Barnstable Public School District
Strategic Technology Action Plan
2010-2013

District Name: Barnstable Public Schools
LEA Code: 020
Contact Person: Bethann R. Orr
Address: District Technology Department
744 West Main St
Hyannis MA 02601
orr_Bethann@Barnstable.k12.ma.us

District Website: http://www.barnstable.k12.ma.us

Excellence can only be attained if you care more than others think is wise, risk more than others think is safe, dream more than others think is practical, and expect more than others think is possible. (Unknown)
Organizational Structure:

Barnstable Public Schools’ Contact Information

Barnstable Public School
Administration Building
230 South Street
Hyannis, MA  02601
508.862.4953
www.barnstable.k12.ma.us

District Technology Office
Barnstable High School
744 West Main Street
Hyannis, MA  02601
508.790.2813

Dr. Patricia Grenier, Superintendent
Marie McKay, Assistant Superintendent

School Committee Members:  Term Expires:
R. Patrick Murphy, Chairman  November, 2011
Tom McDonald  November, 2011
Francis McDonald  November, 2011
Stephanie Ellis  November, 2013
Margeaux Weber  November, 2013

Barnstable Public Schools District Technology Department Members:
Each member will serve on the committee for 2 years. With rotating technology members, many stakeholders will have a deep understanding of the district technology needs.

<table>
<thead>
<tr>
<th>Member Name and Position</th>
<th>Site</th>
<th>Term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marie McKay, Assistant Superintendent</td>
<td>District</td>
<td>Standing</td>
</tr>
<tr>
<td>Bethann Orr, Director</td>
<td>District</td>
<td>Standing</td>
</tr>
<tr>
<td>Gina Hurley, Director</td>
<td>District</td>
<td>Standing</td>
</tr>
<tr>
<td>Beth Knittle, Integration Specialist</td>
<td>District</td>
<td>Standing</td>
</tr>
<tr>
<td>Matt Schefule, Principal</td>
<td>Centerville Elementary</td>
<td>2011</td>
</tr>
<tr>
<td>Patrick Clark, Principal</td>
<td>Barnstable High School</td>
<td>2012</td>
</tr>
<tr>
<td>Christine Spence Dilly, Teacher</td>
<td>Barnstable Intermediate School</td>
<td>2011</td>
</tr>
<tr>
<td>Kim White, Technology Teacher</td>
<td>Barnstable Intermediate School</td>
<td>2012</td>
</tr>
<tr>
<td>Brandy Jackson, Technology Teacher</td>
<td>Barnstable High School</td>
<td>2011</td>
</tr>
<tr>
<td>Thomas Fazio, Student</td>
<td>Barnstable High School</td>
<td>2011</td>
</tr>
<tr>
<td>Noah Demelo</td>
<td>Barnstable High School</td>
<td>2012</td>
</tr>
<tr>
<td>TBD</td>
<td>Barstable Community Horace Mann Charter Public School</td>
<td>2012</td>
</tr>
</tbody>
</table>
The technology committee is charged with 4 goals. They are as follows:

1. To create a technology team of diverse and renewing stakeholders who ensure the development and annual revision of a viable technology vision and plan aligned with state and national guidelines

2. To assess the level of progress attained by the Barnstable Public Schools for each of the areas of focus for technology use as outlined in STaR, the Massachusetts School Technology and Readiness Chart -

3. To recommend strategies to achieve identified benchmarks as itemized in the MA Local Technology Plan Guidelines

4. To prioritize those recommended strategies as strategies that should be completed within the current school year, in the short term (2-3 years), or in the long term (3-5 years)

District Educational Technology Department Members:

Bethann Orr, Director of Educational Technology  
Kurt Turnbull, District Network Coordinator  
BethKnittle, K-12 Technology Integration Specialist  
Alan Brown, District Technology Specialist  
Andrew Bunker, District Technology Specialist  
Kim Rumberger, Common Assessment Facilitator  
DeeDee Beckwith, Technology Facilitator

Technology Assistants, Barnstable Public Schools:
Maura Bussiere, Hyannis West Elementary School  
Betsy Miller, Barnstable West Barnstable Elementary School  
Candy Johansen, Barnstable Community Horace Mann Public Charter School  
Nancy Nicolas, Centerville Elementary School  
Laura Rosenfield, West Villages Elementary School

B2B 22 Educational Television Station  
Dustin Devlin, Educational TV Coordinator  
Noreen Jones, Interim Assistant Coordinator  
Brandy Jackson, Broadcasting Teacher

Other Technology Affiliates

Ryan McGee, Technology Director, Horace Mann Grade 5-6
School Board Approval and Support:

RE: Approval and Support for the Barnstable Public Schools Strategic Technology Action Plan:

The Barnstable Public School Committee has reviewed the district’s technology plan and is in full accord and agreement with the contents and direction of the plan. It is our belief that student learning and effective teaching are enhanced with the use of computer technologies.

Our commitment in this plan is to provide equitable technology access for all students, to develop lifelong learners, integrate technology into the curriculum and transform education to improve student outcomes, and the build a culture of continuous learning for students and staff.

The adoption of the National Technology Standards for All Teachers and Students, and those technology standards derived from the National Educational Technology Standards and adopted and supported by the Massachusetts Recommended Pre-K – 12 Technology Standards, represent a key element in the progress towards high student achievement.

This technology plan has been approved and adopted on _______________________.

R. Patrick Murphy, School Committee Chairman: ______________________________

Dr. Patricia Grenier, Superintendent: ________________________________________

District Demographics
Demographics for Barnstable Public Schools are updated yearly and posted by the Massachusetts Department of Education on their website.

Core Values:

Barnstable Public Schools Mission Statement:

*The mission of Barnstable Public Schools is to develop life long learners and productive/contributing citizens.*

Barnstable Public Schools Vision Statement: Created by the Barnstable Leadership Team August 2006

Our VISION of an ideal school includes the following elements:

A happy, safe, welcoming environment that is marked by acceptance of students, staff, parents, and the community and a respect for diversity. In our school, staff and children feel valued, trusted, and happy. The climate will be supported by open-mindedness, positive behavioral support, and flexibility. We will complement this vision with both a sense of humor and an atmosphere of enjoyment.
Student learning will be the top priority and will be characterized by high expectations and active involvement and engagement. Learning experiences will be inclusive in nature, personalized and will embrace the needs of all learners. Students will have a clear understanding of the goals, will feel connected to their work, and possess a sense of pride in their work. Extensions to learning, creative opportunities, and graduation standards connected to necessary life skills will be the hallmark of the learning.

Faculty and staff will be focused on learning, committed to the profession, dedicated, and highly qualified. Teachers shall serve as facilitators of learning, act in a collegial and respectful manner, and function as empowered and purposeful educators.

Parents and the community at large will feel welcomed in our school and will partner with us in advancing education. Our school will operate as a community within the community and will benefit from active parent and community involvement. Shared values and effective communication will guide our work.

Finally, our school will reflect the support of the community’s resources through a well-maintained, clean, and visually appealing building. Each staff member will have designated productive work spaces with appropriate materials to enhance their teaching including current technology and curricula and students will have access to extended learning opportunities and extra-curricular activities.

Introduction:

At both the national and state levels, technology plans guide the development and implementation of technology use for improving student academic achievement through systemic reform by local school districts. A requirement of the federal government for school districts applying for E-rate and/or federal grants, these plans and the various educational reform acts have been the impetus for the systematic integration of technology into our schools, transforming education from a 19th century factory model to schools of the information age.

The report indicates that the technology that changed the marketplace to a global economy is now transforming the learning and teaching environment within schools. This increasingly competitive global economy, as well as the students themselves, who are “born and comfortable in the age of the Internet,” drives this change. Today’s millennial students are digital natives - technologically savvy, raised with technology, and comfortable incorporating it into their lives.

The full report is available online at:

http://www.ed.gov/technology/netp-2010

Another source of information comes from the National Report of Net Day’s “Speak Up” event. Net Day is a national initiative of the non-profit educational group, Project Tomorrow based in California. Now in its seventh year, Net Day’s “Speak Up” is an annual national research project that collects the voices and views of key stakeholders in education on topics such as educational technology, science, math, and 21st workforce skills.

Over the past seven years the project has collected the viewpoints of over 299,677 K-12 students from all 50 states, as well as 38,642 teachers. In 2009, 232,800 students, 26,312 parents participated in this survey, as well as 1,987 pre-teachers.

The results of the surveys are shared with participating schools and districts so that they can use the data for planning and community discussion. In addition, the findings and data are used by local, state, and national organizations and government agencies to inform new programs and policies.
Districts and national organizations are listening to their primary customers, the students, with a new vigor and intensity. The full report from 2009 is included in the appendices (Appendix C). Here are some interesting pieces of data gleaned from the report:

- Students and teachers want access to up-to-date technology tools at school and the want it to be available when they need it. Their main frustrations result from restrictions to technology use for learning tasks.

- Teachers’ professional use of technology is approaching a comfort level but is not keeping up with the advances in how kids are using technology. Despite conventional wisdom, our data does not show significant differences between how younger teachers and older teachers are approaching their technology use.

- Students are strong believers in the power of technology to enrich their learning experiences. They have ideas about their futures that include using technology tool

HORIZON REPORT

The District Educational Technology Department encourages all stakeholders to read the 2010 Horizon Report co-sponsored by COSN and the New Media Consortium. The PDF can be found at http://cosn.org/Horizon. The key trends area as follows:

<table>
<thead>
<tr>
<th>ONE YEAR OR LESS</th>
<th>TWO TO THREE YEARS</th>
<th>FOUR TO FIVE YEARS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Computing</td>
<td>Game Based Learning</td>
<td>Augmented Reality</td>
</tr>
<tr>
<td>Collaborative environments</td>
<td>Mobiles</td>
<td>Flexible Displays</td>
</tr>
</tbody>
</table>

It is with this inspiration that Barnstable is committed to systemic change and is determined to overcome barriers albeit operational budgeting, capital improvement expenditures or time, using current research to develop and implement a program that transforms student learning.
The model of teaching and learning that will be followed is the TPAK. See below.

Local Technology Plan Guidelines
Comparison to MA recommendations vs. local plan
School years 2010-2013

The district’s strategic technology action plan is its guide for effective technology use to improve student achievement. Massachusetts Department of Education publishes Local Technology Plan Guidelines (School Year 2007-2010) for districts to comply with. Barnstable Public Schools will make every effort to meet the Massachusetts Local Technology Plan Guidelines by 2013. This strategic plan is outlined and organized from this document; the major categories are stated here:

Benchmark Standard 1: Commitment to clear vision and mission statement
Benchmark Standard 2: Technology Integration
Benchmark Standard 3: Technology Professional Development
Benchmark Standard 4: Accessibility of Technology
Benchmark Standard 5: Infrastructure for Connectivity
Benchmark Standard 6: Access to the Internet Outside of School Day
Benchmark 1
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 2010-2011.

Barnstable Public Schools Technology Mission Statement

Our mission is to support teaching and learning with technology. The resources to accomplish this mission include technology professional development, current hardware, software and technical support. Our role is to provide these resources for staff to improve student learning.

To ensure that instructional technology will be used to improve student learning and teaching in the Barnstable Public Schools, students will have access to appropriate technology; and the technology skills necessary to function in a global economy.

Staff will have access to appropriate technology; and the skills necessary to enhance teaching and learning with technology, and the technical support necessary to incorporate new technology into classroom instruction to support the Massachusetts Common Core of Learning and Curriculum Frameworks.

In envisioning the future we are committed to the following principals:

- Support the district’s accountability plan
- Ensure that technology resources are equitable distributed amongst students and staff
- Support all learners and access for all using Universal Design; implement district wide software applications
- Insist that adequate professional development is a component of every technology initiative
- Leverage digital content to support the curriculum
- Support formative assessment in the classroom and data driven decisions to improve student outcomes (BCAS and School Brains, and the DESE state data warehouse, Cognos).
- Support and create the BFON, and participate in the OPEN Cape initiative
- Continue to work with the technology staff and continue to develop a team spirit/effort regarding projects
- Support the members of the department in the professional development to develop those critical skills of a high performance team

Barnstable Technology Vision Statement

Technology will be used throughout our schools as we acquire new and exciting ways to meet the needs of all of our students and to enhance student outcomes. We will strive to use the most up-to-date technology tools in order to:

- design learning environments that will reach out to a diverse learning community,
- gauge and monitor our students’ individual levels of achievement, using that information to make important decisions about our programs and our support for student learning,
- model and encourage collaboration between and among us all: teachers, students, parents, administrators and the global community.
In our classrooms, teachers will be confident and knowledgeable about the range of technology tools that can assist them in making effective choices in designing learning experiences. Supported by accessible technology and professional development, teachers will develop and share authentic and engaging learning activities that require students to hone problem-solving skills.

Through this creative and collaborative environment Barnstable Public School teachers will use technology to:

- promote intellectual experimentation,
- provide options that match learning experiences to the individual learner,
- promote the process of trial and error that comes with the development of higher order thinking.

All students, administrators and teachers will be accountable for basic technology skills while continuing to develop their technological literacy.

As 21st century life-long learners, the students of the Barnstable Public Schools will:

- understand the ever-evolving ways in which technology can challenge our personal safety,
- develop literacy skills that require them to identify reliable and credible sources
- use those sources to develop their own distinctive voices,
- demonstrate responsibility for the ethical use of technology,
- engage in the use of technology to promote participation in the global learning environment,
- distinguish and demonstrate the appropriate technological applications.

In all of our schools, classrooms, and offices, we will use technology to enhance interactions and understand that technology will never replace our human need for each other.

BELIEFS

- Technology allows us to better serve the diverse learning needs of our students.
- Skillful use of technology supports the development of process skills such as flexibility, adaptability, critical thinking, problem solving, communication and collaboration which are essential to success in our rapidly changing information age.
- Our schools must prepare students to be lifelong learners who are responsible for their own learning, skilled in accessing and processing information, confident in using technological tools, able to solve complex problems alone or collaboratively, capable of being creative and innovative, and able to communicate locally, nationally, and globally.

Rationale:

To accomplish our vision for increased student learning with the use of technologies, our action plan hopes to accomplish the following:

Development of Life Long Learners:

Assure skillful use of technology to support the development of lifelong learning skills and process skills such as: flexibility, adaptability, critical thinking, problem solving, and collaboration, which are essential to success in our rapidly changing information age.

Integration of Technology into the Classroom

- Expand classroom tools for teaching and learning.
- Provide for the integration of multiple resources for existing and emerging curriculum.
- Enable the learning community to communicate more effectively, access and process information, and work productively.
- Link the classroom with educational resources within the building, community and worldwide.
- Create a collaborative environment for project oriented activities.
- Increases the productivity of students as they work toward attaining learning outcomes.
- Encourage the use of multimedia tools enabling students to become active and experiential learners.
- Enable learning to involve partnerships within the school, among schools, and with other organizations.
Build a Culture of Continuous Learning for Staff

- Develop school-based technology planning and learning.
- Build online learning opportunities.
- Incorporate learning new curriculum (math, writing, science, etc.) with technology applications aligned in a scope and pacing document.
- Facilitate access to collegial support and best practice information from a wide variety of resources.
- Expands the variety of teaching tools to differentiate and support diverse learners.
- Support productive and efficient management of student assessment and portfolio data.
- Increase support for emerging instructional strategies: differentiated, collaborative, and active learning options.
- Enables curriculum, instruction and assessment to be developed and aligned with each other.
- Provides a system that helps students, parents and teachers work together to support educational outcomes.
- Pilots new teaching strategies, technologies, and instructional resources.
- Investigates emerging possibilities for electronic learning resources.

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.

Barnstable Public Schools Technology Advisory Committee:

See Contact Information for individual members. Technology Committee members meet twice a year to establish guidelines and priorities for district implementation. At any time sub committee members may be called to order on a voluntary basis for guidance and support. The next slated meeting will be held in the fall of 2010 to review the new STAR chart.

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.

The Barnstable technology department previews, evaluates and recommends new technology resources that are purchased or implemented by the district.

Daily Operations/ Projects to be identified

How the work gets done:
The official tech team--Kurt, Alan, Andrew, Beth, Dee Dee, Kim, and Bethann meet once a week and review our project board; this project board is for the current year. Our project board is separated into the following categories: R& D, Hardware, Software, Infrastructure, Data Collection, Professional Development, Website, and Administrative. As a team, we discuss and evaluate the needs of the district and prioritize work orders. Any large project brings us all together to work out the objectives and assign tasks.

There are 5 technology assistants, working under the Director’s certification although they are under the direct supervision of the principal and are in the principal's budget.

Evaluation in Achieving Our Technology Goals

Overall:

The latest version of the Massachusetts STaR Chart (School Technology and Readiness Chart) was issued in July 2010. It describes what technology looks like in Teaching and Learning, Educator Preparation and Development, Administration and Support Services, and Infrastructure for Technology at four progressively
more sophisticated levels. It describes the progress in terms of Early Tech, Developing Tech, Proficient Tech, and Advanced Tech in the following areas under each major category:

**Teaching and Learning**
- Impact of Technology on Teacher Role
- Patterns of Teacher Use
- Design of Instructional Setting
- Curriculum Areas
- Patterns of Student Use*

**Educator Preparation and Development**
- Content of Training
- Capabilities of Educators*
- Leadership and Capabilities of Building Principals and District Administrators
- Models of Professional Development
- Levels of Understanding
- Universal Access: Integration of Universal Design and Assistive Technology

**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)*

**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
- Security

The STaR Chart is a component of the overall technology planning and evaluation process. The document, Local Technology Plan Guidelines developed by the Department, provides recommended benchmarks for districts to meet by the end of the school year 2010-2011. Many of the benchmarks are derived from the Proficient Tech level in the STaR Chart. A local technology plan must be approved by ESE in order for the district to receive E-rate and Title IID funds.

**Create a Commonwealth-Wide STaR Chart Status**
ETAC has created a STaR Chart site for the public to continue provide feedback on the STaR Chart, the District Technology Committee will be charged

In the fall of 2010, the District Technology Committee will be charged to review this new document and evaluate the district under these guiding documents. In addition, the technology committee members in ‘benchmark’ teams to identify the immediate, short and long term priorities reviewed against the MA DESE recommended technology benchmarks.

**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.**

**CIPA**
Barnstable Public Schools uses Sonic Wall’s content filter, which blocks categories, deemed inappropriate by the superintendent or his/her designee.

**CIPA Compliance**
Barnstable Public Schools are compliant with the Children’s Internet Protection Act (CIPA).
100% of the schools in the district have an Internet filter that is in compliance with the Children’s Internet Protection Act (CIPA)
Cyber-bulling:
The Commonwealth of Massachusetts has passed the Act Relative to Bullying in Schools: The Barnstable Public Schools ANTI Bullying committee is charged with following the guidelines issued by the state of Massachusetts, whereas the plan is due in December of 2010.

As part of the anti-bullying program offered across the district, there is specific reference to cyber-bulling.

“The definition of cyber-bullying is as follows: Cyber-bullying, bullying through the use of technology or any electronic communication which shall include but shall not be limited to any transfer of signs, signals, writing, images, sounds, data or intelligence of any nature transmitted in whole or in part by a wire, radio, electromagnetic, phone electronic or photo optical system, including, but not limited to, electronic mail internet communications, instant messages or facsimile communications. Cyber-bullying shall also include (i) the creation of a web page or blog in which the creator assumes the identity of another person or (ii) the knowing impersonation of another person as the author of posted content or messages, if the creation or impersonation creates any of the condition enumerated in clauses (i) to (v), inclusive of the definition of bullying. Cyber bullying shall also include the distribution by electronic means of a communication to more than one person or the posting of material on an electronic medium that may be accessed by one or more persons, if the distribution or posting creates any of the conditions enumerated in clauses (i) to (v), inclusive of the definition of bullying.”

Internet Safety/Technology Use Policy and Acceptable Use Policy for Students

Net Smartz curriculum and materials are available for teachers through the MassOne portal. Elementary Technology Assistants provide safety instruction during technology classes. It is up to the discretion of each individual teacher to provide guidance in regards to online safety.

100% of schools in the district include the acceptable use policy on the school website, and are available in the student handbook.

Internet Safety/Technology Use Policy and Acceptable Use Policy for Staff

BPS does have a staff AUP and all members using a computer and/or email must sign the original document.

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).

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

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.

For the last three years, at every budget process, additional monies are requested. At the present time, the district is unable to fund the operating budget with the recommended levels of funding. The technology operating budget has been level funded for the past 8 years. For example, there is a 60,000 hardware line for computer hardware purchases; at best, this means that only 100 computers can be bought every year for a staff of 600 and 4500 students. This line is grossly under-funded. Historically, the district has counted on grant monies and building renovations to purchase hardware.
The FY09 budget injected $350,000 of technology across the district, as additional funding for the operating budget. BPS was able to fund laptops for the Intermediate school and make a significant increase in the number of Interactive White Boards across the district.

The FY 10 budget injected $400,000 of technology across the district, as additional funding for the operating budget. BPS was able to fund laptops for the elementary schools and purchase additional interactive white boards.

FY 11 has been level funded with an increase in staff. We have created a new job position of District Data Systems Analyst in consideration of the demand of more and more data.

As part of discussions taking place across the district with various committees, priority purchases have been determined. The table below outlines the infrastructure investment needed to support the needs for technology infusion.

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<thead>
<tr>
<th>Account</th>
<th>2010</th>
<th>2011</th>
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<tbody>
<tr>
<td>Travel</td>
<td>$4,000.00</td>
<td>$4,000.00</td>
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<tr>
<td>Repairs</td>
<td>$43,560.00</td>
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<tr>
<td>Maintenance</td>
<td>$67,465.00</td>
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<tr>
<td>Data Lines</td>
<td>$14,220.00</td>
<td>$14,220.00</td>
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<tr>
<td>Networking/Telecommunications</td>
<td>$18,030.00</td>
<td>$18,030.00</td>
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<td>Hardware</td>
<td>$61,800.00</td>
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<tr>
<td>Supplies</td>
<td>$3,560.00</td>
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<tr>
<td>Software</td>
<td>$9,437.00</td>
<td>$9,437.00</td>
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<tr>
<td>Cellular Service</td>
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<tr>
<td>Professional Development</td>
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<tr>
<td>Salary-Stipends</td>
<td>$17,000.00</td>
<td>$17,000.00</td>
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</table>
Priority Purchases for Barnstable Public Schools

<table>
<thead>
<tr>
<th>Infrastructure:</th>
<th>Details</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Cape</td>
<td>Fiber to be run within 18 months Full project must be completed in 3 years</td>
<td>All Cape Towns Co-Location center for regional projects</td>
</tr>
<tr>
<td>BFON</td>
<td>Reviewing runs to find overlaps Centerville is an issue</td>
<td>All along with 58 municipal buildings</td>
</tr>
<tr>
<td>Switches</td>
<td>6 elementary, BIS &amp; BHS</td>
<td>TOB is supposed to pick up this cost</td>
</tr>
<tr>
<td>RCN &amp; Bandwidth</td>
<td>200 mb burst 400 Interim solution Business class at elems (10,800.00)</td>
<td>TBD; waiting for walkthrough with RCN</td>
</tr>
<tr>
<td>Wireless</td>
<td>$600,000</td>
<td>Elementary 15,000 (5) schools BIS 100,000 BHS 200,000</td>
</tr>
<tr>
<td>Hardware</td>
<td>See sheet revolving 100,000 - 200,000</td>
<td>Q sheet identifies revolving purchases. These purchases are from one time injections and NOT funded through the yearly operating budget.</td>
</tr>
<tr>
<td>IWB</td>
<td>5,000 x 150 750,000</td>
<td>BWB BC HYW Cville WV BIS BHS</td>
</tr>
<tr>
<td>Laptop carts</td>
<td>400,000</td>
<td>BWB BC HYW Cville WV BIS BHS</td>
</tr>
</tbody>
</table>

Barnstable uses federal, state and local funding for its technology program. We have actively pursued available grant funding including federal ERATE funds, state entitlement grants (160) which amounts to approximately $10,000 and the Enhancing Education through Technology (EETT) 170 competitive grant for the last 4 years with a focus on utilizing the MA DESE state data warehouse, Cognos. BPS Technology Committee has voiced concerns about the eradication of the EETT NCLB funding and moving those monies to the I3 initiative or Race to the Top funding sources.

**ERATE:** Currently, we apply for reimbursement for telecommunications (POTS & cell phones), and Internet services. All ERATE requests are funded first by operational budget monies. At all times we declare reimbursement from the Form 472 Bear REIMBURSEMENT form. That alone indicates that we pay for services first, and then ask for reimbursement.
F. Evaluation

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

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.

Barnstable is committed to diverse and varied resources available to ALL SCHOLS AND STUDENTS. We have carefully evaluated and have chosen wisely the tools that will benefit all students. Described below are district wide resources available to all schools and students. Most of these resources have administrative tools embedded in them, and monthly reports can be generated and distributed to the schools. With support for the site administrators, we can encourage staff to take advantage of such products.

- **Gradequick and Edline**
  
  - High school staff has had several years of experience using Grade Quick – a program that interfaces with the district’s database. Progress reports, reports on missing work, attendance reports and much more are available for dissemination. In addition, Gradequick has a lesson plan feature that would standardize the form and function of all staff at BHS. The lesson plans would be able to be linked directly with MA Recommended State Frameworks. The technology staff will support the teachers in creating their classroom web pages to fully utilize the power of Edline. Teachers can post calendar events, homework assignments, upload worksheets and provide links for their students. Not only will improved communication support student learning, the use of technology in doing so will, in turn, promote and improve technology skills for everyone. Gradequick for web is available at the middle school, so teachers can access their grades, via a secure login, from anywhere in the world. This application is available to the high school staff, but has not been installed.

- **Atomic Learning**
  
  - A subscription to Atomic Learning has been purchased for support for the high school and intermediate teachers. The technology department would like to extend that subscription district wide for all its staff members. Atomic Learning provides technology support “just in time” for teachers with new laptops and new online applications, as well as effective lessons for students using technology for classroom work.

- **Discovery Streaming**
  
  - United Streaming has over 40,000 videos aligned with the state frameworks available in full-length features and divided into 45,000 clips to integrate into a presentation. United Streaming also has support materials for teachers and allows teachers to develop online quizzes. Student accounts.

- **Net Trekker, DI**
  
  - This is a web based resource; a search engine that is aligned with MA state standards and every site has been juried by an educator. The district recommends this search engine over any other. It is much safer to use these resources on these pages than to trust a Google search. It also has numerous other resources for differentiated instruction, including support for MCAS, English Language Learners, Special Needs and Gateway. Each web page each is assigned a reading level and it also has an universally designed feature that reads web pages to those who need assistance.

- **Read, Write, Gold**
  
  - This universally designed application is available for both the high school and the middle school. It seamlessly is installed “behind” Microsoft Office and comes with a slew of assistive technologies that can accommodate anyone in need of support for writing, research, and reading.
• **BPS MOODLE with Remote Learner**

  ➢ We are supporting online learning through extension of the four walls of the physical classrooms by having teachers create coursework in Moodle. In fact, all the content of our professional development provided by the district technology is written in Moodle. Districts across Cape Cod have formed a collaborative and have been awarded a $300,000 online learning.

• **Virtual High School**

  ➢ In the 2010 school year, we will bring back 20 seats purchased through the Plymouth Public Schools and create an application and selection process that will ensure success with our students.

• **District Staff Training Lab**

  ➢ A district learning lab for teachers and staff will continue to be supported. Teachers and other staff members with technology questions may pop in unannounced to receive support or attend mini labs and workshops for various software applications throughout the year. This HELP DESK will be manned by our HELP DESK students. The technology staff will provide workshops for basic skills in Office suite applications, and other applications such as Rediker, Grade Quick, and Edline. Additional trainings using web 2.0 applications are also offered.

• **Google Apps**

  Barnstable Public Schools has become a Google School. The domains mybps.me and mybps.us have been purchased for both teachers and students.

• **Web 2.0 tools are too numerous to discuss in this document. BPS technology has categorized web 2.0 tools in these areas:**

<table>
<thead>
<tr>
<th>RESEARCH</th>
<th>CREATE</th>
<th>PUBLISH</th>
<th>DISCUSS</th>
<th>MANAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wikipedia</td>
<td>Open Office</td>
<td>Blog (private)</td>
<td>Moodle</td>
<td>P drives</td>
</tr>
<tr>
<td>Yo link</td>
<td>Google Docs</td>
<td>Media Server</td>
<td>Wikis &amp; Blogs</td>
<td>Folders</td>
</tr>
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<td>Diigo</td>
<td>Photostory</td>
<td>Channel 22</td>
<td>Google Docs</td>
<td>Agendas</td>
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<td>Sounds abound</td>
<td>Animationish</td>
<td>Wikis</td>
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<td>Blogs</td>
<td>I Movie</td>
<td>Google pages</td>
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<td>Net Trekker</td>
<td></td>
<td>MovieMaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Atomic Learning</td>
<td></td>
<td>Vimeo</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Benchmark 2
TECHNOLOGY INTEGRATION AND LITERACY

A. Technology Integration

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

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 Standards).

Barnstable strives to adhere to the National Educational Technology Standards (NETS) for Teachers. The International Society for Technology in Education (ISTE) has created a document entitled, NETS for Teachers (NETS-T), which focuses on teacher technology skills where it defines 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.

Specifically to this district, it will be a goal of the technology department in conjunction with building principals to distribute the document and for teachers and administrators to familiarize themselves with the guidelines of this document and through the TSAT, determine which areas need attention and improvement in regards to their skill levels.

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.

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

2 The Massachusetts Recommended K-12 Instructional Technology Standards are available on the Department’s web site (http://www.doe.mass.edu/edtech/standards.html).
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.

A survey of staff indicate the percentage of staff who use technology for professional activities such a lesson planning, administrative tasks, communication and collaboration.
- 92% of staff use technology for professional activities nearly every day.
- 6% of staff use technology for professional activities about once a week.
- 2% of staff use technology for professional activities about once a month.
A survey of staff indicate the percentage of staff who use instructional technology with students for activities such as research, multimedia, simulations, data interpretations, communications and collaboration.

- 56% of staff use technology for instruction nearly every day.
- 30% of staff use technology for instruction about once a week.
- 5% of staff use technology for instruction about once a month.
- 9% of staff rarely or never use instruction for instruction.

B. Technology Literacy

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

The National Educational Technology Standards for Students is designed to provide teachers, technology planners, teacher preparation institutions, and educational decision-makers with frameworks and standards to guide them in establishing enriched learning environments supported by technology.

At the national level, the technology foundation standards for students are divided into six broad categories. Standards within each category are to be introduced, reinforced, and mastered by students.

1. Basic operations and concepts
   - Students demonstrate a sound understanding of the nature and operation of technology systems.
   - Students are proficient in the use of technology.

2. Social, ethical, and human issues
   - Students understand the ethical, cultural, and societal issues related to technology.
   - Students practice responsible use of technology systems, information, and software.
   - Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

3. Technology productivity tools
   - Students use technology tools to enhance learning, increase productivity, and promote creativity.
   - Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

4. Technology communications tools
   - Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.
   - Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

5. Technology research tools
   - Students use technology to locate, evaluate, and collect information from a variety of sources.
   - Students use technology tools to process data and report results.
   - Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.
6. Technology problem-solving and decision-making tools

- Students use technology resources for solving problems and making informed decisions.
- Students employ technology in the development of strategies for solving problems in the real world.

In January of 2008 the Massachusetts Department of Education adopted technology standards, once again adopted from and aligned with the national standards. They have collapsed the above six NETS standards into three broad categories:

**Standard 1. Basic Operations and Productivity Tools**

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

This includes proficiency in basic productivity tools such as word processing, spreadsheet, database, electronic research, e-mail, and applications for presentations and graphics. It also includes conceptual understandings of the nature and operation of technology systems.

**Standard 2. Ethics, Society, and Safety**

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

This relates to the areas of social, ethical, and human issues. It encompasses positive attitudes toward the uses of technology and responsible use of information. In this standard, we want to ensure that students understand how to protect their personal identity and information on the Internet and the general rules for Internet safe practices. We also want to help students develop an understanding of “avatar” presence on the Internet:

- What does a digital identity mean and how will a student carry that through life
- Transacting with people, not programs
- Email and instant messaging must be treated similarly.

Last but not least, we want to make sure that students understand the Massachusetts law for computer crimes.

**Standard 3. Research, Problem Solving, and Communications**

*Demonstrate an ability to use technology for research, problem solving, and communication.*

This standard ensures students will learn to apply a wide range of technology tools to their learning and everyday life:

*Critical Thinking and Information Processing with Technology*

- Help students understand how to “process” information, that is, engage in computational thinking
- Give students sensitivity to the evolution of technology and how those changes affect thinking processes
- Help students understand different ways of thinking through computer programming -- drag & drop, Alice, Python.
- Provide students a way to develop competencies (using technology) for project management, analysis and collaboration.
• Provide students a way to differentiate the “right” tool for a task whether is collecting or presentation information.

Technology-based Communications

• Help students understand the implications of different forms of technology-based communications -- how to present proper tone, tenor

• Help students develop appropriate skills for technology-based communication e.g. telephone conferencing skills, such as methods for engagement, feedback, understanding while using video, phone, IM, etc.

Application of Technology

• Provide students with an understanding and appreciation for how technology is used in different careers

• Give students a general sensitivity to technology that is available, even if not used in their school or their home, ex. PDAs, Blackberry, etc.

• Provide students with an understanding of data/information processing and management, including data banks and data warehousing.

MA DESE Overview of Grade Levels and Grade Spans for Technology Skills for Students.

The specific technology skills are listed for each grade level. The skills are also grouped under four grade spans:

• Kindergarten – Grade 2
• Grades 3 – 5
• Grades 6 – 8
• Grades 9 – 12

We start with standards for Kindergarteners for this publication because Massachusetts has a separate agency, the Department of Early Education and Care that oversees the interest of the children in pre-Kindergarten.

Currently young children are immersed in a wide variety of technologies; as a result, we feel it is important to identify the technology standards for each grade level. We have also grouped the skills in grade span levels based on the developmental readiness of the students.

Kindergarten – Grade 2

Although technology opens up exciting avenues to learning, computers should complement rather than replace successful methods that teachers use to help students develop basic skills and understanding. The mathematics framework, for example, stresses the importance of understanding basic arithmetical operations in elementary school. The Massachusetts Department of Education encourages the use of a wide range of tools, both traditional and technological, to help students gain those understandings.

By the same token, as students learn the skills of electronic research, they should still know how to find a book in the library. As students become more fluent on the computer keyboard, they need to continue to develop legible handwriting. Throughout their school years, students will grow to regard technology as one of the many tools that can be used to help them solve problems and improve productivity. However, in the primary grades, technology should not replace the manipulatives, pencil-and-paper, and other manual methods through which children acquire basic skills.

Grades 3-5

By the end of fifth grade, all students should have had the opportunity to become familiar with the tools they will be expected to use with proficiency later on. Through this exposure, they will have gained a positive view of computers as tools for learning. For example, electronic sources such as multimedia
encyclopedia or teacher- previewed Web sites can be used to gather information for a report. Additionally, there are many developmentally appropriate applications for young 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.

**Grades 6 – 8**

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

Students should understand legal, ethical, and safety issues concerning the use of e-mail and the Internet. Students should understand how to protect their personal identification on the Internet and be knowledgeable about general rules for Internet safe practices. In addition, they should develop an understanding of “avatar” presence on the Internet. By the end of eighth grade students will have had ample opportunity to use technology tools for research, problem solving, and communication across all curriculum areas. They will know how to communicate their learning with peers and other audiences through multimedia presentations, desktop-published reports, and other electronic media. They will have learned effective strategies for locating and validating information on the Internet. Rather than relying on one Web site for information, students will understand why it is important to use multiple sites for their research.

**Grades 9 - 12**

By the time they graduate, students should demonstrate more advanced levels of proficiency in their use of technology. Throughout high school, as students gain more experience with hardware and applications, they will learn to apply more sophisticated file management skills. They will learn, for example, how to convert data from one file format to another, link data between applications, and resolve error messages.

As needed, high school students will continue to develop and demonstrate the skills listed for the previous grade span. With more opportunity to apply technology in their course work, students will become more adept in using these tools. As the curriculum demands more complicated learning tasks, students will discover more advanced capabilities in tools such as database and spreadsheet applications. For example, students might use a spreadsheet for data analysis, use the data to create charts, and then link those charts to a report they have created using a word-processing application.

During high school students also should have the opportunity to use more specialized technology tools that help them with problem solving. These might include simulation software, geographic information systems, computer-aided design, or any of a wide variety of content-specific tools. They should have the opportunity to learn how to write code in a popular programming language. By the completion of high school, students will have developed an appreciation for the capabilities of technology resources; as well as an understanding of how these tools can be used for lifelong learning. In addition, they will be knowledgeable about the role technology plays in various fields of work, enabling them to better plan for their careers in the 21st century.

8th grade students’ technology skills were assessed through a technology skills assessment, staff and student surveys to see if students successfully mastered the Massachusetts technology literacy standard and expectations.

- 5% of grade 8 students have mastered all of the standards
- 75% of grade 8 students have mastered half or more them half of the standards.
- 20% of grade 8 students have mastered less than half of the 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)\(^3\).

C. Staffing

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

   Bethann Orr, Director of Educational Technology has been the director for over seven years.

2. **The district provides one FTE instructional technology teacher per 60-120 instructional staff.**

   We are grossly underfunded in this area.

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

   BPS is currently undergoing an evaluation of this position, with a creation of new job responsibilities.

**IT Staff:**

Staffing is seriously understaffed and needs to be addressed going forward in order to properly serve the needs of a district this size.

District Educational Technology Department Members:

Bethann Orr, Director of Educational Technology  
Kurt Turnbull, District Network Coordinator  
BethKnittle, K-12 Technology Integration Specialist  
Alan Brown, District Technology Specialist  
Andrew Bunker, District Technology Specialist  
Kim Rumberger, Common Assessment Facilitator  
DeeDee Beckwith, Technology Facilitator

**Technology Assistants, Barnstable Public Schools:**

Maura Bussiere, Hyannis West Elementary School  
Betsy Miller, Barnstable West Barnstable Elementary School  
Candy Johansen, Barnstable Community Horace Mann Public Charter School  
Nancy Nicolas, Centerville Elementary School  
Laura Rosenfield, West Villages Elementary School

**B2B 22 Educational Television Station**

Dustin Devlin, Educational TV Coordinator  
Noreen Jones, Interim Assistant Coordinator  
Brandy Jackson, Broadcasting Teacher

Other Technology Affiliates

Ryan McGee, Technology Director, Horace Mann Grade 5-6

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\(^3\) The Technology Self-Assessment Tool is available as an interactive tool on MassONE, as well as a printable PDF checklist (http://www.doe.mass.edu/edtech/standards/sa_tool.html).
Benchmark 3

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 development⁴ that includes technology skills and the integration of technology into instruction.

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

C. Professional development planning includes an assessment of district and teachers' needs. The assessment is based on the competencies listed in the Massachusetts Technology Self-Assessment Tool.⁵

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.⁶

PROFESSIONAL DEVELOPMENT STRATEGIES and District Support of Technology

Program Summary: To promote quality education and creative growth, the Barnstable School System has developed an in-house, ongoing technology professional development plan. The primary objective of the plan is to provide educators with the technology skills necessary to begin the process of integrating technology into the curriculum to meet the needs of the 'net' generation of students. The technology department has a 13 workstation district training lab manned by technology staff. BPS has created a 20 hour professional development program that focuses on web 2.0 tools, and also has been approved to offer a 40-hour 3 credit graduate course for technology. This plan has been approved by the Barnstable Public Schools’ Professional Development Board.

Barnstable Public Schools Technology professional development strategies for improving learning and teaching with technology are a part of the district and school-based strategic plans and curriculum initiatives.

During the 2008-2009 school year the District Ed Tech Team provided 148hrs of professional development to 379 participants for a total of 56,092 participant hours. In 2009-2010 we provided 126 hrs to 558 participants for a total of 70,308 participant hours.

BUILDING A CULTURE OF CONTINUOUS STAFF LEARNING

School-based Support Strategies

⁴ High quality professional development is described in the Massachusetts 2001 State Plan for Professional Development (http://www.doe.mass.edu/pd/stateplan/).

⁵ Details are available on the Department’s web site (http://www.doe.mass.edu/edtech/standards/sa_tool.html).

⁶ 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). The Technology Self-Assessment Tool (TSAT) for teachers is also available as a printable document and as an interactive tool on MassONE (http://www.doe.mass.edu/edtech/standards/sa_tool.html).
The district technology team works throughout the year to coordinate activities and staff development in all schools. Schools would be provided a copy of the strategic technology plan and approve the action plan as their own.

- All teachers should be familiar with the national technology standards. It will be an ongoing effort to include the NETS teacher standards in ongoing district initiatives aimed at improving teaching and ongoing professional development.
- All teachers will take the TSAT on a yearly basis to review needs of the district.
- All administrators will take the Administrators TSAT on a yearly basis to review needs of the district.
- Staff will identify in-school “experts” or “lead learners” who assist colleagues with support of existing and new programs.
- Build a network of resident staff technology support to serve on curriculum committees to write curriculum, select materials, and look for ways to integrate technologies into curriculum areas that support the K-12 technology skills for students.
- Teachers and staff members regularly attend (AND PRESSENT at) technology conferences at the state and national level. Administrators support the attendance to Massachusetts Computer Using Educators in October in Foxboro MA (and other technology conferences), and the International Society for Technology Education.
- The district supports online learning opportunities through MADOE, collaboratives, colleges and universities.
- The district website becomes a rich resource for student and staff learners. Students and staff are both consumers and creators of curriculum resources online.

BPS offers an ANNUAL HOMEGROWN TECHNOLOGY WORKSHOP every February, run by teachers for teachers.

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 computer on an annual basis. (The goal is to have a one-to-one, high-capacity, Internet-connected computer ratio.)

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

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.

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

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

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

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7 The Department defines a high-capacity computer as a computer that has at least 256 RAM and either a Pentium 4 processor or a Macintosh G4 processor (or equivalent). The Department also refers to these as Type A computers.
The table below reflects the current and projected need of student computers.

<table>
<thead>
<tr>
<th></th>
<th>Current ratio of Students to Computers</th>
<th>Total Number of Computers</th>
<th>Estimated Enrollment FY 10</th>
<th>Needs</th>
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<tbody>
<tr>
<td></td>
<td>A</td>
<td>A/B</td>
<td>A/B/C</td>
<td></td>
</tr>
<tr>
<td>District</td>
<td>4.30</td>
<td>3.19</td>
<td>2.81</td>
<td>1411</td>
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<tr>
<td>BWB</td>
<td>7.54</td>
<td>4.98</td>
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<td>Centerville</td>
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<td>Hyannis West</td>
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<td>West Villages</td>
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<td>HM-Gr4/5</td>
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<td>BIS</td>
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<tr>
<td>BHS</td>
<td>2.8</td>
<td>2.6</td>
<td>2.6</td>
<td>656</td>
</tr>
</tbody>
</table>

This table below reflects the current and projected need of staff computers.

Q: *When will the district technology department stop asking for technology funding for hardware purchases?*
A: *The answer is never because old hardware must be replaced.*

The district technology department requests $200,000 for hardware purchases for Budget Year 2011-2012. To date, this refresh rate has been funded ONLY by special funding requests; the refresh cycle line has not been added to the operational budget.

The $200,000 requested for FY 12 will fund the Barnstable High School staff laptops. Once this is accomplished, we can consider the majority of computers across the district refreshed. This is great news. With no rest for the weary, read on.

It is our goal to fund a refresh cycle of computer hardware moving in and out of the district so that no computer is more than 5-6 years old. This has not been achieved yet. We are still considering a leasing arrangement that might make the flow of computers more stable across the district.

<table>
<thead>
<tr>
<th>Department Funded</th>
<th>Budget year/School Year of Replacement Cycle II</th>
<th>Age of Computer Replaced</th>
<th>Description</th>
<th>Cost</th>
<th>Completed</th>
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</thead>
<tbody>
<tr>
<td>Elementary teachers/staff laptop</td>
<td>2009-2010</td>
<td>5 – 6 years</td>
<td>165</td>
<td>125,000</td>
<td>2010</td>
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<tr>
<td></td>
<td>2009-2010</td>
<td>5-6 years</td>
<td>35</td>
<td>35,000</td>
<td>2009</td>
</tr>
<tr>
<td>-------------------------</td>
<td>-----------------</td>
<td>-----------</td>
<td>----</td>
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<tr>
<td>BHS library refresh</td>
<td>2009-2010</td>
<td>7 years</td>
<td>10</td>
<td>10,000</td>
<td>2010</td>
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<tr>
<td>Admin staff/across</td>
<td>2011-2012</td>
<td>5-7 years</td>
<td>20</td>
<td>20,000</td>
<td>2010</td>
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<tr>
<td>Central office</td>
<td>2011-2012</td>
<td>5 years</td>
<td>200</td>
<td>200,000</td>
<td>2010</td>
</tr>
<tr>
<td>BHS staff</td>
<td>2011-2012</td>
<td>5 years</td>
<td>200</td>
<td>200,000</td>
<td></td>
</tr>
<tr>
<td><strong>Funds Needed</strong></td>
<td>2012</td>
<td></td>
<td></td>
<td>200,000</td>
<td>PRIORITY</td>
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<td>BHS students</td>
<td>2012-2013</td>
<td>5 years</td>
<td>Labs/200</td>
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</tr>
<tr>
<td><strong>Funds Needed</strong></td>
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<td></td>
<td></td>
<td>200,000</td>
<td></td>
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<tr>
<td>BIS staff</td>
<td>2013-2014</td>
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<td>100</td>
<td>100,000</td>
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<tr>
<td>Elementary labs</td>
<td>2013-2014</td>
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<td>75</td>
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<td></td>
<td></td>
<td>175,000</td>
<td></td>
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<tr>
<td>BMS students</td>
<td>2014-2015</td>
<td>6 years</td>
<td>Would like to replace these at an earlier date</td>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td><strong>Funds Needed</strong></td>
<td>2015</td>
<td></td>
<td></td>
<td>100,000</td>
<td></td>
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NOTE: Please note that this is a very conservative request. This request does not include ANY classroom computers. At the elementary level, approximately 500 computers would have to be purchased, 80 computers would have to be purchased at the middle school. Also, printers are aging and will have to be replaced soon. It should also be noted that there has been a significant rise in requests for interactive white board technology which will not be addressed from this budget item. We need to identify a source of funding for that technology.

B. Internet Access

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

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.

C. Networking (LAN/WAN)

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

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 works with community groups to ensure that students and staff have access to the Internet outside of the school day.
2. The district web site includes an up-to-date list of places where students and staff can access the Internet after school hours.

E. Staffing

1. The district provides a network administrator.

2. 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.

3. The district provides at least one FTE person to support 200 computers. Technical support can be provided by dedicated staff or contracted services.

Kurt Turbull, is the network administrator for Barnstable Public Schools. BPS runs a NOVELL network and we continuously strive to improve the network capabilities.

Technical Specialists: There are two technology specialists that address hardware and network issues and address hardware problems.

Technical Support:
Timely In-Classroom Technical Support

THE EASIEST PART OF TECHNOLOGY INFUSION IS BUYING THE TECHNOLOGY. The challenge we face, once we get the technology in to the teachers’ hands is to provide them with the support that is needed to be sure that tool is utilized to the fullest.

Technical support is provided in several timely ways:
- Telephone support/Help Desk
- Online FAQ’s or Moodle
- E-mail support
- District-based tech support
- Building-based tech support

The integration of curriculum and technology can only be successful when the end-user has an understanding of departmental software and dependable hardware on which to run it. To that end the Barnstable Public Schools System will offer a better educational technology web page for staff online support. The more a teacher knows about the network and its systems, the easier it is to support them in their efforts to integrate technology into the classroom.

Staff is initially advised to check for obvious faults, such as unplugged power cords, loose network cables, etc. They are also directed to reboot their computer, which will refresh its settings and reestablish contact with network servers. In addition to hardware & software support, staff can request help with specific projects and programs.

Average turnaround time for technical support
2009-2010: 3 working days
2010-2011: tbd
2011-2012: tbd
2012-2013: tbd

The district provides Internet connectivity to:
- 100% of classrooms PreK-12 and offices are connected to the Internet
- 100% of classrooms and offices are connected to the LAN.
- 100% of instructional computers are connected to the Internet.

The district provides bandwidth of at least 10/100 MB to each classroom to avoid most delays. The district provides a minimum 10/100 MB Cat 5 switched network.
Networking (LAN/WAN)

Barnstable I-NET/BFON Information Q & A created by Dan Wood, IT Director for the Town of Barnstable.

What does I-NET mean?

I-NET stands for Institutional Network. An Institutional Network is a closed, private network. The only traffic on the INET is what is generated or received by the participants of the network. There is no competition for bandwidth from anyone that is not a participant of the I-NET. An analogy would be if you could build your own road system and only the participants of the road project could use the roads. You certainly would be able to get places quicker and more efficiently.

Because of confusion in the past with the term INET we are now referring to this project as BFON (Barnstable Fiber Optic Network).

So what is BFON (formally called the I-NET)?

BFON will be approximately 65 miles of Fiber Optic cabling connecting all Municipal, School, Fire, Library, Water and County buildings within the town of Barnstable. A total of 58 sites (see site list at the end of this document). BFON will have a long life span and serve the participants for decades to come.

What will BFON do?

The immediate benefit, BFON will provide reliable, high speed networking connectivity between all buildings. Many sites currently use expensive slow leased lines or other slow methods for interconnections. BFON will provide for better connections at 100 times the speed or better. See “What are the potential uses for BFON in the future?” below.

How often will it need to be upgraded?

BFON will be a 100% Fiber Optic Cable network. Fiber Optic cable uses light to transmit and receive data. Nothing travels faster than the speed of light. It is the capability of equipment at each end of the fiber that decodes the light into things our computers and networks understand that determines the speed. In the technology world the speeds we are talking about are 100 megabit and 1 gigabit. If you are familiar with one of the most commonly used lease lines, the T1, which has a speed of 1.5 megabits you can see that 100 megabits (the minimum speed of BFON) is momentously faster. As technology progresses all that will be required to upgrade the speed would be to upgrade the devices on each end that decode the light. The fiber optic cable that makes up BFON will not need to be upgraded to handle the increase in speeds. Hanging the fiber optic cables on the poles, throughout the town, is the hardest (and most costly) part of the project but will only have to be done once. The fiber will serve the town for decades.

What are the potential uses for BFON in the future?

This is the hardest question to answer because the capacity of the fiber allows for so many different things to be done. Many we haven’t even thought of yet. Here is a sampling of potential uses:

✓ Consolidation of servers (email, data, application)
✓ More reliable and faster data backups
✓ Consolidation of phone services (potential for large cost savings)
✓ Change in phone methodologies, VOIP allowing better integration and management
✓ Live broadcasts from any site on the Town’s CH18 and School’s CH22
✓ Providing high speed backhauls for police cruisers with wireless laptops
✓ Distant learning and training
✓ Centralized electronic monitoring of environmentals, equipment and machinery
✓ Centralized Internet access and content filtering, virus protection etc.
✓ Expanding Town GIS applications to Police, Fire, Water and County Departments
✓ Provide access to Town data
✓ Video and security
✓ Emergency preparedness
Who will maintain this large network?

The Town’s Information Technology Department will maintain and monitor BFON from the networking standpoint. The town will contract out for maintenance of the fiber optic cable in case of accidents, downed trees etc.

Who will pay for this project and how?

The Town will fund this project using franchise fees already collected from Comcast. The funding does not come from the General Fund and is not part of the property taxes the town collects.

Will there be any costs to me?

Town and School buildings will not have any direct charges associated with this project. Fire Departments and Water Companies and others could see a charge for use of the connections. The costs will be very reasonable and will help cover their share of ongoing maintenance and monitoring of the large network. Remember this project will replace many existing leased lines currently in use and provide a tremendous increase in speed and capability.

What do I need to do at my site to connect to BFON?

The Town’s Information Technology Department will work with you to determine your sites needs. Sites other than Town and School will have to purchase compatible fiber optic networking equipment for their respective locations. The Town will work with you in selecting the compatible equipment.

How soon will this project be completed?

The project is tentatively schedule to begin in late January and it is expected to take 3 to 4 months to complete and test.

Sixty eight municipal buildings, along with all of the schools will have fiber run to them.

OPEN CAPE:

Update on OPEN CAPE

The technology directors across the Cape met with members of OPEN CAPE to discuss the 3 year implementation plan regarding OPEN CAPE. The possibilities are extremely interesting and exciting. We are moving forward to collaborate to discuss what options are available to us with regards to regional-izing resources, and leveraging our power by numbers.

There will be 65 dead end connections to educational institutions across the cape (along with 72 anchors), and BHS will be the recipient of one of those, due to the fact it is designated an emergency shelter. Engineers are in discussions presently with regards to how to get the two lines over the bridge, and then the fiber will be built in ‘legs’. Once over the bridge, they are first heading down the Falmouth route, of course, due to WHOI’s role in this Cape wide project. The infrastructure MUST BE COMPLETED in three years, as outlined in the grant. Barnstable and other schools across the Cape will now have the needed Bandwidth speeds.

In addition to the fiber optic connections, we will have server space carved out of the ‘hotel’ or data center that will reside ‘up on the hill’ at the Barnstable County Complex. (This site has enough power to run the hotel.) This center will be open 24/7.

While the OPEN CAPE grant allows the infrastructure to be built, it is up to our committees and staff to decide what we are going to do with/ and how we will use those resources, and that in itself will be a very exciting opportunity to think out of the box in the hopes that we finally have enough bandwidth to do ALL the things we envision.

Wireless:

Initial projections of a district wireless initiative are approximated at $600,000.00. In June of 2010 the technology department has purchased two HP switches with POE capabilities and controllers. West
Villages Elementary School now has wireless access with POE switches and access points. Centerville Elementary School has wireless access with high end switch, controllers and multiple access points. More funding must be made available to continue this project to fund the rest of the elementary schools. Both the intermediate school and the high school have pockets of wireless access. Note that the Barnstable High School is the third largest building on Cape Cod and will require an enormous injection of funds to complete a wireless campus.

See Appendix for budget items for wireless.

Benchmark 5

E. LEARNING ENVIRONMENTS AND COMMUNICATION

Learning and Communications

A. The district encourages the development and use of innovative strategies for delivering specialized 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 e-learning include courses, cultural projects, virtual field trips, etc.

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

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.

Use of Innovative Strategies for Delivering Specialized Courses

Barnstable utilizes the following resources for online opportunities:

- Moodle
- Online Learning Lab at Barnstable High School
- Virtual High School
- Cape Cod Learning Environments

BPS has been working very diligently to bring online learning opportunities to students at Barnstable High School over the past six years with varied success. Over the past years, BPS has worked with local districts to create our own Virtual Schools, piloted various programs such as Plato, Class Com, and Virtual High School.

We are determined to be successful to offer online learning opportunity to Barnstable High School students. Currently, there is an online learning lab at Barnstable High School for credit recovery… NOT credit acceleration. In other words, high school administration only allows for credit recovery; it is a challenge we face to have colleagues understand the opportunities that online courses can offer.

8 Information about state regulations is available from the state’s Record Management Unit (http://www.sec.state.ma.us/arc/arcrmu/rmuidx.htm).
Over the past year (2009-2010) we have been able to service approximately fifty students in the online learning lab for credit recovery in all subject areas.

In the school year 2010-2011 BHS will bring back the opportunity for students (20) to take courses through Virtual High School. These seats are purchased through Plymouth Public Schools. Our goal, if successful, will be to have a teacher dedicated to offer a Virtual High School course which will open up 25 seats for future student participation.

As part of C3VLE, Cape Cod Connection Virtual Learning Environment, we will develop courses for CREDIT ACCELERATION to offer to students across the Cape and even Massachusetts.

Up to date Website:

Barnstable Public Schools has strived to create a district website and websites for each of its schools. We are constantly striving to improve its information content for students, staff and the community. The website is created with Adobe Dreamweaver and staff members responsible for content have been given Contribute keys. There is NO staff member or dedicated ‘website developer’; however, there is a part time technology assistant that dedicates approximately 5 hours a week to the website.

Access to the Internet:

Access to the Internet Outside of School
The district web site posts an up-to-date list of places where students can access the Internet. The district contacts community groups twice a year to update its posting of places where students can access the Internet

Action Plan for Barnstable Public Schools

Based on the vision statement created and the priorities identified by the district technology committee, an action plan with specific actions and timelines will be approved by these stakeholders and adopted by the district. This is in conjunction with priorities identified and set by the district wide Educational Technology team. We are looking for the district members, ie. principals, teachers, teaching assistants, specialists, students and others to adopt these goals and objectives as their own. Without community support, these goals or action steps will not come to fruition.

Goal 1: Design Learning Environments that will Reach Diverse Learners Rationale:

Challenge: A well documented, chronically under-funded district initiative regarding technology is apparent and obvious to all stakeholders of BPS. The wind has changed and the school committee and stakeholders understand the need to develop a proper technology program and are making progress towards funding the district as it should be funded. The district has been funded with one time injections every school year which has added a huge influx of activity and excitement for technology across the district. Purchasing hardware is not the end all, it is only the beginning. Teachers now have to review the learning opportunities we provide to our children and develop ways for students to accumulate knowledge. Lessons/Activities should be developed with respect for meeting the needs of the diverse learner, understanding the ideal of universal design and availability of technology/information for all students, with expectations for improved student outcomes.

Justification for Approach: The technology department and technology committee is counting on its teaching staff to come forward and offer model technology lessons aligned with the grade level district document. They are charged with having students not
only acquire knowledge in content areas, but also to achieve higher levels of understanding. The teachers must understand what kind of students they are teaching in this day and age and understand how best to prepare them in a global economy.

**Goal 2: Support Teachers to Become Confident and Knowledgeable about the Range of Technology to Design Effective Learning Experiences Rationale:**

**Challenge:** The district technology department has informed all of the principals (and their staff) of all the resources that we have available for technology integration within the classroom. Barnstable is making great strides in procuring a package of technology resources that are available to all schools and students; the goal of the department is to provide a set of tools that will enhance the learning experience for the student. Additional purchases of resources are not necessary. What is necessary is for the teacher to embrace those technologies that are available to them and their classroom. Teachers should collaborate with other teachers to experiment with those tools and resources and through that experimentation determine what best fits their classroom needs.

**Justification for Approach:** Can classrooms exist without technology today? Technology has transformed the way we live and learn. To facilitate the learning for students, and fulfill the daily tasks that are a requirement of employment, teachers must have a set of technology skills that are necessary and a requirement of employment.

**Goal 3 : All Staff and Students will be Accountable to Achieve the Use of Technology to Support 21st Century Skills and Model Life Long Learning Rationale:**

**Challenge:** Technology can change the face of education. We are charged with preparing our students to be successful in the 21st century, and to do so there must be a level of competency in technology for them as well. The importance of technology and the role it plays effects everyone in the educational system. It is the responsibility of all teachers to support the transformation of education through technology. The staff, teachers, and administrators of the district must come together and support those technology initiatives identified by the technology committee members.

**Justification for Approach:** Students must learn 21st century skills while acquiring content. How do teachers do that faced with the many other challenges in their day to day tasks? By using technology tools teachers can support the learning of higher order thinking skills.

Where does this go?

**Backup of our Internet System**
The technology department will be creating redundant system for Internet access when the BFON and Open Cape is developed.

**Backup of Critical Files**
Critical files throughout the district are backed up nightly using an ARCServer program. Tapes are removed off site.