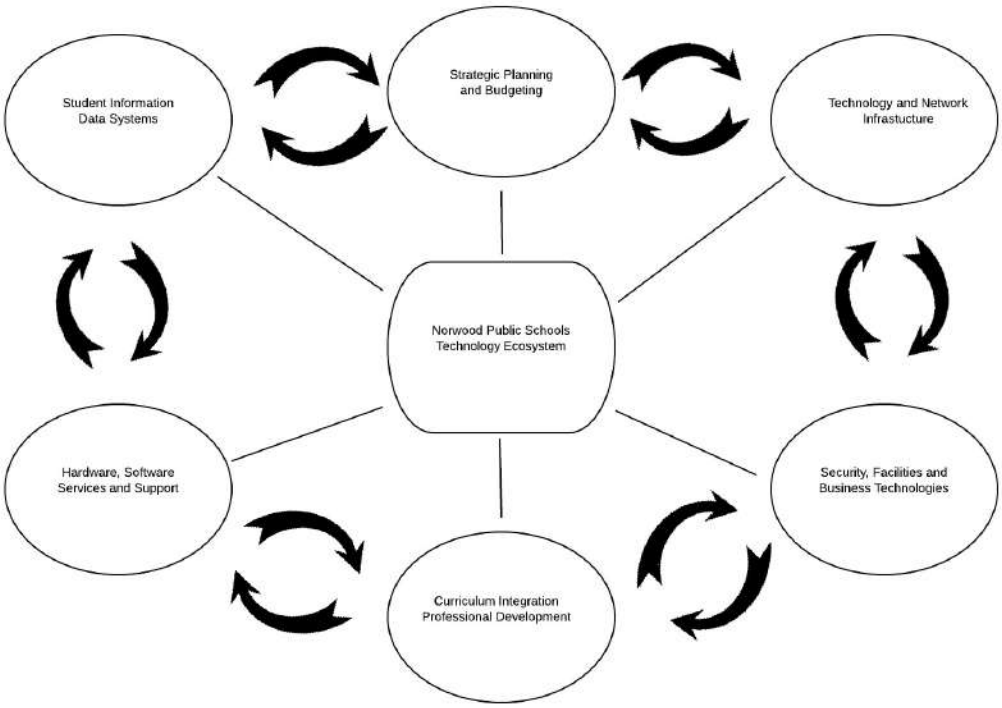
NORWOOD PUBLIC SCHOOLS STRATEGIC TECHNOLOGY PLAN 2013-2016



Introduction

The purpose of the Norwood Public Schools strategic technology plan is to provide a vision and roadmap for the use and integration of technology in the Norwood Public Schools to enhance teaching and learning and assist the school district in achieving its strategic goals. This plan is an active document that will constantly be evaluated and adjusted as technology, budget, student needs and the strategic goals of the school districts shift year to year. While the plan is a three-year plan, it will be assessed on a biannual basis and modified as needed.

The Norwood Public Schools vision for learning with technology must be based upon and aligned with the mission and strategic goals of the Norwood Public Schools district itself which is:

The mission of the Norwood Public Schools is to seek academic excellence for all children in an environment which is safe, nurturing, and supportive, to inspire in them an enduring love for learning, and prepare them to contribute as citizens of a diverse community.

Beliefs

- Every child can learn.
- Academics is the primary focus of education. In addition to Academics, Athletics, and Activities are essential for a complete education.
- Each child is unique and has special abilities and interests that must be recognized, encouraged, and developed.
- The home, school, and community are responsible for the education of all children
- Teachers must engage every student in learning..
- Students are responsible for their own learning and for their personal conduct.
- Parents are responsible for setting values and expectations that support the learning process.
- Lifelong learning is essential for productive and responsible participation in a diverse and changing world.
- Teachers have the right to teach and students have the right to learn in a safe and nurturing environment.
- A community thrives when individuals contribute to the well being of others.
- Integrity, respect, and cooperation are essential in building trusting relationships.
- Our community is strengthened and enriched through diversity

Norwood is a community that is committed to its children and values and respects its educational system. We currently have one early education center, five elementary schools, one middle school, one new high school, and an administrative office building. Enrollment in our Pre-K to Grade 12 school population is over 3,500. This plan is designed to take into account and align with the strategic priorities of the district which include:

I. Preparing all students to be college or career ready through the improvement of literacy skills, the expansion of STEAM initiatives, and the differentiation of instruction.

II. Expanded technology integration through teacher professional development, preparation for the PARCC assessment, and the formation of a district-wide technology committee.

III. Meeting the social/emotional needs of students through reviewing the health and wellness curriculum district wide, enhancing program initiatives and supporting the Open Circle program.

IV. Maximizing parent and community relationships to support student learning through expanding communication methods, updating community groups on the district's strategic plans and initiating business, community, and service partnerships.

V. Improving and upgrading our district facilities through the repair and maintenance outlined in the 10 year capital plan as well as examining school facilities in relation to future needs.

For the purposes of creating the 2013 - 2016 strategic technology plan, a Norwood Public Schools technology advisory committee was formed. The committee was made up of 23 members representing all schools and a variety of grade levels and disciplines. Members included teachers, administrators and department chairs. The representatives from the Norwood Public Schools Technology Committee are:

Name	Building	Position
Dr. Alexander Wyeth	Savage Educational Center	Assistant Superintendent
Joe Kidd	Savage Educational Center	Director of Technology
Joyce Onischewski	Savage Educational Center	Director of Student Services
Gail Geary	Savage Educational Center	Technology Specialist
Anna Fogg	Savage Educational Center	Technology Specialist
Randi Johnson	Savage Educational Center	Data and Applications
Jill Milton	Savage Educational Center	Elementary Math Coordinator
Lauri Giffin	Willett Early Childhood Education Center	Kindergarten Teacher
Nicole Smith	Balch Elementary School	Grade 3 Teacher
Lindsey Kranz	Balch Elementary School	Grade 4 Teacher

Mike Downs	Callahan Elementary School	Grade 5 Teacher
Erica Simmonds	Cleveland Elementary School	Grade 4 Teacher
Paula McMullen	Cleveland Elementary School	Library Media Specialist
Donna Miller	Oldham Elementary School	Library Media Specialist
Brianne Killion	Prescott Elementary School	Principal
Elizabeth Fleming	Prescott Elementary School	Grade 1 Teacher
Laurel Cawley	Prescott Elementary School	Special Education
Cristina Serradas	Coakley Middle School	Technology Education
Christopher Noce	Coakley Middle School	Music
Kathleen Bousquet	Coakley Middle School	Science
Sean Kane	Norwood High School	Assistant Principal
Jennifer Orlinski	Norwood High School	Department Chair - History
Dr. Michael Crowley	Norwood High School	Technology Education
Justin Merenda	Norwood High School	Physical Education
Beth Goldman	Norwood High School	Library Media Specialist

The technology advisory committee met face-to-face once a month and worked in between sessions in an collaborative online environment with the purpose of creating a vision for technology in the Norwood Public schools and to create goals that would help the district to achieve that vision.

Vision for Technology in the Norwood Public Schools

The **vision** for the Norwood Public Schools Technology Plan is to create a technology-rich teaching and learning environment that encourages collaboration, communication, innovation, and achieves academic and professional proficiency for all students and teachers respectively. We believe students and teachers should be able to use technology to:

- Enhance teaching and learning to meet the learning needs and styles of all students
- Engage in learning anytime, anyplace
- Procure, research, organize, and share information
- Think critically and solve problems
- Innovate and create new ideas
- Express themselves effectively and creatively
- Collaborate with other students and teachers anywhere in the world

Through this strategic plan, we are aiming to build a technology ecosystem that is equitable, collaborative, always on and available everywhere. We plan on aligning our infrastructure, data systems, hardware, software, training and curriculum with the sole purpose of increasing student achievement and closing learning gaps across the district. Technology is not the only tool, but it is a critical tool that needs to be used proficiently in order for students to graduate the Norwood Public Schools with the skills to succeed in college and in an increasingly competitive global workforce.

In order to align our technology with that of other districts in the commonwealth, it was the decision of the committee to adopt the Massachusetts Department of Elementary and Secondary Education local technology plan guidelines as the benchmark we as a district would use to create our roadmap to achieving our vision of technology use in the district. It was also the decision of the group to incorporate other resources into the plan as needed including, the National Educational Technology plan of 2010, the International Society for Technology in Education (ISTE) Essentials, and the ISTE Nets standards for students, teachers and administrators. You will also see data referenced from a variety of sources including, but not limited to, our own district surveys and information, as well as data collected from the statewide Digital Learning Survey in February of 2013, and data from the Partnership for Assessment of Readiness for College and Careers (PARCC). You can find links to each of these resources and others cited in this plan located in the Appendix of this plan.

While we used the DESE technology plan guidelines as the benchmark for the creation of our strategic goals, our goals are organized by the six components of our technology ecosystem which include:

- **Strategic Planning and Budgeting**
- **Network Infrastructure**
- **Data and Communication Systems**
- **Hardware, Software, Services and Support**
- **Curriculum Integration and Professional Development**
- **Facilities and Business Technologies**

In order to achieve our vision for technology in the Norwood Public Schools we need to take into account how each component of our technology ecosystem connects and builds on one another to achieve success. We must strategically plan for each piece as all parts of the ecosystem rely on each other for overall success. For example, without a strong network infrastructure, use and deployment of district hardware and software will not be successful. Without equitable access to up-to-date hardware, technology integration and student assessment becomes difficult. Without data systems, student information cannot be used in a way to improve instruction and personalize learning.

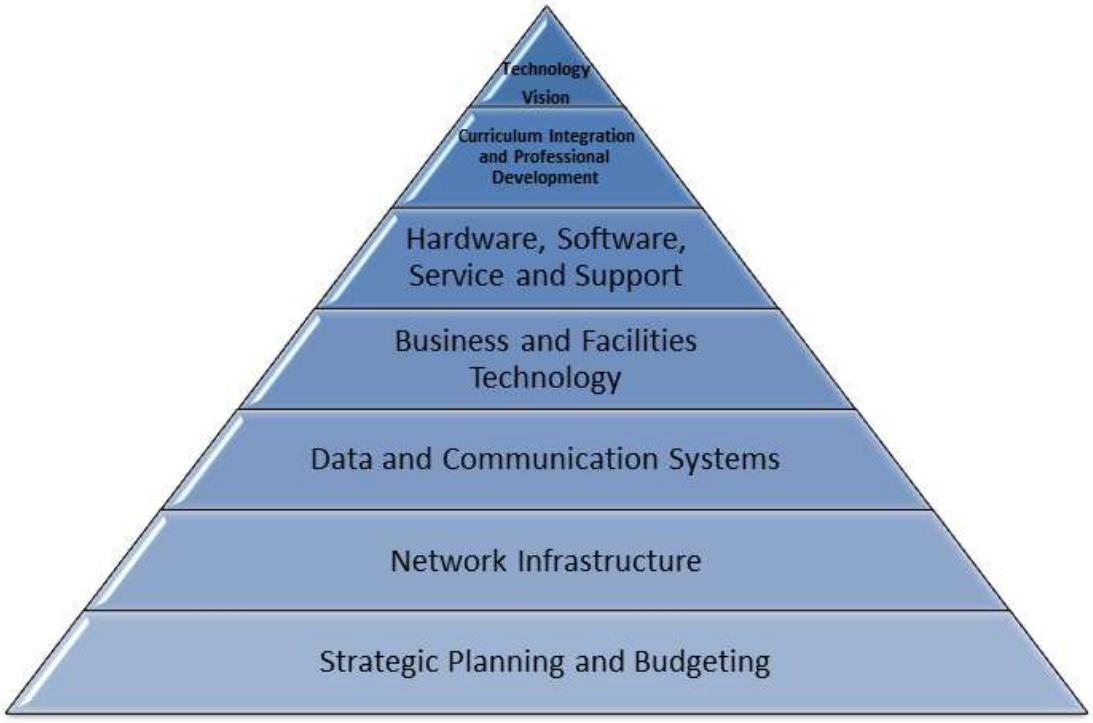


Figure 1: Six Components of the Norwood Public Schools Technology Ecosystem

The DESE Local Technology Plan Guidelines

The Massachusetts Local technology guidelines were developed in 2010 and designed to assist districts in developing a purposeful long-range technology plan. Below is a matrix as to where the Norwood Public Schools falls under each benchmark and if there is a strategic goal in this plan that will meet that benchmark.

Benchmark 1
Commitment to a Clear Vision and Implementation Strategies

Benchmark	Is Norwood Currently Meeting the Benchmark?	Is there a strategic Goal Needed to Meet This Benchmark by the SY '15-'16?
1.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.	Yes	No
1.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.	Partially	Yes - See Strategic Planning and Budgeting - Goal 1
1.C.1 The district assesses the technology products and services that will be needed to improve teaching and learning.	No	Yes - see PD, Curriculum and Student Learning Goal 2
1.C.2 The technology plan includes an assessment of the services and products that are currently being used and that the district plans to acquire.	No	Yes - see PD, Curriculum and Student Learning Goal 2
1.D.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.	Partially	Yes - Strategic Planning and Budgeting Goal 2
1.D.2 The budget includes staffing, infrastructure, hardware, software applications, professional development, support, and contracted services	Yes	Yes - Strategic Planning and Budgeting Goal 2
1.D.3 The district seeks funding for technology programs from federal, state, and private resources, as well	Partially	Yes - Strategic Planning and Budgeting Goal 2

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.		
1.D.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.	Yes	No
1.E.1 The district routinely consults with technology staff before purchasing technologies items, to ensure that the items are appropriate, cost-effective, and sustainable.	Yes	No
1.E.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.	No	Yes - see Strategic Planning and Budgeting Goal 3

Benchmark 2
Technology Integration and Literacy

Benchmark	Is Norwood Currently Meeting the Benchmark?	Is there a strategic Goal Needed to Meet This Benchmark by the SY '15-'16?
2.A.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.	Partially	Yes - See PD, Curriculum and Student Learning - Goal 1
2.A.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.	Partially	Yes - See PD, Curriculum and Student Learning - Goal 1
2.B.1 At least 90% of eighth grade students show proficiency in all the Massachusetts Technology Literacy Standards and Expectations for grade eight	Unknown	PD, Curriculum and Student Learning Goal 2 states the adoption of the ISTE Nets Standards for Students

2.C.1 The district has a district-level technology director/coordinator.	Yes	No
2.C.2 The district provides one FTE instructional technology specialist per 60-120 instructional staff to coach and model.	No	Yes - Strategic Planning and Budgeting Goal 4
2.C.3 The district has staff specifically dedicated to data management and assessment.	Yes	No

Benchmark 3
Technology Professional Development

Benchmark	Is Norwood Currently Meeting the Benchmark?	Is there a strategic Goal Needed to Meet This Benchmark by the SY '15-'16?
3.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.	Partially	Yes - See PD, Curriculum and Student Learning Goal 3
3.B. Technology professional development is sustained and ongoing and includes coaching, modeling best practices, district-based mentoring, study groups, and online professional development.	Partially	Yes - See PD, Curriculum and Student Learning Goal 3
3.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.	No	Yes - See PD, Curriculum and Student Learning Goal 3
3.D. Administrators and teachers consider their own needs for technology professional development.	Yes	Yes - See PD, Curriculum and Student Learning Goal 3

Benchmark 4
Accessibility of Technology

Benchmark	Is Norwood Currently Meeting the Benchmark?	Is there a strategic Goal Needed to Meet This Benchmark by the SY '15-'16?
4.A.1 By 2014-2015, the district has an average ratio of one high-capacity,	No	Partially - See Hardware, Software and Support Goal 2 (High School)

Internet-connected computer for each student. (The Department will work with stakeholders on a regular basis to review and define high-capacity computers.)		
4.A.2 The district provides students with emerging technologies appropriate to their grade level.	Partially	Yes - See See Hardware, Software and Support Goal 1
4.A.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.	Yes	Yes - See Hardware, Software and Support Goal 1 and
4.A.4 The district has procurement policies for information and instructional technologies that ensure usability, equivalent access, interoperability and SIF compliance	Partially	Yes - See Student Information, Data and Communications Goal 2
4.A.5 The district provides technology-rich classrooms, with access to devices such as digital projectors, electronic whiteboards, and student response systems.	Partially	Yes - See Hardware, Software and Support Goal 4
4.A.6 The district has established a computer replacement cycle of five years or less.	No	Yes - See Hardware, Software and Support Goal 3
4.B.1 The district provides connectivity to the Internet for all computers in all classrooms in all schools, including wireless connectivity.	Partially (wireless is not present in all classrooms)	Yes - See Network Infrastructure Goal 3
4.B.2 The district provides an external Internet connection to the Internet Service Provider (ISP) of 100 Mbps per 1,000 students/staff	Yes	Yes - See Network Infrastructure Goal 1
4.B.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.	Yes	Yes - See Network Infrastructure Goal 1
4.C.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.	Yes	Yes - See Network Infrastructure Goal 1
4.C.2 The district provides access to servers for secure file sharing, backups, scheduling, email, and web publishing, either internally or through contracted services	Yes	Yes - Yes - See Network Infrastructure Goal 2
4.D.1 The district provides access to its	Partially	No

computer labs before and after school to ensure that students and staff have adequate access to the Internet outside of the school day.		
4.D.2 The district disseminates a list of up-to-date list of places where students and staff can access the Internet after school hours.	No	No
4.E.1 The district provides staff or contracted services to ensure that its network is functioning at all times.	Yes	N/A
4.E.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.	Partially	Yes - See Hardware, Software and Support - Goal 5
4.E.3 The district provides at least one FTE person to support 400 computers. Technical support can be provided by dedicated staff or contracted services.	Yes	N/A

Benchmark 5
Virtual Learning and Communications

Benchmark	Is Norwood Currently Meeting the Benchmark?	Is there a strategic Goal Needed to Meet This Benchmark by the SY '15-'16?
5.A. The district encourages the development and use of innovative strategies for delivering high-quality courses through the use of technology.	Partially	Yes - See PD, Curriculum and Student Learning Goal 2
5.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.	Partially	Yes - See PD, Curriculum and Student Learning Goal 2
5.C. Classroom applications of virtual learning include courses, collaborative projects, field trips, and discussions.	Partially	Yes - See PD, Curriculum and Student Learning Goal 2
5.D. The district maintains an up-to-date website that includes information for parents and community members.	Yes	Yes - See Student Information, Data and Communications Goal 3

Benchmark 6
Safety, Security and Data Retention

Benchmark	Is Norwood Currently Meeting the Benchmark?	Is there a strategic Goal Needed to Meet This Benchmark by the SY '15-'16?

6.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.	Partially	Yes - See PD, Curriculum and Student Learning Goal 2
6.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.	Yes, but needs expansion	Yes - See PD, Curriculum and Student Learning Goal 2
6.C. The district has a plan to protect the security and confidentiality of personal information of its students and staff.	Yes, but needs to be updated	Yes - See Student Information, Data and Communication Goal 1
6.D. The district complies with federal and state law, and local policies for archiving electronic communications produced by its staff and students. The district informs staff and students that any information distributed over the district or school network may be a public record.	Partially - need to inform staff and students through AUP	N/A

Strategic Planning and Budgeting Goals:

Strategic planning and budgeting is the first essential key for the district to be successful in reaching its vision of technology usage and integration. The strategic plan provides the roadmap that the district needs to follow in order to reach its goals and increase student achievement. The plan cannot come from one department or a small group of people, but must be developed as a shared vision for educational technology among all stakeholders, including teachers and support staff, school and district administrators, teacher educators, students, parents and the community.[1] The plan must be aligned with the strategic goals and vision of the school district and consistent, ongoing funding must be provided to support the personnel, technology infrastructure, hardware, software, systems and support.

In order to reach the shared vision stated in this technology plan, the Norwood Public Schools will continue to have a technology advisory committee and will expand the scope and membership of the organization in the 2013-2014 school year. Multiple subcommittees will be formed to explore, plan and make recommendations on a number of specific topics including, technology professional development, curriculum integration, 1:1 initiatives, internet safety and acceptable use. In order to better engage our community stakeholders, we are establishing a technology advisory subcommittee made up of local technology industry experts who will review our plans and current practices and offer important strategies, best practices, and recommendations for us to reach our district's technology vision.

The district will also review and submit its annual technology budget to reflect the amount of money that is needed on an annual basis to complete this plan. Currently, the Norwood Public Schools technology budget is made up of three funding sources; the general budget, the capital budget and ancillary resources that include grant funding through other departments, school budgets and donations. Through the general budget, the technology department pays for system hardware, consulting fees, maintenance, software, website subscriptions, telephones and internet access. Through the capital budget, the technology department pays for large-scale network equipment deployments, student hardware devices, teacher hardware devices and classroom technology hardware. Through ancillary funding resources the technology department works with schools, other departments, the PTO and community business partners to fund specific technology initiatives. It is the intention of the technology department to review all spending and systems to make sure that the district is maximizing its return on investment as well aligning all technology purchases to the goals of this plan and strategic goals of the district.

The district also plans on increasing instructional technology staffing in the schools which is essential to the successful implementation and usage of technology in education. Currently, the technology department is made up of:

1 - 1.0 FTE Technology
1 - 1.0 FTE Network Specialist
3 - 1.0 FTE Desktop Support Specialists/Technicians
1 - 1.0 FTE Data/Applications Specialist

[1] ISTE Essential Conditions - Shared Vision

1 - 0.7 FTE Database Support Specialist
1 - 1.0 FTE Administrative Assistant

Technology staffing levels in the Norwood Public Schools are in line with the Massachusetts DESE Technology Guidelines except in one critical area, instructional technology. According to the guidelines, the district should "provide one FTE instructional technology specialist per 60 -120 instructional staff to coach and model."[2] Currently, the Norwood Public Schools has zero instructional technology staff to coach and model teachers. Adding instructional technology staff is paramount in order to help teachers effectively integrate technology into their teaching. According to the 2012 Norwood Public Schools staff technology survey, the number one barrier teachers face in achieving their objectives related to using technology as a tool for teaching and learning is "lack of time to research and plan integration." The number two barrier identified was "lack of training." When teachers were asked to prioritize where they think the Norwood Public Schools technology department should devote its resources, the most important priority identified was "Provide instructional support and training."[3] In order to effectively utilize the investments the Town of Norwood and the Norwood Public Schools are putting into technology, teachers need to be properly trained and supported. Dedicated instructional technology staff made up of experts in teaching pedagogy and educational technology is essential in the success of this plan and the success of technology integration in the district. Right now 46% of school districts in Massachusetts that participated in the Digital Learning Survey report that they have instructional technology staffing for their schools[4].

In order to even begin to realize our vision of technology in the Norwood Public Schools, we need to create a strategic plan that has the budget and staff needed to be successful. The following represent our strategic goals for planning, budgeting, and staffing.

Strategic Planning and Budgeting - Goal 1: The district will expand the current technology advisory committee into various subcommittees to study best practices and make recommendations regarding how to best reach the district's vision of technology for teachers and students. These subcommittees will include a variety of stakeholders including teachers, administrators, school committee members, parents and members of the community. Subcommittee groups will specialize in working on**:**

- Technology integration and professional development for teachers including the adoption and incorporation of ISTE Nets standards for teachers and administrators
- Technology curriculum for students including adoption and incorporation of the ISTE Nets standards for students
- Hardware, infrastructure and network management, data security and guidelines
- Student Acceptable Use Policy and district-wide social media usage and guidelines
- Assistive technology
- 1:1 and BYOD study and preparation

[2] Massachusetts Local Technology Plan Guidelines 2010-2015
[3] Norwood Public Schools Staff Technology Survey - November 2012
[4] This information is based on 2011-2012 Digital Learning Survey data submitted by 221 Massachusetts school districts-snapshot in March 2013.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Begin recruitment of various academic technology subcommittees	Fall 2013	Director of Technology Assistant Superintendent	N/A
1.2 – Schedule and plan meetings with subcommittee groups for SY'13-14	Fall 2013	Director of Technology Assistant Superintendent	N/A
1.3 – Begin Recruitment of community technology advisory committee made up of outside industry experts	Winter 2013-2014	Director of Technology Superintendent Assistant Superintendent	N/A
1.4 – Continuous meetings with various subcommittees on NPS technology policies and practices	Ongoing	Director of Technology Assistant Superintendent Tech subcommittees	N/A
1.5 – Recommendations of subcommittees presented to district leadership and school committee	Ongoing	Director of Technology Assistant Superintendent Tech subcommittees	N/A

Strategic Planning and Budgeting - Goal 2: The district will prepare and submit a technology budget each year that reflects the implementation of the long term technology plan while also seeking funding from additional, alternative sources, including E-Rate, community partnerships and educational grants.

Action Steps	Timeframe	Responsible Teams	Budget Source
2.1 – Prepare report of all budget sources and tech expenditures for FY'13	Fall 2013 Fall 2014 Fall 2015	Director of Technology	N/A
2.2 – Review of current hardware, software, systems and services to align with long range strategic goals.	Fall 2013 Fall 2014 Fall 2015	Director of Technology	N/A
2.3 – Submit general technology budget that covers hardware, software, systems and services	Fall 2013 Fall 2014 Fall 2015	Director of Technology	N/A
2.4 – Prepare and submit E-Rate filing application including the possibility of going out to bid for some network services	Winter 2014 Winter 2015 Winter 2016	Director of Technology Business Office	N/A
2.5 – Prepare and submit capital budget plan that aligns with strategic technology plan and district goals	Winter 2014 Winter 2015 Winter 2016	Director of Technology	N/A
2.6 – Research and apply for additional technology funding through educational grants and community partnerships	Ongoing	Director of Technology Assistant Superintendent Superintendent Tech subcommittees	N/A

Strategic Planning and Budgeting - Goal 3: The district will undergo a biannual evaluation to monitor the progress of this technology plan and adjust goals in response to district priorities and new

opportunities as they arise. The district will either adopt or develop an evaluation tool for use by the district-wide technology advisory committee in order to monitor the progress of this plan

Action Steps	Timeframe	Responsible Teams	Budget Source
3.1 – Develop or adopt an evaluation tool/rubric to monitor the progress of the NPS strategic technology plan	Winter 2013	Director of Technology Assistant Superintendent Advisory Committees	N/A
3.2 – Biannual evaluation of the technology plan to measure progress and make adjustments.	January 2013 June 2014 January 2014 June 2015 January 2015 June 2016	Director of Technology Assistant Superintendent Advisory Committees	N/A
3.3 – Present technology plan progress report to the School Committee with proposed adjustments	June 2014 June 2015 June 2016	Director of Technology Superintendent Assistant Superintendent	N/A

Strategic Planning and Budgeting - Goal 4: By 2015-2016 school year the district will have hired three FTE Instructional Technology Specialists. One each for the elementary, middle and high school academic level. These positions will be responsible for directly assisting staff in integrating technology into their classroom instruction, providing relevant technology professional development to staff and modeling the use of technology in the classroom.

Action Steps	Timeframe	Responsible Teams	Budget Source
4.1 – Hire Technology Integration Facilitators at each school as a stipended teacher position	Fall 2013	Director of Technology Superintendent	Teacher Stipends
4.2 – Development of an FTE job description for a staff instructional technology specialist	Spring 2014	Director of Technology	None
4.3 – Hiring of two instructional technology specialists (one elementary, one secondary) for the 2014-2015 school year	Summer 2014	Director of Technology Hiring Committee	FY'15 Staffing Budget
4.4 - Hiring of a 1:1 learning instructional technology specialist, specifically for the high school for the 2015-106 school year	Summer 2015	Director of Technology Hiring Committe	FY'16 Staffing Budget

Network Infrastructure Goals:

In the Norwood Public Schools, the network infrastructure is the foundation by which all technology access is supported. As we prepare our students for college and career, there is an expectation that an infrastructure for learning is always on, available to students, educators, and administrators regardless

of their location or the time of day.[5] The Norwood Public Schools is working to establish an infrastructure of always-on learning that combines the use of hosted and cloud services available to the school community anywhere they have internet access. With the construction of a state-of the-art data center in the new high school, the Norwood Public Schools has moved in the direction of server virtualization and domain consolidation. In the fall of the 2013-2014 school year, the Norwood Public Schools will consolidate accounts into one domain allowing us to reduce the number of physical servers on our network. This will make the network easier for us to manage while reducing the costs of server maintenance and replacement. This strategy also allows us to expand and implement the NPS Cloud platform which allows us to create access to files and applications hosted within the NPS data center anywhere a user has internet access. We will also move towards creating a unified portal which will allow the merging of public cloud resources with private resources. For example, a user will be able to use the NPS Cloud to gain access to their files being stored on the file server in our data center. Through the same portal, the user will also have the option to securely access cloud hosted applications such as the district's email system. The network strategy is also to explore running specific services in the cloud, keeping them out of our data center and easier to manage. Benefits of using Software as a Service model are that it allows reliable and consistent uptime, access anytime, anywhere, as well as guaranteeing upgrades. SaaS applications are usually managed and maintained by the software provider and users are always accessing the most updated versions. The result of this makes the applications we use as a district easier to manage, efficient and more cost-effective.

Security and reliability is also essential when implementing our infrastructure for learning. In pursuance of the Children's Internet Protection Act (CIPA), any school or library that participates in the E-Rate program must have an internet safety policy that includes technology protection measures. The protection measures must block or filter Internet access to pictures that are (a) obscene; (b) child pornagraphy; or (c) harmful to minors.[6] The Norwood Public schools has an on-site firewall for network filtering, blocking and security. The firewall allows for user-defined filtering which allows us to differentiate what web resources are filtered based upon school level and role. Students receive stricter filtering policies than faculty and staff. As we continue to improve our user's web experience, we will refine our use of network monitoring and work with students, teachers, and administrators to adjust our policies in a manner that gives our community the safest most educational experience possible.

Paramount to the usage of the network is the confidence that the files and data stored are safe from failure or disaster. Currently all files and applications in the high school data center are replicated on another disk and available in case of data loss. However, it is essential that a comprehensive backup and recovery plan is developed and put into place along with specific procedures and practice for data and application recovery.

In order for an always-on learning infrastructure to become a reality, we need to have the network bandwidth to support it. Students, teachers, and staff rely on the network as a utility with the expectation that it is always available and robust. With the expansion of online assessments and mobile

[5] National Educational Technology Plan 2010
[6] Children's Internet Protection Act - Updated 2011

learning devices, reliance on internet access both wired and wireless is at an all-time high. Internet access is a mission-critical utility that is used every single day by almost every single staff member and most students for learning, data and administrative needs. The next generation classroom described by DESE has wireless connectivity to encourage collaboration, provides enough bandwidth so all users can access digital content (at minimum 300kbps at peak) with over 90% of academic areas in all schools with adequate wireless access points.[7] Currently the Norwood Public Schools receives broadband internet service from Norwood Light and Broadband. As we implement the infrastructure of a next generation classroom and approach PARCC assessment, we will begin to do some more focused testing on network bandwidth and make recommendations based on those assessments. In the meantime, we will continue the current capital plan to replace network switches in each of our schools as well as add pervasive wireless access to our elementary schools and the Willett Early Education Center.

Network Infrastructure - Goal 1: To provide reliable network access to the recommended bandwidth requirements as presented by the Partnership for Assessment of Readiness for College and Careers (PARCC) and the Massachusetts Department of Elementary and Secondary Education. (DESE)

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 - Complete second phase of the network switch replacement project by installing new switches at the Coakley School, Willett EEC and Savage Administration building	Summer-Fall 2013	Network Specialist Vendor/Consultants	Capital Budget
1.2 - Reconfigure the district firewall reporting structure to better understand the amount of bandwidth being used by each school	Fall-Winter 2013	Network Specialist Director of Technology Vendor/Consultants	General Budget
1.3 – Measure Bandwidth usage and evaluate amount of bandwidth needed in order to successfully take PARCC Assessment	Ongoing	Director of Technology Network Specialist Vendor/Consultants	Unknown
1.4 - Participate in PARCC assessment pilot in order reliably measure impact on school network	Spring 2014	Schools Director of Technology Network Specialist	N/A
1.5 - Develop and present network upgrade recommendations and long term network planning based on evaluations	Spring 2014	Director of Technology Network Specialist Industry Technology Advisory Committee	N/A
1.6 - Perform network upgrades based upon recommendations of network evaluations	Summer-Fall 2014	Network Specialist Vendor/Consultants	Capital Budget (if approved)
1.7 - Participate in the online PARCC Assessments	Spring 2015	Schools	N/A

Network Infrastructure- Goal 2: The district will develop an always-on infrastructure of learning that includes the ability for students and teachers to securely access their resources anywhere they have

[7] Beyond PARCC: the Next Generation Classroom

internet access.

Action Steps	Timeframe	Responsible Teams	Budget Source
2.1 - Migrate all user accounts, data and files to one domain in order to better manage users and take advantage of virtualized server infrastructure in the high school data center	Summer-Fall 2013	Network Specialist Database support specialist Desktop Support Specialists Director of Technology	N/A
2.2 - Consolidate and retire some servers no longer needed as a result of migration	Winter 2013	Network Specialist	N/A
2.3 – Create a long-term strategy to utilize the cloud platform we currently have in place.	Fall 2013	Director of Technology Network Specialist Partner Vendor/Consultants	N/A
2.4 – Perform work on set up of cloud platform including upgrading to next available version, expanding SSO capability,adding usage analytics, troubleshooting and testing features.	Fall 2013	Director of Technology Network Specialist Partner Vendor/Consultants	N/A
2.5 - Begin training program and promotion of the system to faculty, staff and students	Winter 2013-2014	Director of Technology Network Specialist	N/A
2.6 - Evaluate performance and usage of the system as it is currently set up and make decisions on adjusting the product in anticipation of the next budget cycle.	Summer 2014	Director of Technology Network Specialist	N/A
2.7 - Evaluate Data Center infrastructure and develop plan for upgrades and future direction	Summer 2014	Director of Technology Network Specialist Vendor/Consultants Industry Technology Advisory Committee	General Budget

Network Infrastructure– Goal 3: Install enough wireless access points in all schools to create robust wireless network access in every classroom throughout the district.

Action Steps	Timeframe	Responsible Teams	Budget Source
3.1 – Install new wireless network in the Willett Early Education Center in support of iPad initiative	Fall 2013	District Electrician Director of Technology Network Specialist	Capital Budget
3.2 - Redistribute wireless access points from CMS wireless	Fall 2013	Director of Technology Network Specialist	N/A

upgrade to various elementary schools to increase wireless capabilities			
3.3 - Install new wireless network in the Oldham Elementary School	Winter 2013-2014	District Electrician Director of Technology Network Specialist	Capital Budget
3.4 - Redistribute wireless access points from Oldham and Willett wireless upgrade to various elementary schools to increase wireless capabilities	Winter 2013-2014	Director of Technology Network Specialist	N/A
3.5 - Retire one of our Cisco wireless controllers as we increase the amount of cloud-controlled Meraki WAP's throughout the district	Fall/Winter 2013	Network Specialist	N/A
3.6 Assess usage of wireless network throughout the district to determine where we need more coverage and which elementary schools are next upgraded	Spring 2014	Director of Technology Network Specialist	N/A
3.7 Develop plan for wireless upgrade of the next four elementary schools and funding sources needed for them.	Spring 2014	Director of Technology Network Specialist	N/A
3.8 Perform an assessment of the current wireless network at the Norwood High School in anticipation of 1:1 device initiative planning	Spring 2014	Director of Technology Network Specialist Contracted Vendor	General Budget
3.9 Install updated wireless network in two of the elementary schools	Summer 2014	District Electrician Director of Technology Network Specialist	Capital (if approved)
3.10 Install updated wireless network in the last two of the elementary schools	Summer 2015	District Electrician Director of Technology Network Specialist	Capital (if approved)
3.11 Install additional wireless access points at the High School to accommodate 1:1 mobile device inititative	Summer 2015	District Electrician Director of Technology Network Specialist	Capital (if approved)

Network Infrastructure – Goal 4: The district will develop a comprehensive security, backup and disaster recovery plan for district data, files and applications.

Action Steps	Timeframe	Responsible Teams	Budget Source
4.1 – Maximize existing tools available to create scheduled backups of existing data, files and applications	Fall 2013	Network Specialist High School Desktop Support Specialist Vendor/Consultants	General Budget
4.2 - Review and re-configure current network firewall solution following the domain migration.	Fall 2013	Director of Technology Network Specialist Vendor/Consultants	General Budget
4.3 – Create comprehensive	Winter 2013	Director of Technology	N/A

long-term network security and DR strategy for the district, including off-site backups and training for DR practices and costs of implementation		Network Specialist Vendor/Consultants Industry Technology Advisory Committee	
4.4 Present findings of review of current backup practices and costs of comprehensive plan to superintendent and other stakeholders for review	Winter 2013-2014	Director of Technology	N/A

Hardware, Software, Service and Support Goals:

As more teachers and students rely on the internet to access data and use digital learning resources it becomes both increasingly important and increasingly challenging to provide students with equitable access to internet-connected learning devices. It is expected that in the spring of 2014, schools will be required to begin taking the PARCC assessments administered online. PARCC has released their guidelines for the minimum and recommended specifications for computer hardware, input devices, and security requirements; as well as the suggested recommended levels of bandwidth that will support schools instructional and assessment needs. Moving forward, any new student devices purchased by the Norwood Public Schools must meet the recommended requirements as outlined by the Partnership. In addition to its recommended device requirements, PARCC recommends that each school will need a minimum of one PARCC Assessment compliant device for every two students at the largest grade level in each school, while the recommended requirement is to have one device for every student in the largest tested grade level in your school [8].

Currently, our elementary schools and barely meet the minimum requirement of a device for every two students in the largest grade level. For example, during the 20012-2013 school year, the Balch school's largest grade level population was 54 students. There are 28 PARCC Assessment compliant devices currently available to students at the Balch. While this does meet the minimum requirement, it would take the school approximately 15 days to complete the assessment with that many devices. This would mean that for *three weeks* there would be no student computing devices available to the school for any other reason than taking the assessment. However, if the school had the recommended amount of PARCC devices available of one device per student in the largest tested grade level (54), then it would take only 5 days to complete the assessment and therefore minimize the amount of time students would not have the availability of technology for learning.[9]

The Coakley Middle School currently does not meet the minimum requirements for the amount of devices needed to take the assessment, as constituted today, it would take the middle school over 20 days to complete. Student devices were written into the 2014 capital budget plan which was approved by Town Meeting in the spring and therefore, more student devices will be added to each of the schools K-8.

The technology department will continue to monitor the PARCC recommendations as they are released and work with the Assistant Superintendent and school administration in developing the scenarios and planning needed to ensure we have the resources to successfully complete the online assessments securely, in a timely manner, and with minimal disruption.

Aside from planning for the PARCC assessment, it is critical that students and teachers are both given access to up-to-date digital learning tools in order to be college and career ready. Access to up-to-date information and digital tools is now the standard in education. It is the expectation that students entering college and the workforce understand how to appropriately and effectively use technology to

[8] Technology Guidelines for PARCC Assessments

[9] This information was taken from the PARCC Capacity Planning Tool completed during the SY'12-'13 in preparation of the Capital Plan

communicate, collaborate, and solve problems. Students need to work with technology from an early age through high school and beyond, and schools need to have devices and applications available to their students in order to successfully integrate personalized learning and reach the vision of technology use throughout the district. Thanks to the approval of the 2014 capital budget plan by Town Meeting, we can begin to expand the availability of student devices in all of our schools. We will work with teachers, administrators and the technology advisory committee to research and purchase the right devices for each school, while keeping in perspective the educational capabilities of the device, the management of the device, the price of the device and the sustainability of the device. We will begin by piloting devices at different levels and evaluating the educational impact of its usage. We will also form a technology advisory subcommittee that will focus on the formation and impact of a one-to-one initiative in the Norwood Public Schools starting in the High School. As students move onto college, most are required to use a mobile computing device on a daily basis. More and more school districts in Massachusetts are recognizing the impact that a one-to-one initiative can have on teaching and learning. While only 14% of Massachusetts school districts report they have a one-to-one initiative already in place, another 37% report that they are in the planning stages of implementing a one-to-one initiative within the next 1-5 years.[10] However, it is important to note that there has been little published research on the long term effectiveness of a one-to-one learning environment for improving student outcomes. However, many programs report changes in teaching and learning outcomes, increased student engagement, and increased effective use of technology by both teachers and students.[11]

As a district we need to begin looking at what a successful one-to-one learning initiative can look like in our schools taking into account, curriculum and teaching, professional development, budget strategy, sustainability, staffing, and type of device. In fact, the type of device should be one of the last factors we look at when planning the initiative as whatever educational objectives that are to be met through the initiative should be device agnostic and allow for the possibility of a Bring Your Own Device option for the Norwood Public Schools.

Within the classroom, teachers need access to the digital tools in order to deliver an engaging and empowering learning experience on a daily basis. Classrooms need to be equipped with presentation and interactive devices to help deliver and create content in a meaningful, tactile manner. Hardware such as LCD projectors, document cameras and interactive whiteboards help to bring lessons and activities to life and engage students like never before, capturing their attention and immersing them in a lesson. With the construction of the new high school two years ago, each classroom is a model of the next generation classroom equipped with a ceiling mounted LCD projector, interactive whiteboard and document camera along with teacher computer workstation that controls the entire setup. In the elementary and the middle school, teachers have access to a teacher media workstation laptop cart, projector and document camera in almost all classrooms. Interactive whiteboards and wall-mounted interactive projectors are scattered among different classrooms and grade levels throughout the elementary schools and Coakley Middle School. In the next three years the district plans to model the high school provide equitable access to the next generation classroom. In the elementary schools, each

[10] This information is based on 2011-2012 Digital Learning Survey data submitted by 221 Massachusetts school districts-snapshot in March 2013.

[11] Educational Outcomes and Research from 1:1 Computing Settings - Damian Bebell & Laura M. O'Dwyer

classroom will have a wall-mounted projector, interactive whiteboard and document camera. In the middle school, each classroom will contain and interactive projector and document camera. These devices are necessary to provide an equitable technology experience for the teachers and students in all of our schools throughout the district and will help students meet the Massachusetts curriculum learning standards based on the Common Core State Standards.

In order for technology to be useful, it needs to be in good working order. It is important that both our students, teachers and staff have confidence that they will be able to successfully complete their work with minimal disruption. However, technology breaks down, systems fail and disruptions take place. When this happens, the Norwood Public Schools technology department staff is ready to assist, troubleshoot, and fix the issue in as timely a manner as possible. We are customer service focused and will continue to work on better ways to prioritize, respond and manage technology issues that are submitted to us. During the time of this technology plan, the technology department will create service goals measure by key performance indicators and evaluated every school year.

Hardware, Software and Support - Goal 1: By the spring of the 2014-2015 school year, each school will have access to a PARCC assessment compliant computing device at a 3:1 student to device ratio.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 - Refresh of elementary computer labs at the Balch, Callahan, and Prescott Elementary Schools	Spring 2013	Elementary Desktop Support Specialist Director of Technology Vendor	General Budget
1.2 - Refresh of two Coakley Middle School computer labs	Summer 2013	Middle School Desktop Support Specialist Director of Technology Vendor	Capital Budget
1.3 – Deployment of iPads to the Willett school for the creation of iPad learning centers in Kindergarten classrooms	Fall 2013	Director of Technology Elementary Desktop Support Specialist Willett School	Multiple - General Budget, Donations, Grants
1.4 – Deployment of Google Chromebooks to the Coakley Middle School as student device pilot and expansion	Fall 2013	Director of Technology Middle School Desktop Support Specialist Coakley Middle School	Capital Budget
1.5 - Planning for expansion of student technology devices in all elementary schools	Fall 2013	Director of Technology Technology Advisory Committee	N/A
1.6 - Evaluation of Google Chromebooks Initiative at the Coakley Middle School	Winter 2013	Director of Technology Coakley Middle School Technology Advisory Committee	N/A
1.7 - Deployment of student mobile technology devices in all elementary schools (amount dependent on device chosen)	Winter 2013/2014	Director of Technology Elementary Desktop Support Specialist Elementary Schools	Capital Budget
1.8 - Deployment of additional student mobile technology devices a the middle school (amount dependent on device chosen)	Spring 2014	Director of Technology Middle School Desktop Support Specialist Coakley Middle School	Capital Budget
1.9 - Evaluation of student iPad usage at the Willett EEC	Spring 2014	Director of Technology Willett School	N/A
1.10 - Decision on expansion of	Spring 2014	Director of Technology	N/A

Willett iPad usage into all Kindergarten and Pre-K classrooms		Willett School	
1.11 Evaluation of inventory of student devices throughout the elementary and middle school in order to plan capital needs for student device expansion in anticipation of PARCC Testing	Spring 2014	Director of Technology	N/A
1.12 Refresh of computer labs at the Callahan and Cleveland elementary schools	Summer 2014	Director of Technology Elementary Desktop Support Specialist Vendor	Capital Budget (Needs Approval)
1.13 Deployment of the needed amount of student technology devices in preparation of PARCC assessments based upon spring evaluation	Fall 2014	Director of Technology Vendor	Capital Budget (Needs Approval)
1.14 Reevaluation of student hardware refresh cycle in anticipation of the next five school years	Spring 2015	Director of Technology	N/A
1.15 Technology Department will work with Student Services on evaluating and purchasing assistive technology devices for students with disabilities	Ongoing	Director of Technology Instructional Technology Specialist Director of Student Services	Multiple

Hardware, Software and Support - Goal 2: By the 2015-2016 school year, each student at Norwood High School will have access to a PARCC assessment compliant computing device at a 1:1 student to device ratio.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Establish a 1:1 initiative technology advisory committee to begin planning 1:1 device initiative for the high school	Winter 2013	Director of Technology Superintendent Assistant Superintendent	N/A
1.2 – Work with advisory committee on curriculum, budgeting, device selection, research and site visits for planning a 1:1 initiative	Ongoing 2013	Director of Technology Assistant Superintendent 1:1 Advisory Committee	General Budget
1.3 - Present 1:1 initiative planning to school committee for approval to implement pilot program for the 2014-2015 school year	Spring 2014	Director of Technology Assistant Superintendent 1:1 Advisory Committee	N/A
1.4 - Deployment of 1:1 pilots based upon technology committee planning	Fall 2014	Director of Technology Assistant Superintendent 1:1 Advisory Committee	Unknown
1.5 Evaluation of 1:1 pilot program and presentation of findings and recommendations to the school committee for future of 1:1 program	Spring 2015	Director of Technology Assistant Superintendent 1:1 Advisory Committee	Unknown
1.6 Deployment of 1:1 device	Fall 2015	Director of Technology	Unknown

program in the high school		Assistant Superintendent 1:1 Advisory Committee	
1.7 Evaluation and recommendations for expansion of the 1:1 program presented to the Norwood School Committee		Director of Technology Assistant Superintendent 1:1 Advisory Committee	Unknown

Hardware, Software and Support - Goal 3: Teacher Device Goal: The district will work with the technology advisory committee to select a standard teacher computing device to be deployed to all elementary and middle school teachers.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Work with middle school teachers to select a standard teacher computing device based upon educational need, management, price and sustainability	Fall/Winter 2013	Director of Technology Middle School Technology Advisory Committee	N/A
1.2 – Purchase and deploy selected device to all classrooms in the middle school	Winter/Spring 2014	Director of Technology Middle School Technology Support Specialist Selected Vendor	Capital
1.3 - Work with Elementary school teachers to select a standard teacher computing device based upon educational need, management, price and sustainability	Winter 2014	Director of Technology Elementary Schools Technology Advisory Committee	N/A
1.4 Purchase and Deploy selected devices to all classrooms in the elementary schools	Spring/Summer 2014	Director of Technology Elementary School Desktop Support Specialist Selected Vendor	Uknown
1.5 Strengthen internal asset management system and procedures, develop computer and hardware replacement cycle, dependent on device	ongoing	Technology Department	General Budget

Hardware, Software and Support – Goal 4: By the end of the 2015-2016 school year, 100% of elementary, middle and high school classrooms will be model next generation interactive classrooms that include the following:

- **Wall or ceiling mounted LCD projector**
- **Interactive whiteboard or projector**
- **Document camera**
- **Access to internet connected devices for student use**
- **Other technology as determined by advisory committees**

Action Steps	Timeframe	Responsible Teams	Budget Source
4.1 – Install Interactive	Summer/Fall	Director of Technology	Multiple - Capital,

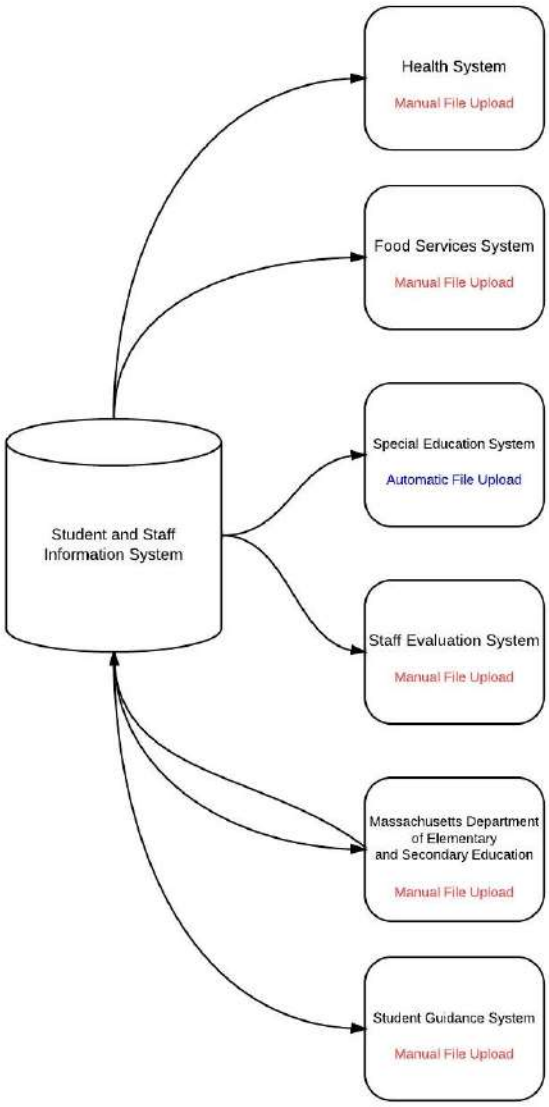
Whiteboards and wall-mounted projectors in all fourth and fifth grade classrooms	2013	Buildings + Grounds	General and School Budgets
4.2 – Install wall-mounted interactive projectors in 10 middle school classrooms	Summer 2013	Director of Technology Selected Vendor	N/A
4.3 - Install Interactive Whiteboards and wall-mounted projectors in all third grade classrooms	Spring 2014	Director of Technology Buildings + Grounds	Capital Budget
4.4 - Install wall mounted interactive projectors in 10 middle school classrooms	Summer 2014	Director of Technology Selected Vendor	Multiple - General and Capital Budget (Needs Approval)
4.5 - Install interactive whiteboards and wall mounted projectors in all second grade classrooms	Summer 2014	Director of Technology Buildings+Grounds	Multiple - General, Capital and Donations
4.6 - Install wall mounted, interactive projectors in 4 middle school classrooms, completing 100% of the middle school	Summer 2015	Director of Technology Selected Vendor	N/A
4.7 - Install interactive whiteboards and wall mounted projectors in all first grade classrooms completing 100% of all elementary classrooms	Summer 2015	Director of Technology Buildings and Grounds	

Hardware, Software and Support - Goal 5: The technology department will develop and publicize service goals and how they will be measured .

Action Steps	Timeframe	Responsible Teams	Budget Source
5.1 – Develop internal customer service goals for prioritizing and responding to technology work orders. Establish Key Performance Indicators or benchmarks to assess performance.	Fall 2013	Technology Department	N/A
5.2 – Review current system and procedures for collecting and responding to technology work orders	Fall 2013	Technology Department	N/A
5.3 - Publish clear expectations and policies for reporting and responding to technology work orders through the district	Winter 2013	Technology Department	N/A
5.4 Assess customer service performance using data from teacher surveys and our technology work order system	Ongoing	Technology Department	N/A

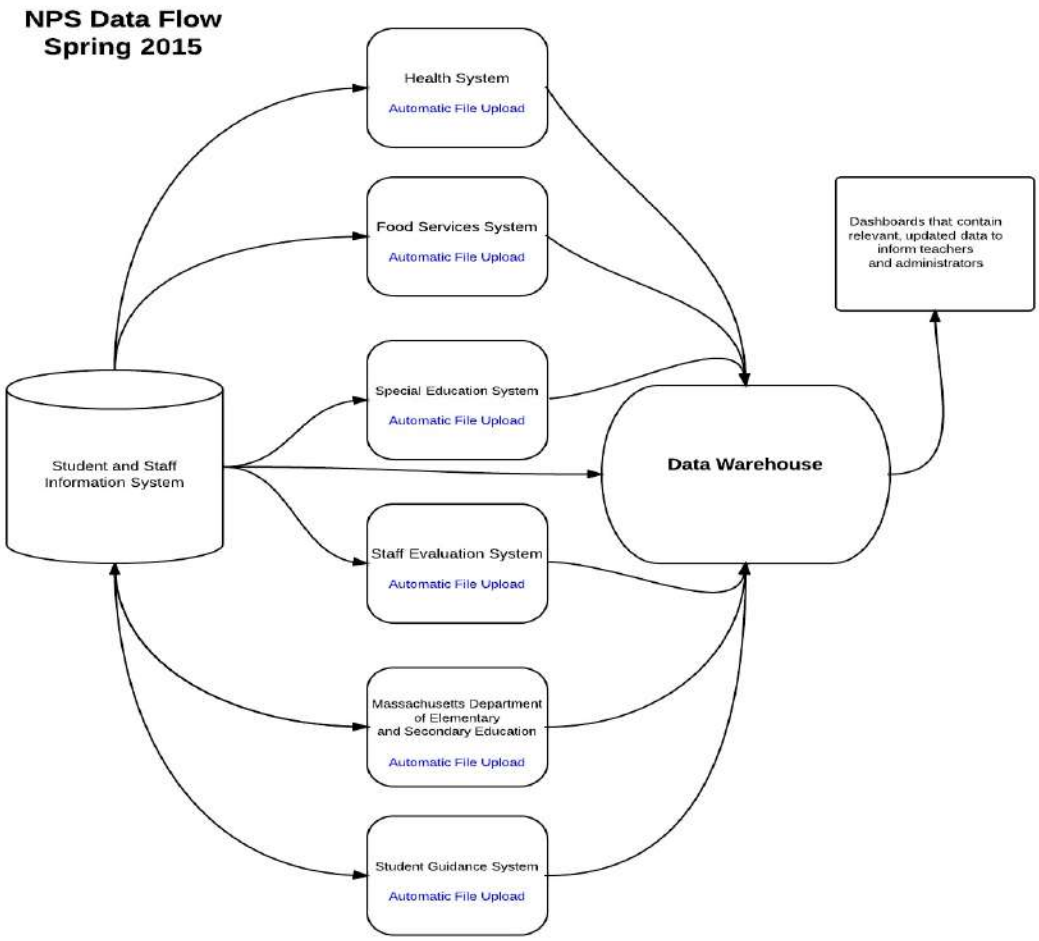
Student Information, Data and Communication Systems Goals

The importance of data in education today cannot be underscored. Student academic data, attendance data, assessment data, and other information is being collected and can be used to improve teaching and help personalize learning. For this type of work to be successful, we need to make sure that the data we collect accurate, secure, useful and timely. We also need ways to take the data we collect from various sources, put it together and present it in a way that is manageable for teachers and administrators to analyze and take appropriate action. To achieve this, our systems and databases need to be able to communicate with each other rather than just working in information silos, which is what they are doing now.



Current NPS Data Flow

To improve the accuracy and quality of data in Norwood, the technology department participated in the Massachusetts DESE introductory Data Quality Program during the 2012-2013 school year. Over the next three years, we plan on implementing lessons learned from this program and establishing a culture of data quality district-wide. We will start our work by instituting universal procedures for collecting and managing quality data, defining roles and responsibilities of who collects data and who has access to data. Finally, we will work on increasing the interoperability of our current systems to help us keep accurate, quality data and give us the ability to consolidate relevant data to better inform our teachers and administrators.



In addition to creating a culture of quality data in the district, the Norwood Public Schools will employ systems that create a culture of quality communication to students and their families. An upgrade to the district's website, the district's mass notification system and expansion in the use of parent and student portal of the student information system will allow us to provide accurate, relevant information needed by our students and families. Schools will be provided with the tools and support needed to inform families of what is happening at the schools, upcoming events, important news, as well as updated assessment and academic information through the use of the student information system's parent and student portal.

Student Information, Data and Communications - Goal 1: The district will develop an internal data quality program based on the Department of Elementary and Secondary Education's program framework where a culture of data quality requires data to be accurate, secure, useful and timely to serve a specific purpose.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Review the components of the DESE Data Quality Program. Develop data quality standards to be shared district-wide	Winter 2013	District Data Specialist Director of Technology	N/A
1.2 – Establish District-Wide data quality team to decide upon the flow of data throughout the system and roles and responsibilities of those who input and access data in the district	Winter 2013	District Data Specialist Director of Technology Assistant Superintendent	N/A
1.3 Develop a data dictionary and set data input processes that are followed district-wide	Spring 2014	District Data Specialist District Data Quality Team	N/A
1.4 Present Data policies to the superintendent and school committee for approval	Spring 2014	District Data Specialist District Data Quality Team	N/A
1.5 Begin training and education on the Norwood Public Schools Data Quality program to data stakeholders throughout the district	Beginning summer 2014 and Ongoing	District Data Specialist Asst. supt	N/A

Student Information, Data and Communications- Goal 2: The district will review all information systems and develop a way in which all data sources talk to one another and are consolidated into a data warehouse that provides information dashboards to teachers and administrators to inform instruction and raise student achievement.

Action Steps	Timeframe	Responsible Teams	Budget Source
2.1 – Develop a strategic, long term data plan in which NPS systems talk to each other and information is consolidated and presented to key stakeholders in a manageble and useful way.	Fall 2013	Director of Technology	N/A
2.2 – Establish automatic imports between existing data systems	Winter 2013	Director of Technology	N/A

and the district's student information system			
2.3 - Research SIF options for current Student Information System for automatic data sync with the Massachusetts DESE data system	Spring 2014		N/A
2.4 - Review district's student information system and provide recommendations for possible upgrade or replacement.	Summer 2014	Director of Technology District Data Specialist Technology Advisory Committee	N/A
2.5 - Research data consolidation and reporting systems (data warehouse) that can provide dashboarding capability of key student data	Summer 2014	Director of Technology District Data Specialist Technology Advisory Committee	N/A
2.6 - Begin RFP and evaluation process of data warehouse product for the Norwood Public Schools	Fall 2014	Director of Technology District Data Specialist Assistant Superintendent Technology Advisory Committee	N/A
2.7 Acquire and deploy data warehouse system that consolidates district student data and provides real-time dashboards of important information to teachers and administrators	Spring 2015	Director of Technology District Data Specialist Superintendent Assistant Superintendent	Unknown

Student Information, Data and Communications- Goal 3: The district will provide tools to teachers and administrators that offer updated district, school and academic information to students and their families.

Action Steps	Timeframe	Responsible Teams	Budget Source
3.1 – Upgrade the district's content management system and launch a new district website	Summer 2013	Director of Technology District Data Specialist	General Budget
3.2 – Upgrade district's current mass notification service to the latest version	Fall 2013	Director of Technology	General Budget
3.3 - Work with the high school and middle school to support usage of iPASS rankbook to post student assignments and grades	Ongoing	Director of Technology District Data Specialist Schools	N/A
3.4 - Work with elementary schools and the superintendent to establish the types of information posted to the parent portal of the student information system for elementary school students	Winter 2013	Director of Technology District Data Specialist Schools	N/A
3.5 - Launch the ability for high school students to access academic information through	Spring 2014	Director of Technology District Data Specialist Schools	N/A

the use of the iStudent portal			
3.6 - Launch the ability for middle school students to access academic information through the use of the iStudent portal	Fall 2014	Director of Technology District Data Specialist Schools	N/A

Professional Development, Curriculum Integration, and Student Learning Goals

The ways in which students learn and interact with information today is vastly different that it was as recently as 20 years ago. 20 years ago computers in schools were confined mostly to labs and access to online information was very limited both in school and at home. Today, the landscape and opportunities for both our students and teachers are seemingly limitless in comparison. It is now the norm for students to have access to the internet with a mobile device 24 hours a day, 7 days a week. The opportunity that this access has created for education is transformative. Teachers and students now have the ability to create multimedia content and instantly share it with the world. They have the power to create new ideas, collaborate with others in real-time and learn about any topic that "fills their passion" both inside and outside of school. New online learning opportunities break down the walls of the traditional brick and mortar classroom and allow for a new generation of learners to emerge and pursue their education in a more personalized manner at their own pace. Technology allows us to not only break down physical barriers to education, but also can allow us to break time barriers in which students who need more time on a concept are no longer pushed along before they are ready and students who are ready to can freely move ahead in their learning. This is why it is no longer a luxury for students to have equitable access to digital learning tools on a daily basis, but a standard. It is imperative that our students are able to use these tools effectively and responsibly.

Our challenge as educators is to create authentic, engaging, and relevant learning experiences for all of our students. Learning experiences that empower our students to take control of their education and allow them to create new and innovative ideas. No matter what the subject area or school discipline, technology needs to be woven into the daily experience of the student. We need to teach our students to be critical thinkers, collaborators, problem solvers, and expert communicators in order to become competitive in college and the global workforce. Our students need to be information literate; they need to be able to find the important, authentic information they need quickly; and they need to be able to create new ideas from it. Using technology is a means to help reach those goals. Everyday, college students and working professionals use technology to be successful in their daily lives, creating multimedia, video conferencing, researching information, performing simulations or programming applications We need our students to have those same experiences using the same tools. Using real-world tools creates learning opportunities that allow them to grapple real-world problems - opportunities that allow them to be more productive members of a globally competitive workforce.[12]

In order to properly integrate these tools into everyday curriculum, teachers must embrace a new style of instruction that allows the use of personalized and project-based authentic learning experiences for students in the classroom. Learning depends on effective teaching and effective teaching is an outcome of preparing and continually training teachers and leaders to guide the type of learning we want in our

[12] National Education Technology Plan 2010

schools.[13]

Effective teachers and school leaders need the resources and the training in order to integrate digital resources in their daily instruction. When the tools, training, and leadership support are available, it creates an environment in which technology integration is not the exception, but it is the norm. This way of instruction allows teachers to differentiate instruction to meet the needs of multiple learners while also personalizing instruction that is paced to the individual's learning needs. The effective use of technology can also help teachers to collaborate with their peers both within the district and beyond. The use of collaborative documents, social networking tools, and personalized learning networks allow professionals to connect in a way never thought of before, and like students, allow teachers professional development experiences that were not attainable as recently as 10 years ago. In order to increase teacher usage of integrating technology in the Norwood Public Schools, the district will plan to increase technology professional development opportunities and encourage the adoption the ISTE Nets standards for digital age teaching as a model for technology integration in the classroom. Following the Nets Standards for Teachers encourages teachers to

- Facilitate and Inspire Student Learning and Creativity
- Design and Develop Digital Age Learning Experiences and Assessments
- Model Digital Age Work and Learning
- Promote and Model Digital Citizenship and Responsibility
- Engage in Professional Growth and Leadership[14]

The availability of digital learning tools for students is a key for the success of our students to become college and career ready. Besides the aforementioned benefits of personalized, differentiated, and authentic learning experiences for our students, there are other added advantages to using technology in instruction. The use of technology is a great motivational tool for students. Research shows that the most effective learning experiences are individualized, differentiated and personalized in the sense that they fit the interests of the particular learners.[15] Technology also serves as a bridge between in school and outside of school learning. The use of collaborative tools such as Google Apps for Education or Microsoft 365, email, and instant messaging allow students to work together in ways that were not possible 20 years ago but are an expectation in today's colleges and workforce. Outside of school, students have the freedom and the access to learn about anything they want. It is imperative that educators embrace and promote the opportunities students have to become lifelong learners and teach them how to responsibly disseminate the limitless amounts of information they have at their fingertips and create new ideas from it. In order to increase student usage of technology in learning, the district will encourage the adoption of the ISTE Nets Standards for students. Following the Nets Standards for students encourages students to develop the skills of

- Creativity and Innovation
- Communication and Collaboration
- Research and Information Fluency

[13] National Education Technology Plan 2010
[14] ISTE Nets Standards for Teachers
[15] National Education Technology Plan 2010

- Critical Thinking, Problem Solving, and Decision Making[16]

Students must be responsible users of the internet and must be taught how to interact with other online with kindness and respect. The district will work with the technology advisory committee to develop an updated Acceptable Use Policy for teachers and students that includes social media guidelines.

PD, Curriculum and Student Learning - Goal 1: The district will increase the use of technology by teachers for teaching and learning by establishing a technology integration committee to develop a professional development plan for teachers as well as adopting the ISTE Nets standards for teachers for the integration of technology in the classroom.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Establish a technology integration subcommittee for the purpose of adopting student and teacher technology expectations and standards	Winter 2013	Director of Technology Assistant Superintendent	N/A
1.2 – The hiring of a stipended position of technology facilitators for each school to assist in tech integration and training	Fall 2013	Director of Technology Assistant Superintendent	General Budget
1.3 - Establish an online area for teachers to share technology resources, lessons and products using current resources	Winter 2013	Director of Technology Technology Advisory Committee	N/A
1.4 - Establish a professional development plan which provide a variety of technology training opportunities to assist teachers in integrating technology in teaching and learning	Winter 2013	Director of Technology Technology Advisory Committee School Technology Facilitators Assistant Superintendent	N/A
1.5 - The hiring of instructional technology specialists at the elementary middle and high school level to train and assist teachers in integrating technology into daily teaching and learning	Summer 2014 Summer 2015	Director of Technology Superintendent Hiring Committee	Unknown

PD, Curriculum and Student Learning Goal 2 - The district will increase the use of technology by students throughout the district to achieve student learning goals, to demonstrate competency of the Massachusetts State Curriculum Standards, and by 2016 all students will demonstrate specific ISTE NETs Standards prior to graduation.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Establish a technology integration subcommittee for the purpose of adopting student and	Winter 2013	Director of Technology Assistant Superintendent	N/A

[16] ISTE Nets Standards for Students

teacher technology expectations and standards			
1.2 – The increase of student technology devices in the elementary and middle schools to a 3:1 student to device ratio.	Ongoing	Director of Technology	Multiple Sources
1.3 - Establish assessment rubric for all current educational technology software subscriptions currently used by the Norwood Public Schools	Winter 2013	Director of Technology Technology Integration Committee	N/A
1.4 - Pilot of student email and Google Apps for Education accounts in the middle and high school	Fall/Winter 2013	Technology Department Schools	N/A
1.5 - Deployment of student email and Google Apps for Education accounts in the middle and high school	Winter/Spring 2014	Technology Department Schools	General Budget
1.6 - Pilot of Google Apps for Education Accounts with elementary school students	Spring 2014	Technology Department Schools	N/A
1.7 - Explore and Establish objectives and strategic plan for online content delivery and learning options for students in the Norwood Public Schools	Spring 2014	Director of Technology Technology Advisory Committee Assistant Superintendent	N/A
1.8 - Report findings of year long usage evaluation of educational technology software subscriptions currently used by Norwood Public Schools	Spring 2014	Director of Technology Technology Advisory Committee	N/A
1.10 - Research and Evaluation of Blended, adaptive and game-based learning strategies and potential implementation in the Norwood Public Schools	Fall 2014	Director of Technology instructional Technology Specialists Technology Advisory committee	N/A
1.11 - Deployment of Google Apps for Education accounts for elementary school students	Fall 2014	Director of Technology instructional Technology Specialists Technology Advisory committee	General Budget
1.12 - Pilot online content, curriculum delivery with selected teachers and students	SY 2014-2015	Director of Technology Technology Advisory Committee Assistant Superintendent	General Budget
1.13 - Increase high technology class offerings at the elementary, middle and high school level including programming, robotics and engineering	SY 2014-2016	Director of Technology Superintendent Assistant Superintendent Curriculum Coordinator Instructional Technology Specialists Schools	Staffing Budget
1.13 - Evaluate online content, curriculum delivery pilots and make recommendation for expanded implementation	Spring 2015	Director of Technology instructional Technology Specialists Technology Advisory committee	General Budget

1.14 - The establishment of a 1:1 device initiative at the high school	Fall 2015	Technology Department Schools	Unknown
1.15 - Implement expanded online curriculum and content delivery based on recommendations of pilot program	SY 2015-2016	Director of Technology Instructional Technology Specialists Technology Advisory Committee Schools Assistant Superintendent	Unknown
1.16 - Begin pilot of blended, adaptive, and game-based learning systems in selected classrooms in the district	SY 2015-2016	Director of Technology Instructional Technology Specialists Technology Advisory Committee Schools Selected Participants Assistant Superintendent	General Budget
1.17 - Technology Department will work with Student Services on developing strategies to integrate assistive technology devices for students with disabilities	Ongoing	Director of Technology Director of Student Services Instructional Technology Specialist	Multiple

PD, Curriculum and Student Learning - Goal 3:

By the end of School Year 2016, 100% of the district's classroom teachers will have participated in at least 10 hours of relevant professional development focusing on instructional technology integration.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Establish a technology professional development subcommittee for the purpose of providing a technology PD plan for the district over the next three years	Winter 2013	Director of Technology Assistant Superintendent	N/A
1.2 – Based on the plan created by the advisory committee, create a variety of technology training resources and opportunities for teachers based on prioritized tech integration subjects using expert technology teachers across the district.	Winter/Spring 2014	Director of Technology Assistant Superintendent Technology Advisory Committee	Professional Development Budget
1.3 - Survey Teachers on Norwood Public Schools Technology program to inform what skills and training is needed for the next school year	Spring 2014 Spring 2015 Spring 2016	Director of Technology Technology Integration Committee Assistant Superintendent	General Budget
1.4 - Create a variety of technology training resources and opportunities for teachers based on district priorities and priorities identified in the technology survey	School Year 2015-2015 School Year 2015-2016	Director of Technology Technology Integration Committee Assistant Superintendent	Professional Development Budget

Facilities Technologies and Business Applications Goals

Another important component of the technology plan is to effectively manage and support facilities technologies and business applications. More and more facilities and securities systems are managed by applications that are run through the district's data centers including the HVAC systems, security door locks and security cameras. It is important to have a strong partnership with the Buildings and Grounds department to manage those applications, schedule updates and troubleshoot when needed. Just as important is a strong partnership with the Business Department in researching and developing ways we can cut costs and increase efficiencies through the implementation of document management solutions and decreased printing strategies. Whether it is exploring managed printing solutions to help us cut down on toner and maintenance costs, to the exploration of online curriculum and electronic textbooks, the benefits of moving towards a more paperless environment need to be investigated.

Facilities and Business Technologies - Goal 1: Work with the Buildings and Grounds department on the deployment and management of security and facilities technologies across the network.

Action Steps	Timeframe	Responsible Teams	Budget Source
1.1 – Assist in deployment of security door locking system district wide	Summer/Fall 2013	Director of Technology Network Specialist Facilities Director District Electrician Selected Vendor	N/A
1.2 – Create and implement a facilities technology management plan in which all facilities technology is identified and protocol for management, responsibility and evaluation is established	Winter 2013	Director of Technology Network Specialist Facilities Director District Electrician	N/A
1.3 - Create and implement a security technology management plan in which all district security technology is identified and protocol for management, responsibility and evaluation is established	Winter 2014	Director of Technology Network Specialist Facilities Director District Electrician	N/A

Facilities and Business Technologies - Goal 2: Work with the Business department to identify cost savings and efficiencies across the district through the use of technology, starting with lowering printing costs district wide.

Action Steps	Timeframe	Responsible Teams	Budget Area
1.1 – Research and Evaluate electronic document management solutions as a way to save money on printing and storage costs.	Winter/Spring 2014	Director of Technology Business Office	N/A
1.2 – Research and Evaluate print management solutions as a way to save money on printer maintenance, toner and paper costs throughout the district	Winter/Spring 2014	Director of Technology Business Office	N/A
1.3 Pilot print management solutions in the district	Spring 2014	Director of Technology Business Office	General Budget
1.4 Pilot document management Solutions in the district	Summer/Fall 2014	Director of Technology Business Office	General Budget
1.5 Make a decision on moving forward with a print management solution	Summer 2014	Director of Technology Superintendent Business Office	N/A
1.6 Make a decision moving forward on a electronic document management solution	Winter 2014	Director of Technology Superintendent Business Office	N/A

APPENDIX

There were many resources that helped to guide us in preparing this plan, including the examples of other school district plans throughout the Commonwealth, teacher experience and input, the National Educational Technology Plan, the International Society for Technology in Education and the Massachusetts Department of Elementary and Secondary Education technology benchmarks. It is through these "guiding resources" that we gathered and analyzed technology data from the district and discussed the biggest needs that would bring us to reaching the technology vision as presented in this plan

Resource	Link	Explanation
Massachusetts Department of Elementary and Secondary Education - Local Technology Plan Guidelines	http://www.doe.mass.edu/odl/techplan/10-15guidelines.pdf	Technology benchmarks designed to assist school districts develop purposeful long-range technology plans
National Educational Technology Plan 2010	http://www.ed.gov/technology/netp-2010	The National Education Technology Plan calls for applying the advanced technologies used in our daily personal and professional lives to our entire education system to improve student learning, accelerate and scale up the adoption of effective practices, and use data and information for continuous improvement.
Beyond PARCC: The Next Generation Classroom	http://www.doe.mass.edu/odl/NextGenClassroom.pdf	Published by Massachusetts DESE, this paper is working to define a new standard for Commonwealth schools that will help ensure that all students and educators benefit from a learning environment that provides adequate access to high quality 21st century learning resources.
ISTE Essential Conditions	https://www.iste.org/docs/pdfs/netsessentialconditions.pdf?sfvrsn=2	The necessary conditions to effectively leverage technology for learning as published by the International Society for Technology in Education.
ISTE NETS standards for learning, leading and teaching in the digital age	https://www.iste.org/standards	The NETS standards for students, teachers and administrators set a standard of excellence and best practices in learning, teaching, and leading with technology in education.
Massachusetts Common Core State Standards - 2011 ELA & Literacy Curriculum Framework	http://www.doe.mass.edu/frameworks/ela/0311.pdf	This framework merges the Common Core State Standards for English Language Arts and Literacy in History/Social Studies, Science, and Technical Subjects with additional Massachusetts standards and other features.

Massachusetts Common Core State Standards - 2011 Mathematics Curriculum Framework	http://www.doe.mass.edu/frameworks/math/0311.pdf	This framework merges the Common Core State Standards for Mathematics with additional Massachusetts standards and other features.
Massachusetts DESE 2011-2012 Digital Learning Survey submitted in March 2013	http://www.doe.mass.edu/odl/etreport/2012.pdf	This survey was conducted in March 2013. 221 Massachusetts school districts submitted data regarding digital learning initiatives, future plans and PARCC readiness.
Technology Guidelines and information for the PARCC Assessments	http://www.parcconline.org/technology	PARCC assessment technology guidelines published to inform schools and districts of the minimum and recommended specifications for computer hardware, input devices, security requirements and bandwidth needed that will support schools instructional and assessment needs.
Children's Internet Protection Act	http://www.fcc.gov/guides/childrens-internet-protection-act	The Children's Internet Protection Act (CIPA) was enacted by Congress in 2000 to address concerns about children's access to obscene or harmful content over the Internet In early 2001, the FCC issued rules implementing CIPA and provided updates to those rules in 2011.
The Journal of Technology Learning and Assessment: Educational Outcomes and Research From 1:1 Computer Settings - January 2010	http://escholarship.bc.edu/ojs/index.php/jtla/article/viewFile/1606/1463	This report is the findings of four separate empirical studies