areas. Technology in education, used appropriately and effectively, is a complex set of interactions of people, materials, infrastructure and continuous support. It is not a single investment at one time.

3. The chart will be reviewed annually and updated as needed.

4. The chart is "forward looking" because technology constantly changes and educators need to consider how these changes impact teaching and learning and educational management.

The chart strikes a balance between what is reasonable in schools given the current funding and what is desirable given our goals for student learning and each community's expectations.

TEACHING AND LEARNING

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(A)	**Impact of Technology on Teacher Role**	Mostly teacher-centered lectures. Minimal student use of technology in instruction.	Mostly teacher directed learning. Students use technology to work on individual projects.	Mostly teacher-facilitated learning. Students use technology for cooperative projects in their own classroom.	Mostly student-centered learning, teacher as mentor/facilitator. Students use technology to communicate and collaborate outside the classroom.
(B)	**Patterns of Teacher Use**	85% of teachers use technology as a productivity tool (e.g., email, grades) and/or as a classroom supplement (e.g. drill and practice).	85% of teachers explore using technology to support curriculum goals (e.g. research, lesson planning).	85% of teachers use technology for research, lesson planning, multimedia and graphical presentations, and simulations. Teachers share technology uses with colleagues.	85% of teachers integrate evolving technologies that transform the teaching process by allowing for greater levels of access, interest, inquiry, analysis, collaboration, creativity, and content production.
(C)	**Design of Instructional Setting**	Mostly computer labs or libraries; scheduled use only.	Labs, libraries, many classrooms; flexible scheduling.	Lab, libraries, all classrooms, and portable technology (e.g. wireless laptops or handheld electronic devices); flexible scheduling.	Seamlessly integrated throughout classes and all content areas. Technology is available anytime both in school and within the community.

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(D)	**Curriculum Areas**	Limited to teaching technology skills at different grade levels.	Use of technology is minimal in a few curricular areas across grade levels.	Integrated into most Curriculum Framework areas and activities at all grade levels.	Integral to all curricular areas at all grade levels.
(E)	**Patterns of Student Use**	Less than half of students show proficiency in all Massachusetts Technology Literacy Standards and Expectations[iv] for their grade.	More than half of students show proficiency in all Massachusetts Technology Literacy Standards and Expectations for their grade.	Almost all of students show proficiency in all Massachusetts Technology Literacy Standards and Expectations for their grade.	All students show proficiency in all Massachusetts Technology Literacy Standards and Expectations for their grade.
(F)	**Content of Training**	Technology skills (email, word processing, Iinternet browser use, etc.) for teachers' professional use.	Training encompasses more complex professional uses (district applications such as attendance and report cards, scanners, cameras) and curriculum integration strategies.	Training directly ties technology to its use in content areas and how to effectively manage it in the classroom.	Training focuses on modeling, mentoring, and adopting new technologies as well as the integration of Universal Design and access considerations for all students.

EDUCATOR PREPARATION AND DEVELOPMENT

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(G)	**Capabilities of Educators**	100% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.	80% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.	80% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.	80% meet TSAT and/or local district teacher technology competencies and implement them into the school environment.
(H)	**Leadership of Principals, Teacher Leaders and District Administrators**	Recognizes benefits of technology in instruction to improve learning outcomes for all students. Minimal personal use (email, word processing, Internet browser use, etc.). Awareness of national standards for administrators.	Supports use of technology in instruction. Uses technology in daily work. Approaching proficiency of national standards for administrators.	Recognizes and identifies exemplary use of technology in instruction. Uses technology skills in daily work such as research and communication and models appropriately with staff. Provides constructive feedback to teachers on their technology use.	Promotes exemplary use of technology in instruction. Models and uses in daily work in communication, presentations, online collaborative projects, and management tasks. Develops a school culture that expects all teachers to use technology. Advocates in the community for the integration of technology in instruction. Expects all teachers to use technology well.

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(I)	**Models of Professional Development**	Whole group, skill-based training with minimal follow-up.	Whole group curriculum-based training with follow-up to facilitate classroom implementation.	Coaching, modeling best practices, district-based mentoring. Involvement in a development / improvement process. Study groups.	Creates a culture of inquiry, sharing and knowledge building. Anytime learning available through a variety of delivery systems (e.g., just-in-time support, mentoring, peer observation).
(J)	**Levels of Understanding**	Most at entry or adoption stage (Students learning to use technology; teachers use technology to support traditional instruction).	Most at adaptation stage (technology used to enrich curriculum). Most beginning to use with students.	Most at appropriation stage (technology is integrated, used for its unique capabilities).	Most at invention stage (teachers discover and accept new uses for technology).

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(K)	**Universal Access: Integration of Universal Design and Assistive Technology**	Emerging awareness of universal design and assistive technologies (hardware/software) limited to special educators; few examples across the district of universal design strategies or assistive technology used to promote access to the general curriculum.	Awareness of universal design and assistive technologies (hardware/software) by special educators & some general educators; universal design strategies or assistive technology used to promote access to the general curriculum demonstrated across all grade levels.	Awareness of universal design and assistive technologies (hardware/software) by special educators & most general educators; universal design strategies or assistive technology used to promote access to the general curriculum demonstrated across all grade levels; staff are designated to provide AT assessment, procurement, support (training) and maintenance.	Systemic adoption of universal design strategies throughout the curriculum and the seamless integration of assistive technology to promote access to the general curriculum for all students; staff are designated to provide AT assessment, procurement, support (training), and maintenance.

ADMINISTRATION AND SUPPORT SERVICES

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(L)	**Vision and Planning**	Minimal technology plan; technology used mainly for administrative tasks such as word processing, budgeting, attendance, grade book.	The technology plan is aligned with the Massachusetts Technology Plan, and is approved by the School Committee & supported by the Superintendent. Plan collaboratively developed by key stakeholders (e.g., teachers, parents, community members, local business, and individuals with disabilities), guiding policy and practice. Addresses local district teaching and learning standards.	In addition, the Technology Plan is integrated into district plan; used for internal planning, budgeting, applying for external funding and discounts. Teachers and administrators have a vision for technology use in support of student learning, teacher professionalism, and data management.	The technology plan and vision are focused on improving the success of all students based on needs, research, proven teaching and learning principles and is actively supported by the School Committee and Superintendent. Technology plan is collaboratively developed, guiding policy and practice; updated at least annually.

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(M)	**Technical Support (hardware, operating system, network)**	Some technical support and minimal support tools to resolve 95% of problems in greater than five days. Problems cause major disruptions to curriculum delivery using technology.	Sufficient technical staff and support tools to resolve 95% of problems in two to five days. Same-day technical support for infrastructure problems by call-in. Problems sometimes cause major disruptions to curriculum delivery using technology. Designated Network Administrator.	Sufficient technical staff and support tools to resolve 95% of problems within two days. Same-day in-classroom technical support available. Problems infrequently cause major disruptions to curriculum delivery using technology. Network administrator.	Sufficient technical staff and support tools to resolve 95% of problems within one day. Technical support is readily available on-site for both infrastructure and application problems. Problems do not cause major disruptions to curriculum delivery using technology. Network administrator.
(N)	**Technology Integration Specialist**	No district level Technology Director. Local instructional technology support is inconsistent.	District level Technology Director. One-half instructional technology specialist per 60-120 staff.	District level Technology Director. Dedicated instructional technology specialist—one half person per 30-60 staff. Dedicated staff at district level for data management and assessment.	District Technology Director. Dedicated instructional technology specialist—one half person per 30-60 staff. Dedicated staff at district level for data management and assessment and to help produce integrated curriculum content.

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(O)	**Budget Levels**	Budget for hardware and software purchases and professional development.	Budget for hardware and software purchases (new and replacement) and professional development, minimal staffing support, and some ongoing costs.	Budget for purchases, professional development, adequate staffing support, and ongoing costs. Other state, federal, and local programs directed to support technology funding. Business partnerships, donations, and other local funding designated for technology.	Budget for purchases, incentives for professional development, sufficient staffing support, and ongoing costs. Appropriate budget to support district technology plan.
(P)	**Budget Allocated for Technology (Total Cost of Ownership)**	Less than $175 per student.	Between $175- $300 per student.	Between $300 - $425 per student	$425 or more per student

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(Q)	**Universal Design and Accessible Technology Considerations (e.g., Section 508)**	Considerations for universal design and accessible technologies are limited to the Individual Education Program (IEP) process for students with disabilities. Procurement policies for information and instructional technologies do not ensure usability, equivalent access, or interoperability.	Considerations for universal design and accessible technologies are established in areas of high student use (e.g., libraries, computer labs); inconsistent implementation of procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability.	Considerations for universal design and accessible technologies are established in areas of high student use (e.g., libraries, computer labs), some classrooms and administrative offices; routine implementation of procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability.	Universal design and accessible technologies considerations are established throughout the district; procurement policies for information and instructional technologies that ensure usability, equivalent access, and interoperability in accordance to the guidelines established by Section 508.

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(R)	**Students Per Instructional Computer**	10 or more students per Type A or B computer; no firm computer replacement policy established by district.	Fewer than 10 students per Type A and B computer; replacement policy established; one computer per teacher.	Fewer than 5 students per Type A and B computer; replacement cycle established for 6 years or less; one computer per teacher—possibly a laptop for working at home. Most students have access to handheld electronics. Maintains a list of places students can use technology outside of school.	One student per Type A and B computer or other electronic device. Replacement cycle established for 5-6 years or less; one computer per teacher—possibly a laptop for working at home. 75% of computers meet Massachusetts A/B standards. School works with community to provide equitable access to technology for students and community members after school hours.

INFRASTRUCTURE FOR TECHNOLOGY

Row	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(S)	**Internet & WAN Access, Connectivity, and Speed**	Dial-up connectivity to the Internet available only on a few computers.	Direct connectivity to the Internet available at each school and in most rooms. Adequate bandwidth to the school to avoid most delays.	District Internet connection of 10 Mbps per 1,000 students and staff district-wide.[v] School connection to district WAN of 100 Mbps per 1,000 students/staff to avoid most delays. Easy access for students and teachers, including some wireless.	District Internet connection of 100 Mbps per 1,000 students and staff district-wide.[vi] School connection to district WAN of 1,000 Mbps per 1,000 students/staff. Easy access for students and teachers including most wireless connectivity to enable interactive presentations and video.

Row	Focus Areas	Levels of Progress			
		Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(T)	E-Learning Environments	Web- and/or satellite-based interactive learning opportunities delivered synchronously or asynchronously, on a scheduled or unscheduled basis, primarily for professional development on a limited basis.	Expanded web- and/or satellite-based interactive learning opportunities with the possible addition of asynchronous video streaming or synchronous videoconferencing. The addition of courses for professional development for teachers and student courses at the high school and college level (K-16).	Building upon Developing Tech, development of connections for improved access to web-based and/or interactive IP-based video learning on the local, state, regional, national, and international level (school to school, district to district, school/district to state, state to state, country to country). Applications to include courses, cultural projects, virtual field trips, etc.	Seamless IP-based infrastructure expanded to K-16 to allow development of high-quality web- and video-based content. Content distribution available for all students and teachers. Archives allow for content review asynchronously and sharing/distribution of these resources.

Ro w	Focus Areas	Levels of Progress			
		Early Tech	**Developing Tech**	**Proficient Tech**	**Advanced Tech**
(U)	**LAN**	Limited print/file sharing network at each school for lab, administration, and some classrooms. Some shared resources and some secure storage space. Minimum 10/100 Mbps Cat 5 hubbed network.	Most rooms connected to Internet via WAN and wireless connectivity where possible at each school with student access. Minimum 10/100 Mbps Cat 5 switched network. Basic servers for sharing some resources at each school.	All rooms connected to Internet with significant wireless connectivity at each school with sufficient bandwidth for effective student access. Minimum 100 Mbps Cat 5e switched network. District-owned servers or cloud computing provides secure storage, backups, applications, schedule, email, and website. Students, teachers and parents have easy access to educational resources from home and school (e.g., web portal).	All rooms connected to Internet with significant wireless connectivity at each school with sufficient bandwidth for effective student access. Minimum 100 Mbps/1 Gbps Cat 5e/6 switched network to classroom. Different services (data, phone, video, guest access, etc.) on different virtual LANs. All schools have sufficient bandwidth for content delivery through resources such as video streaming and conferencing. Students, teachers and parents have easy access to educational resources from home and school (e.g., web portal).

Ro w	Focus Areas	Levels of Progress			
		Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(V)	**Other Technologies**	Shared teacher use of resources such as telephone, TVs, VCRs, DVD players, and classroom sets of programmable calculators.	Shared use of resources such as telephone, computer video projectors, or interactive white boards, classroom sets of programmable calculators, digital cameras, and scanners.	Dedicated and assigned use of common technologies such as telephone, computer video projectors, or interactive white boards. Programmable calculators assigned to each student as needed. In each school, there is shared use of specialized technologies, digital cameras, scanners, handheld electronic devices.	Readily available fully equipped classrooms with computer/video projectors, interactive whiteboard, and other technology to enhance student instruction. Use of new and emerging technologies.

Ro w	Focus Areas	Levels of Progress			
		Early Tech	Developing Tech	Proficient Tech	Advanced Tech
(W)	Safety and Security	Backup and restoration procedures and virus protection to guard individual computers. District-wide acceptable use policy in place.	Basic firewall protection and diligent upgrading of network vulnerabilities added to protect against external threats. Protection against a wide range of malware (viruses, worms, Trojans, rootkits), adware, and spyware. District-wide responsible use policy in place, as well as policy on connecting student/staff-owned devices to school network.	To Developing Tech, add adequate network and server availability protection for expanded capabilities and to ensure dependable access. Protection of workstations from internal network attacks. Encryption of sensitive personal data on local networks. Network supports board policy on connecting student/staff-owned devices (guest devices) on the network.	Usage authentication added for mobile computer and home/external access requirements. Use of virtual LANs (VLANs) to protect network infrastructure and sensitive data. If guest devices are allowed on the network, guest traffic is on an isolated VLAN and/or guest devices are checked for currency of anti-virus software and operating system security patches.

End Notes

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[i] Educational Technology Advisory Council to the Massachusetts Board of Education and the Commissioner, http://www.doe.mass.edu/boe/sac/edtech/

[ii] *Texas School Technology and Readiness (STaR) Chart*, http://starchart.esc12.net/. The Texas Teacher STaR Chart is intended to assist all classroom teachers in assessing needs and setting goals for the use of technology in the classroom to support student achievement.

[iii] *Massachusetts STaR Chart (School Technology and Readiness Chart)*, November 2006

[iv] *Massachusetts Technology Literacy Standards and Expectations*, Massachusetts Department of Elementary and Secondary Education, approved by the Massachusetts Board of Education on April 29, 2008, http://www.doe.mass.edu/edtech/standards/itstand.pdf

[v] Based on recommendations the State Education Technology Directors Association (SETDA) in *High-Speed Broadband Access for All Kids: Breaking Through the Barriers* for network speeds for "next 2-3 years" for a technology-rich learning environment, June 2008, http://www.setda.org/web/guest/2020/broadband

[vi] Based on recommendations the State Education Technology Directors Association (SETDA) in *High-Speed Broadband Access for All Kids: Breaking Through the Barriers* for network speeds in "5-7 years" for a technology-rich learning environment, June 2008, http://www.setda.org/web/guest/2020/broadband