

September 17, 2014
Bill Olsen, Superintendent of Schools
23 Depot Street,
Westford, MA 01886

Letter of Transmittal

Dear Mr. Olsen:

Please find attached the Digital Learning Plan 2014-2019 for Westford Public Schools.

This report is a roadmap with specific goals and actions to guide our district through the transition to a mobile digital learning environment. It is a detailed three year plan with a general outline for another two years, which makes a combined outlook of five years. We intend to regularly assess and monitor the success of this plan and make appropriate adjustments.

Sincerely yours,

Julie Baudreau, Director of Digital Learning
Westford Public Schools

“As many schools and districts are now rushing to buy every student a digital device, I’m concerned that most one-to-one implementation strategies are based on the new tool as the focus of the program. Unless we break out of this limited vision that one-to-one computing is about the device, we are doomed to waste our resources.”

(‘Why Schools Must Move Beyond One-to-One Computing’) by Alan November

Alan November

Alan November is recognized internationally as a leader in education technology. He was named one of the nation’s fifteen most influential thinkers of the decade by Technology and Learning Magazine. In 2001, he was listed as one of eight educators to provide leadership into the future by the Eisenhower National Clearinghouse. In 2007, he was selected to speak at the Cisco Public Services Summit during the Nobel Prize Festivities in Stockholm, Sweden. His writing includes numerous articles and best-selling books, Who Owns the Learning, Empowering Students with Technology and Web Literacy for Educators. Alan was co-founder of the Stanford Institute for Educational Leadership Through Technology and is most proud of being selected as one of the original five national Christa McAuliffe Educators.

Digital Learning Plan

This report is a roadmap with specific goals and actions to guide our district through the transition to a mobile digital learning environment. For school years 2014-15, 2015-2016 and 2016-2017 there are detailed goals and actions, for the school years 2017-2018 and 2018-2019 there is a general outline.

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The Digital Learning Plan Committee

Many thanks for all the hard work that everyone contributed to this plan.

Ellen Brandt	Librarian (Blanchard 6-8)
Blake Buxton	8th Grade Math/Science Teacher
Chris Chew	Principal Stony Brook Middle School
Stephanie Gosselin	ITS (WA)
Christine Francis	Assistant Superintendent
Carolyn Jerzylo	8th Grade Mathematics Teacher
Roshni Mirchandani	Former Westford Student
Margaret Murray	School Committee
Mary O’Gorman	Math Coordinator (3-5)
Charlotte Redman	Student
Claire Redman	Parent
Lisa Sanderson	ITS (Abbot 3-5)
Rick Tricca	Parent
Julie Baudreau	Director of Digital Learning

Digital Learning Plan Introduction

Why a Digital Learning Plan?

This is a Digital Learning Plan, which focuses on student learning and transforming pedagogical strategies rather than a traditional Technology Plan, which generally emphasizes hardware, needs. Digital Learning is *“any instructional practice that effectively uses technology to strengthen a student’s learning experience.”* (Alliance for Excellent Education)

The Purpose

The purpose of this Digital Learning Plan is to provide a roadmap with specific goals and actions to move our district from where we are now through the transition to a mobile digital learning environment. It is a detailed three-year plan with an outline for another two years, which makes a combined total of five years. It is not possible to plan in detail for the next five years, as technology changes so quickly. Additionally, we intend to regularly assess and monitor the success of the three-year plan and make appropriate adjustments. In turn, this will impact our plans for years four and five.

This plan is designed to prepare educators and administrators for the mindset shift to student-centered learning required by a mobile digital learning environment. The pilot programs are intended to answer the questions about what pedagogical strategies combined with which devices, supported by what types of professional development will best enhance learning in Westford Public Schools.

The Instructional Technology Program Review

In order for Westford Public Schools to recognize what we need to do to make the transition to a high quality mobile digital learning environment we evaluated our existing instructional technology program and how we currently use technology it through a detailed review. An executive summary can be found in Section II and a full report is included in the appendix of this plan. The Instructional Technology Program Review was based on four key areas or indicators:

- Student Outcomes
- Teacher Skills and Pedagogy
- Administration and Policies
- Infrastructure

The findings for each key area or indicator have been turned into goals and action items for this Digital Learning Plan. More information about the indicators can be found in the appendix.

Focus on the Learning Goals

When considering the transition to a mobile digital learning environment where students have access to devices in the classroom as and when they need them, it is important to begin by focusing on the learning goals and how the devices will support the learning process and experience for students. Educators should ask themselves what it is they expect the students to know and what it is they want the students to be able to do. Only then should we consider what types of devices will strengthen the learning process. According to research-based evidence, by taking this approach and focusing on the learning process rather than the device (or alternatively, simply planning on 'going 1:1') we are much more likely to see a positive impact on student learning.

For this reason, this Digital Learning Plan is highly focused on providing professional development to create a common understanding of how we use technology to strengthen, differentiate and potentially accelerate the learning process in Westford Public Schools.

Our Vision for Digital Learning

Our Vision for Digital Learning provides a description and a picture for how technology infused learning will look in Westford Public Schools. We envision a successful mobile digital learning environment where:

- Students are at the center of the learning process
- Educators let go of some of the control
- Students become expert learners
- Students are assessed on skills such as the 4Cs (collaboration, critical thinking, creativity and communication) as well as content area knowledge

It is important that this is a living vision, which everyone in the schools and the community embraces. However, while some educators' teaching style lends itself to this approach, for some it requires a shift in mindset, as it allows students to take more ownership and control of their own learning in globally literate classrooms. Consequently, the transition to a mobile digital learning environment may require some educators to move a little out of their comfort zone and take a few risks with their teaching practices.

Supportive Conditions for Student and Teacher Success

It is important that the district provides the necessary conditions and supports that will set all teachers and students up for success. This is a fundamental theme in this plan. These essential conditions range from establishing school level Digital Learning Task Teams and a district wide Digital Learning Advisory Team to providing access to devices and reliable infrastructure. The school level Digital Learning Task Teams will be responsible for providing teachers with a voice regarding digital learning, planning and writing grants and contributing to decisions around how digital learning is implemented in their school. The district wide Digital Learning Advisory Team will be responsible for drawing up proposals and updates for district wide policies regarding digital learning, reviewing the recommendations from the evaluations of the pilot programs and assessing the alternatives and timeline for moving to a mobile learning environment.

Teachers will have opportunities to participate in ongoing job embedded professional development, courses, attend conferences, peer classroom observations and join an online community of practice. Creating a district wide collaborative culture is an important supportive condition. Administrators play a crucial role in this. They create the right culture and supports for educators to be able to grow professionally, move out of their comfort zones and develop their digital learning skills. It is the responsibility of the district to provide the administrators with the necessary tools and support to be successful. Consequently, the first year of this plan focuses on providing the administrators with the professional development they need to be successful educational leaders in this digital age. Professional development will also be provided for office staff such administrative assistants and secretaries.

Pilot Programs

Given that our focus is on learning goals and objectives and selecting the device that best supports our needs, a one size fits all for all grades is unlikely to be a good fit. Therefore, we plan to set up a variety of pilot programs which are tailored to align with our curriculum needs in order to find out what types of devices work best for which age level. This Digital Learning Plan outlines these pilot programs, which will be evaluated to find the best options for Westford Public Schools moving forward.

The pilot programs use different blended learning models. Blended learning is where students learn at least in part through online delivery of content and instruction with some element of student control over time, place, and path. It is an approach to learning in which teachers leverage technology to meet student needs in real-time. Blended learning allows teachers to use technology to create a more personalized learning environment and to differentiate instruction. The different blended learning models, which are included in the pilot programs, include:

Blended Learning Model	Westford's Definition	Pilot Program
Station Rotation	The teacher delivers the majority of the curriculum. All learning takes place in the classroom. Students rotate on a fixed schedule between a teacher facilitated small group and stations, one or more of which are online. This blends self-paced work online with face-to-face instruction.	Elementary
Blended Project - Based Learning	A teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to a complex question, problem, or challenge. In a blended approach to project-based learning, students receive some of the content and resources online.	District wide
Face-to-Face Driver	The teacher delivers the majority of the curriculum. The online learning element is used to supplement and remediate, as well as to engage students in online discussions, activities, and projects beyond the physical classroom. The devices are usually in the back of the classroom.	Elementary, Middle
Flipped Learning Model	Students learn new content online by watching video lectures, usually at home, and what used to be homework (assigned problems) is now done in class with teachers offering more personalized guidance and interaction with students, instead of lecturing. This enables teachers to differentiate instruction and spend more time answering student questions in class.	Westford Academy
Flex Model	The class meets for some sessions face-to-face and others are non-face-to-face sessions. During the non face-to-face times students work independently or in small groups online. The teacher provides face-to-face support through activities such as small-group instruction, group projects, and individual tutoring.	Westford Academy The Power of One

The SAMR Model: Substitution, Augmentation, Modification, Redefinition.

This a model developed by Dr. Ruben Puentedura, Ph.D., to help educators integrate technology into teaching and learning. The model aims to enable teachers to design, develop, and integrate technology infused lessons that transform learning experiences for students leading to higher levels of achievement. Lessons that are aligned with the higher levels of the SAMR model teach and assess the 4Cs: It is the model that we are using district wide to develop a common understanding and language around technology integration.

(Please see the appendix for more information.)

TPACK Model

"In a digital learning environment, expert teachers are those who combine subject matter knowledge, effective instructional strategies, and appropriate applications of technology". The combination is described as Technological Pedagogical Content Knowledge (TPACK). It is more than simply adding technology to traditional approaches. It depends upon deep knowledge of how technology can be used to access and process subject matter. Teaching math to grade 3 students requires different pedagogical uses of technology than teaching history in high school or literacy in the early years. In each case, the expert teacher needs to make creative links between what is being learned (content), how it is taught (pedagogy), and the appropriate tools (technology). (Please see the appendix for more information.) (*Source: Teaching Teachers for the Future*).

Our goal when integrating technology is for educators, where appropriate, to create tasks that:

- Target the higher-order cognitive skills (Bloom's)
- Have a significant impact on student outcomes (SAMR)
- Support deeper learning by connecting content, pedagogy and technology (TPACK)

Measuring the Effectiveness of the Plan

Progress will be monitored and assessed twice a year. We recommend implementing Clarity by BrightBytes, which is a web-based software product. This product will provide detailed graphic reports of our strengths and weaknesses at a district level and the individual school level. It will also provide a specific, school level analysis on the actual progress being made in the classrooms with the SAMR model. This will allow us to directly target our goal of providing the support teachers need to move up through the SAMR model to the transformational stage.

Lesson Examples and Scenarios

It is helpful for teachers, administrators and parents to understand what high quality digital learning looks like. Vermont has developed some K-12 example lessons and scenarios, which are aligned to the ISTE Standards (the national standards for technology). The sixty exemplars describe technology infused lessons across a variety of subjects and age levels. Our goal is to use these lessons as a model for developing our own exemplars and scenarios, which we can use in Westford. Our lessons will be aligned to the ISTE Standards. More information about the lesson exemplars from Vermont can be found in the appendix.

Budget

Pilot programs will take into account budget constraints and equity issues. A future digital learning program that requires more of a 1:1 ratio of devices to students needs to be financially sustainable. This is likely to mean either a Bring Your Own Device (BYOD) model or a leasing program which can be funded by a fee charged to students. The goal is to use existing annual capital funding for technology to pay for devices that are used in the classrooms and are not part of a BYOD or leasing program. The District Digital Learning Advisory Team in consultation with the School Digital Learning Task Teams will review the research and options for moving to a 1:1 environment over the 2014-2015 school year and make a recommendation by March 2015.

It is intentional that there is a large budget for professional development, as we need to focus on the mindset shift and pedagogical strategies, as well as technology skills. Professional development is one of the key elements that will fundamentally impact the success of this plan. It is as important as purchasing devices and needs to occur in a timely fashion in order to be effective.

Infrastructure

A successful mobile digital learning environment relies on fast Internet connections and reliable wireless infrastructure. This plan includes strategies for improving and maintaining the quality of service provided to the schools.

Department of Elementary and Secondary Education

The Massachusetts Department of Elementary and Secondary Education provides districts with benchmarks, which are recommended guidelines designed to help districts develop purposeful long-range technology plans. While not mandated, the guidelines represent recommended conditions for effectively integrating technology into teaching and learning. These guidelines have been taken into account in developing this plan and have been included in the appendix for informational purposes.

Instructional Program Review Executive Summary

The Westford Public Schools recently conducted an evaluation of how instructional technology currently supports teaching and learning in our schools. The evaluation team considered the Instructional Technology Program against four key indicators. The indicators represent the conceptual framework around which Westford's Instructional Technology Program was reviewed and the goal for how technology should support learning in Westford in the following four key areas:

- Student Skills and Outcomes
- Teacher Skills and Pedagogy
- Administration, Policies and Professional Development
- Infrastructure

Process

The review included a multi-faceted approach to gathering information on the varied opinions and experiences from teachers, students, administrators, parents and observations. Data collecting activities were through focus groups, classroom observations and surveys. With data in-hand, the evaluators analyzed the district's performance against the indicators. The findings and associated recommendations from that evaluative analysis formed the basis for Westford Public School's Technology Plan.

Summary Findings

The evaluation team found that:

1. Overall there is a very limited understanding of the vision for technology's role in teaching and learning amongst the school communities and the parents. Nevertheless, many teachers are enthusiastic about the use of the technology resources they have. Teachers do feel, however, that their access to devices and training is limited.
2. It will be really hard to engage teachers on a meaningful basis about implementing ideas that support the vision for technology until the teachers' concerns about a lack of resources have been addressed.
3. Teacher comments at all levels suggest that there is little equity from one building to another in opportunities to use technology as a tool for learning.
4. Additionally, teacher and parent comments note that students have significantly different experiences from year to year.
5. There is a lack of consistent viable instructional technology curriculum that is aligned to ISTE (National Technology Standards), Common Core State Standards, and Westford Technology Benchmarks.

6. Looking at the teacher survey data, one can begin to see that teachers who do engage their students in technology-supported activities do so on average only “several times a semester”. The data shows that generally technology is not a ubiquitous resource used by teachers and students on a daily basis to support learning.
7. Due to the lack of a shared vision for the use of technology to strengthen learning experiences, there appears to be a somewhat limited understanding on the part of Westford teachers as to how technology can broadly be applied to the development of deeper learning.
8. Teachers and Principals note a lack of professional development that is aligned with the vision for instructional technology, ISTE (National Technology Standards) and Common Core State Standards over recent years.
9. The data shows the most desired topic for technology related professional development is “Developing Online Learning Opportunities for Students”.
10. The infrastructure (network and hardware) in many schools is inadequate, with unreliable networks and slow bandwidth speeds to support the successful implementation of the digital learning vision.

Summary Recommendations

The evaluation team’s findings give rise to several basic recommendations for how Westford Public Schools could improve its Instructional Technology Program. The goal of the Technology Plan is to transform these recommendations into goals and action plans in order to make the new vision for using technology a reality.

1. First and foremost, the district needs to establish a commonly held vision for technology’s role in supporting – as well as transforming - teaching and learning. This vision should focus on technology’s role in helping Westford’s students meet the challenges of life ahead in terms of becoming creative, collaborative, and critical life-long learners.
2. There needs to be a plan that emphasizes access to resources as well as a framework for what to do with those resources.
3. Since this vision for student outcomes should not be specific to “technology”, it is necessary for the district to articulate the role of technology in meeting the vision for learning. If it is made clear how and what students should do, then it becomes clear what teachers need to do. The evaluation teams recommend that the Student Skills/Outcomes and Teacher Skills/Pedagogy indicators be used as the basis for a vision for instructional technology integration and therefore the cornerstone of the district’s new Technology Plan.
4. Next, Westford needs to provide professional development necessary to help teachers and students meet the district’s vision. This professional development should generate exemplars, curriculum maps, and a scope and sequence of student technology skills that align with standards such as ISTE (National Technology Standards), Westford Public Schools Benchmarks, the Common Core, and the Framework for 21st Century Learning.

In order to conduct such meaningful professional development, much of which will be job-embedded, the district will need to refocus the role of the Instructional Technology Specialist toward that of Digital Learning Specialist.

5. Finally, Westford needs to improve its technology infrastructure over the near-term future. As an immediate goal, the district should upgrade its network bandwidth to be consistent in all schools. Subsequently, plans need to be made to upgrade the wireless infrastructure in all schools to industry-standard commercial quality. The installation of these more robust wireless network systems should coincide with the implementation of a device management plan in each school, which plans to have a 1:1 or BYOD mobile learning policy.

Vision

Westford Public Schools prepares our students for their future as citizens of a digitally connected world.

Skilled educators continuously foster innovation, critical thinking and creativity as well as strong research and organizational skills, within a technology strengthened curriculum. Students develop and integrate knowledge, explore different perspectives, and creatively publish their ideas for a variety of audiences. Students are inspired to take ownership of their own learning, problem solve and collaborate, both globally and locally. Teachers and administrators have the knowledge, skills and commitment to establish personalized, relevant, globally literate, learning environments for all students while developing information literacy and digital citizenship skills across the curriculum.

There is a clear understanding, actively owned by the broad community of Westford, students, teachers, parents, and administrators, regarding how we use technology to strengthen learning. Westford Public Schools ensures through its policies and actions that all students have an equitable experience, supported by consistent and sustainable funding for technology.

All decisions involving technology focus on developing the skills students need to be successful digitally connected citizens.

Overview of Goals by Indicator

Indicator	Goals
<p>Indicator 1: Student Outcomes</p>	<p>For Students in Grades 1-5 By June 2015 at least 40% of WPS students 1-5 will be proficient in grade level application of appropriate core technology skills (typing, etc) and practice responsible digital citizenship. By June 2016 60% of these students will be proficient in grade level application of appropriate core technology skills (typing, etc), practice responsible digital citizenship and 50% will be proficient in information and media literacy. By June 2017 75% will be proficient in grade level application of appropriate core technology skills (typing, etc), practice responsible digital citizenship and 60% of these students will be proficient in information and media literacy.</p> <p>For Students in Grades 6-8 By June 2016 at least 50% of WPS students 6-8 will be proficient in grade level application of appropriate core technology skills, information and media literacy skills and practice responsible digital citizenship. By June 2017 at least 75% of WPS students 6-8 will be proficient in grade level application of appropriate core technology skills, information and media literacy skills and practice responsible digital citizenship. By June 2018 at least 90% of WPS students 6-8 will be proficient in grade level application of appropriate core technology skills, information and media literacy skills and practice responsible digital citizenship.</p> <p>For Students in Grades 9-12 By June 2017 at least 70% of WPS students 9-12 will be proficient in grade level application of appropriate core technology skills, practice responsible digital citizenship and information and media literacy skills. By June 2018 at least 80% of WPS students 9-12 will be proficient in grade level application of appropriate core technology skills, practice responsible digital citizenship and information and media literacy skills. By June 2019 at least 90% of WPS students 9-12 will be proficient in grade level application of appropriate core technology skills, practice responsible digital citizenship and information and media literacy skills.</p>
<p>Indicator 2: Teacher Skills and Pedagogy</p>	<p>Goal 1: Year 1: By July 2015 100% of educators will have moved out of the beginner's level on the SAMR model report from Clarity by BrightBytes. All schools will show a positive trend on the CASE domains report from Clarity by BrightBytes.</p> <p>Year 2: By July 2016 there will be significant growth for all schools on the SAMR model report from Clarity by BrightBytes. All schools will continue to show a positive trend on the CASE domains report from Clarity by BrightBytes.</p> <p>Year 3: By July 2017 here will be significant growth for all schools on the SAMR model report from Clarity by BrightBytes. All schools will continue to show a positive trend on the CASE domains report from Clarity by BrightBytes.</p>

	<p>GOAL 2: Year 1: By July 2015, outside of teaching, at least 70% of teachers use technology every day, including some of the following areas: research, lesson planning, organization, administrative tasks, communications, and collaboration. Year 2: By July 2016 the number will be at least 80%. Year 3: By July 2017 the target is at least 90%.</p>
<p>Indicator 3: Administration and Policies</p>	<p>GOAL 1: Administrators understand and set up the supportive conditions necessary in their schools to enable teachers to successfully implement a digital learning environment and implement the Vision for Digital Learning.</p> <ul style="list-style-type: none"> ● Redefine what it means to be an educational leader in the digital age ● School Based Digital Learning Task Teams ● Develop a collaborative culture in all schools - 'It's ok to take risks' ● Understand and demonstrate the ISTE Standards for Administrators ● Communicates using Google apps and social media such as Twitter and blogs ● Clarify role of ITS ● Provide time for teachers to share and collaborate <p>GOAL 2: Develop an evaluation process for the Digital Learning Program that enables the district to monitor its progress in achieving its goals and to make mid-course corrections in response to new developments and findings.</p>
<p>Indicator 4: Infrastructure</p>	<p>GOAL 1: Develop an affordable, sustainable, commercial quality and reliable technology infrastructure that enables teachers and students to implement the Westford Public School's Vision for Digital Learning.</p> <p>GOAL 2: Develop a plan for a financially sustainable digital learning environment where all students and teachers are afforded equitable and timely access to software, devices, peripherals, and technology integration expertise to support a seamless infusion of technology into the learning process.</p>

Action Plan

Indicator 1: Student Outcomes

Goals

For Students in Grades 1-5

By June 2015 at least 40% of WPS students 1-5 will be proficient in grade level application of appropriate core technology skills (typing, etc) and practice responsible digital citizenship.

By June 2016 60% of these students will be proficient in grade level application of appropriate core technology skills (typing, etc), practice responsible digital citizenship and 50% will be proficient in information and media literacy.

By June 2017 75% will be proficient in grade level application of appropriate core technology skills (typing, etc), practice responsible digital citizenship and 60% of these students will be proficient in information and media literacy.

For Students in Grades 6-8

By June 2016 at least 50% of WPS students 6-8 will be proficient in grade level application of appropriate core technology skills, information and media literacy skills and practice responsible digital citizenship.

By June 2017 at least 75% of WPS students 6-8 will be proficient in grade level application of appropriate core technology skills, information and media literacy skills and practice responsible digital citizenship.

By June 2018 at least 90% of WPS students 6-8 will be proficient in grade level application of appropriate core technology skills, information and media literacy skills and practice responsible digital citizenship.

For Students in Grades 9-12

By June 2017 at least 70% of WPS students 9-12 will be proficient in grade level application of appropriate core technology skills, practice responsible digital citizenship and information and media literacy skills.

By June 2018 at least 80% of WPS students 9-12 will be proficient in grade level application of appropriate core technology skills, practice responsible digital citizenship and information and media literacy skills.

By June 2019 at least 90% of WPS students 9-12 will be proficient in grade level application of appropriate core technology skills, practice responsible digital citizenship and information and media literacy skills.

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/Status
2014-2015	Introduce keyboarding to the 1-5 digital learning curriculum (web-based, outside of the school day)	12/14	1/15	\$5000 per year (existing district wide technology budget)	Baudreau, K-5 ITS	In progress
2014-2015	Develop and implement a 1-5 digital citizenship curriculum including assessments	7/14	6/15	(Summer curriculum work budget)	Baudreau, K-5 ITS	Implementing
2014-2015	Develop a scope and sequence for the updated district-wide 1-8 curriculum	1/15	3/15	\$0	Baudreau, All ITS	

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/Status
2015-2016	Establish current grade level technology and media literacy skills and benchmarks aligned to ISTE Standards, Westford Public Schools Benchmarks, the Common Core (CCSS) grades 1-8 include assessments	7/15	8/15	(Summer curriculum work budget)	Baudreau, ITS	
2015-2016	Add media literacy skills to the 1-5 digital citizenship curriculum including assessments	7/15	8/15	(Summer curriculum work budget)	Baudreau, ITS	
2015-2016	Develop a 6-8 digital citizenship and media literacy skills curriculum including assessments and an implementation plan	7/15	8/15	(Summer curriculum work budget)	Baudreau, ITS	
2015-2016	Implement a 6-8 digital citizenship and media literacy skills curriculum including assessments	8/15	6/16	\$0	Baudreau, ITS	
2015-2019	Provide Pre K-12 teacher professional development on the new grade level technology, information and media literacy skills & how to develop high quality technology infused lessons across the curriculum	7/15	6/19	District Wide PD	Baudreau, ITS, Assistant Superintendent	
2015-2017	Develop strategies to create opportunities for PreK-12 teachers and ITS to collaborate and develop technology infused lessons	9/15	6/17	\$0	Baudreau, ITS, Curriculum Coordinators, WA DL Task Teams, Assistant Superintendent	

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/Status
2016-2017	Develop strategies and plans to infuse, technology skills, information and media literacy and digital citizenship to the 9-12 curriculum (across subjects)	7/16	8/16	(Summer curriculum work budget)	Baudreau, ITS, WA DL Task Team	
2016-2017	Implement plans to infuse, technology skills, information and media literacy and digital citizenship to the 9-12 curriculum (across subjects)	9/16	6/17	\$0	WA ITS, Curriculum Coordinators, Teachers, Assistant Superintendent	

Evaluation:

1. **Keyboarding skills:** assess student progress by reports generated by software program.
2. **Other grade level technology and information and media literacy skills:** pre and posttests.
3. **Digital citizenship:** pre and posttests.

Action Plan

Indicator 2: Teacher Skills and Pedagogy

GOAL 1:

1. By July 2015 100% of educators will have moved out of the beginner's level on the SAMR model report from Clarity by BrightBytes. All schools will show a positive trend on the CASE domains report from Clarity by BrightBytes.

By July 2016 there will be significant growth for all schools on the SAMR model report from Clarity by BrightBytes. All schools will continue to show a positive trend on the CASE domains report from Clarity by BrightBytes.

By July 2017 here will be significant growth for all schools on the SAMR model report from Clarity by BrightBytes. All schools will continue to show a positive trend on the CASE domains report from Clarity by BrightBytes.

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/Status
2014-2017	Implement the Clarity by BrightBytes survey twice a year.	12/14	6/19	Under Indicator 3	Baudreau, ITS, School DL Task Teams	
2015-2016	Develop a common set of expectations for how teachers should use technology as a tool for teaching and learning, aligned and integrated with the curriculum/CCSS/IST E Standards and Westford Technology Benchmarks, the CASE domains of the Clarity by Bright Bytes framework and the SAMR model.	9/15	6/16	\$0	Baudreau, ITS, School DL Task Teams	

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/ Status
2015-2017	Provide PD with exemplars of model lessons and scenarios using technology, which are aligned, to the ISTE Standards, Westford Technology Benchmarks and CCSS standards and the SAMR model. Have teachers modify or customize their own lessons in a similar fashion. <u>Example scenarios and model lessons from Vermont.</u> More information in the appendix.	9/15	6/17	\$0	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders	
2014-2017	Teachers use self-assessment tool such as the TSAT to self assess their needs, both in and outside the classroom for technology focused professional development.	10/14	6/17	(District wide PD days, stipends from district PD budget)	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders	
2015-2019	Our goal is that 90% of teachers will have mastered 80% of the skills in the TSAT by June 2019.	1/16	6/19	(University of Westford budget, district PD budget)	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders, District PD Task Force	
2014-2017	Provide PD to develop a clear understanding amongst teachers of how to use technology to support the teaching and assessing of the 4Cs: critical thinking, creativity, communication and collaboration.	8/14	6/17	(University of Westford budget, district PD budget)	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders	

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/ Status
2014-2017	Provide opportunities for Pre-K to 12 teachers and administrators to attend conferences such as: Building Learning Communities, MassCUE, iPad Summit, and Google Summit.	9/14	9/17	TBA	Baudreau, ITS, School DL Task Teams, Administrators, Coordinators, Teachers, Assistant Superintendent	
2014-2017	Build capacity amongst ITS to ensure the most effective and useful coaching techniques are carried forward.	9/14	9/17	\$0	Baudreau, ITS	
2014-2015	Given the important part attending conferences plays in professional development in this plan we recommend that the district review the value of establishing a district wide technology professional development budget.	1/15	6/15	TBA	Superintendent, Assistant Superintendent, Administrative Leadership Team	
2015-2019	Investigate innovative ideas for new courses and curriculum, such as blended PBL, The Genius Hour and passion based - learning opportunities.	9/15	Ongoing	\$0	Baudreau, curriculum coordinators, administrators, Assistant Superintendent	
2015-2019	Explore partnership opportunities with external businesses and academic institutions such as Olin College of Engineering	9/15	Ongoing	\$6000	Baudreau, curriculum coordinators, administrators, Assistant Superintendent	

Action Plan

Indicator 2: Teacher Skills and Pedagogy

GOAL 2:

By July 2015, outside of teaching, at least 70% of teachers use technology every day, including some of the following areas: research, lesson planning, organization, administrative tasks, communications, and collaboration.

By July 2016 the number will be at least 80%.

By July 2017 the target is at least 90%.

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/Status
2014-2017	Provide time during faculty meetings, curriculum meetings and district-wide professional development days for teachers to share information about technology uses with their colleagues.	10/14	6/17	(District professional development budget)	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders, Teachers, Assistant Superintendent	
2014-2017	Develop and implement strategies to establish a common understanding that PD comes in many forms including: job embedded coached by ITS, through social media such as Twitter or webinars.	10/14	6/17	\$0	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders, Teachers District PD Task Force, Assistant Superintendent	
2014-2017	Ensure all PD focuses on continuous improvement by modeling and developing school/district wide strategies that support a collaborative culture and reflective thinking.	8/14	6/17	\$0	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders, Teachers, District PD Task Force, Assistant Superintendent	

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/ Status
2014-2017	Provide PD to enable teachers and administrators to develop their own Personal Learning Network and become more self-directed and independent with their technology focused PD.	8/14	6/17	\$0	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders, Teachers, District PD Task Force	
2014-2017	Establish a district wide online community of practice for teachers and administrators for sharing technology infused lessons.	8/14	6/17	\$2000 (stipends for creating the online environment)	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders, Teacher, District PD Task Force, District DL Advisory	

Evaluation:
1. Digital Learning Program: Clarity by BrightBytes.
2. Quality and relevance of professional development: workshops evaluation surveys

Action Plan

Indicator 3: Administration and Policies

GOAL:

1. Administrators understand and set up the supportive conditions necessary in their schools to enable teachers to successfully implement a digital learning environment and implement the Vision for Digital Learning.

- Redefine what it means to be an educational leader in the digital age
- School Based Digital Learning Task Teams
- Develop a collaborative culture in all schools - 'It's ok to take risks'
- Understand and demonstrate the ISTE Standards for Administrators
- Communicate using Google apps and social media such as Twitter and blogs
- Clarify the changing role of ITS
- Provide time for teachers to share and collaborate

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/ Status
2014-2015	Clarify role of ITS as model and coach across all buildings. 1) Define the specific responsibilities of Instructional Technology Specialists (ITS) and clearly communicate them. 2) Change the name of the ITS to Digital Learning Specialist.	1/15	6/15	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders	
2014-2015	Administrators develop a common understanding of the ISTE Standards for Administrators.	10/14	6/15	\$0	Baudreau, Administrators	
2014-2015	Develop a district wide, consistent procedure for teachers to request technology integration support from the ITS.	2/14	6/15	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team	
2014-2015	Make a district wide decision on which learning management platform to use at which age levels.	2/14	6/15	\$2200 per year (\$1 per student /teacher per year)	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders	

2014-2017	Provide PD opportunities for administrators to learn and become excited about what it means to be an educational leader and how it impacts student learning in the digital age.	10/14	6/17	\$0	Baudreau, Administrators, Assistant Superintendent	
2014-2017	<p>Administrators will develop a personal digital learning action plan with specific steps timelines and communication strategies for becoming more connected leaders and lead learners in their buildings.</p> <p>The plan should include the following:</p> <ol style="list-style-type: none"> 1) Vision for Digital Learning, which is repeatedly and proactively communicated to all teachers, administrators, parents and the community in different ways. 2) The use of multiple communication channels including social media. 3) A timeline for expanding their own Personal Learning Network. 4) Strategies to support and develop a culture of innovation (it's ok to take risks). 5) Strategies to encourage the teachers and staff to explore different research-based ways to infuse technology in the classroom. 	12/14	6/17	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders	

2014-2016	Review the role of the Library Media Specialists as teachers and models of information and media literacy: 1) Explore strategies for using the LMS to their full potential in each school 2) Seek out opportunities for the LMS and ITS to collaborate and also both attend the LMS Conference: "Better Together"	1/15	6/16	\$0	Baudreau, Administrators, ITS, LMS	
2014-2017	The superintendent may focus one of his goals on helping administrators implement strategies that support the new definition of what it means to be an educational leader in the digital age.	9/14	6/17	\$0	Superintendent	
2014-2017	Administrators set up school based Digital Learning Task Teams.	10/14	6/17	\$0	Baudreau, Administrators, ITS, School DL Task Teams, Informal Teacher Leaders, Teachers	
2014-2017	Provide PD for all staff including administrative support and secretaries on the new productivity tools.	10/14	6/17	\$0	Baudreau, ITS, School DL Task Teams, Informal Teacher Leaders	
2014-2019	Develop an ongoing two-way communications plan to inform all stakeholders including the local community about: 1) Our Vision for Digital Learning 2) Our ongoing progress and the appropriate adjustments we are making 3) The financial impact	10/14	6/19	\$0	Baudreau, School DL Task, District DL Advisory Team	

Action Plan

Indicator 3: Administration and Policies

GOAL:

2. Develop an evaluation process for the Digital Learning Program that enables the district to monitor its progress in achieving its goals and to make mid-course corrections in response to new developments and findings.

Year	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/ Status
2014-2017	Implement Clarity by BrightBytes surveys twice a year. Review the results with the schools and make adjustments accordingly.	9/14	6/17	\$5,300 per year	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders, Teachers	

Evaluation:

1. **Digital Learning Program:** Clarity by BrightBytes Framework.
2. Administrators share digital learning and PLN successes and experiences at an annual Techfest for administrators.

Action Plan

Indicator 4: Infrastructure

GOAL:

1. Develop an affordable, sustainable, commercial quality and reliable technology infrastructure that enables teachers and students to implement the Westford Public School's Vision for Digital Learning.

School Years	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group Contributing	Update/Status
2014-2017	Plan and budget to upgrade the wireless networks in all schools to commercial quality by September 2017 to provide an affordable, sustainable and reliable service that supports the new vision for digital learning.	4/14	6/17	\$65,000 per year (assumes 260 units and 4 year life cycle)	Baudreau, Mike Wells, Kevin Murphy, Lucy Smith, technicians, Administrators, School DL Task Teams, ITS	
2014-2017	Develop wireless network device management plans for the schools that ensure quality of service while allowing sufficient access to meet the needs of staff, students and visitors to the buildings.	4/14	6/17	\$15,000 (based on Casper BYOD suite)	Baudreau, Mike Wells, Kevin Murphy, Lucy Smith, technicians, Administrators, School DL Task Teams, ITS, District DL Advisory Team	
2014-2016	Assess and resolve bandwidth issues required to implement the Vision for Digital Learning: 1) Review bandwidth needs for each building and determine the	9/14	6/16	\$50,000 for switches and up to \$120,000 for cabling. Plus up to \$12,000 per year in ISP charges.	Baudreau, Mike Wells, Kevin Murphy, Lucy Smith, technicians, Administrators, School DL Task Teams, ITS, District DL Advisory Team	

	proper specifications and connectivity (cable, FIOS)					
2014-2015	Review the technical and ITS support, for the week before school starts and the first two weeks of school.	10/14	6/15	\$0 (taking days off during the school year)	Baudreau, Kevin Murphy, Lucy Smith, technicians, Administrators, School DL Task Teams, ITS	
2014-2017	Continuously evaluate security policies to ensure the security of all technology is addressed and up to date.	10/14	6/17	\$0	Baudreau, Mike Wells, Kevin Murphy, District DL Advisory Team	
2014-2019	Town IT Department will continuously monitor various external organizations, which provide timely security information to be sure the security policy, and practices are current. Security issues will be fixed when discovered.	On-going		\$0	Baudreau, Mike Wells, Kevin Murphy, Lucy Smith, technicians, Administrators, School DL Task Teams, ITS, District DL Advisory Team	
2014-2019	Director of Digital Learning meets with Town IT department regularly to ensure good communication and planning regarding updating the technology infrastructure	On-going		\$0	Baudreau, Mike Wells, Kevin Murphy, Lucy Smith, technicians, ITS, District DL Advisory Team	
2014-2015	Designate a Privacy Official – A senior district administrator designated as the	10/14	11/14	\$0	Baudreau, Mike Wells, Superintendent	

	person responsible for ensuring accountability for privacy laws and policies.					
2014-2015	Ensure that the legal counsel our district accesses understand education privacy laws and how they are applied to technology services. We do not want to wait until there is a pressing issue that must be addressed.	10/14	11/14	\$0	Baudreau, Mike Wells, Superintendent	

Evaluation:
1. Digital Learning Program: Clarity by BrightBytes framework.

Action Plan

Indicator 4: Infrastructure

GOAL:

2. Develop a plan for a financially sustainable digital learning environment where all students and teachers are afforded equitable and timely access to software, devices, peripherals, and technology integration expertise to support a seamless infusion of technology into the learning process.

Year	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Update/ Status
2014 - 2015	<p>Compare allocations of technology budget and technology PD budget across buildings:</p> <p>1) Assess the current resources, devices, technology PD and budgets, in each building and ensure there is equity across all buildings so students in each classroom and grade, can have the same opportunities whether they are in the same building or another.</p> <p>2) Review the district wide policy for attending technology conferences, develop strategies for providing equal opportunities and funding for attending technology conferences.</p> <p>3) Consider joining technology associations: MassCUE, METTA and COSN at a district level.</p>	9/14	6/15	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders	

2014 - 2015	Review what access the district provides to devices before and after school to ensure that students and staff have adequate access to the Internet outside of the school day: 1) Evaluate how students and staff can access the Internet after school hours.	1/15	6/1	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders, Teachers	
2014 - 2015	Review implications of fundraising and grants: 1) Develop a policy to manage devices acquired through fundraising and grants that supports the new grade level skills and standards and Vision for Digital Learning	1/15	6/15	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders, Teachers	
2014-2015	Set up a district wide Digital Learning Advisory Team to: 1) Review policies for technology and research mobile learning initiatives. 2) Investigate the possibility and plan the setting up of student help desks in the schools 3) Plan and develop a budget to provide more access to devices for students in classrooms including a 1:1 environment. 4) Establish grade level standards for software programs, devices and peripherals across the district. Consider learning objectives and learning models at	11/14	Ongoing	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders, Teachers	

	each grade level. 5) Make recommendations for moving to a mobile learning environment including a 1:1 ratio in some schools by April 2015.					
2014-2015	Review the policies, protocols, need and budgets for providing devices to: a) ELL students b) Students who have a requirement for access to a device in their IEP or 504 Plan	1/15	6/15	TBA	Baudreau, District DL Advisory Team, Administrators, Student Services Director, Assistant Superintendent, ITS	
2015-2016	Review Assistive Technology policies, protocols, need and budgets. Develop recommendations for how the ITS can support students and teachers in this area.	10/15	6/16	\$0	Baudreau, District DL Advisory Team, Administrators, Student Services Director, ITS	
2015 - 2016	Review the current staffing levels of ITS at all schools and the level of technical support by technicians.	10/15	6/16	TBA	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders, Teachers	
2015 - 2016	Review the current process for assessing the technology products and services that are purchased by schools to improve consistency: 1) Ensure the new plan includes a strategy for all students to receive equitable access to comparable software products and services 2) Ensure the district	10/15	6/16	\$0	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team,	

	has procurement policies for information and instructional technologies that ensure usability, equivalent access, interoperability and SIF compliance.					
2015-2016	Set up a WA club to repair donated computers and re-donate them to families without a device at home	9/15	Ongoing	WA budget	Baudreau, ITS, teacher volunteer	

Evaluation:
1. Digital Learning Program: Clarity by BrightBytes framework.

General Outline for School Years 2017-2018 and 2018-2019

School Years 2014-2017

During the first three years of the plan the focus is on providing professional development to support a shift in the culture around teaching and learning while building a robust infrastructure to support our vision for a digital learning environment.

During the school year 2014-2015 the 13 pilot programs will be regularly assessed and this data will inform our decisions regarding the combination of devices, which are most appropriate for supporting successful pedagogical strategies. The District Digital Learning Advisory Team will evaluate 1:1 mobile computing options starting in November 2014. The Team will make a recommendation by May 2015 for moving forward, this may be a phased approach. The goal is for any 1:1 mobile computing initiative to be financially sustainable, therefore it is anticipated that any recommendation will not require additional expenditure for devices outside the current annual capital request, which is in the region of \$300,000 annually.

School Years 2017-2018 and 2018-2019

The Westford Public Schools will continue to use data to evaluate the success of the digital learning program and to inform decisions moving forward. The goals under all four indicators will be updated and adjusted to ensure that we are meeting our targets and achieving our vision for digital learning. New technologies and tools will also be evaluated in line with our vision.

Digital Learning Professional Development

Goals

This Digital Learning Plan is highly focused on providing professional development that will:

- Create a common understanding of how we use technology to strengthen and differentiate the learning process in Westford Public Schools
- Develop educator and administrator technology skills
- enable teachers to design and deliver technology infused lessons at the higher level of Bloom's Taxonomy, the SAMR and TPACK models
- Support administrator skills as educational leaders in the digital age
- Encourage a culture of sharing and collaboration
- Enable educators and administrators to use the wealth of tools and resources available to become self-directed, globally connected learners

Diverse Formats

Professional development will be available in different formats:

- Online PD opportunities - both independent and facilitated
- Edcamp style (teachers volunteer to run sessions)
- Teacher presented hands - on workshops
- open labs (working sessions everyone works on a topic of their choice)
- Attending conferences
- Peer observations
- Visiting other schools
- Action research
- Tech fest for teachers and/or administrators
- District wide online community of practice

Community of Practice

We will create a district wide, online community of practice for sharing technology infused lessons and experiences. Educators will be able to collaborate and share promising practices supporting each other as they apply their new learning in the classroom.

Professional Development - Blended Learning

The Highlander Institute will provide PD for a group of elementary teachers. These teachers will in turn provided PD for other elementary teachers in their school. Elementary teachers learn the station rotation model of blended learning where students rotate through a number of stations, or centers in the classroom, at least one of which is a digital station. In math for example, this should allow the student who has mastered a concept before her class to move on, and allow the student who may be struggling more time to grasp important building blocks. The teacher is able to meet the needs of all students in a more personalized manner and blended learning can begin to address the need for differentiation in meaningful ways.

School Years	Professional Development	Target Audience	Cost
2014-2017	PD from the Highlander Institute - Blended Learning Station Rotation Model	Elementary Teachers	\$6000

Courses

The will be a mixture of online, blended and face to face, repeated each year according to need and demand. BrightBytes will also add more courses reports. All the courses listed below will be run by Westford teachers and administrators within the University of Westford or district wide professional development days. Costs will be paid from the district wide PD budget.

School Years	Course	Target Audience	Cost	Notes
2014-2016	Educational Leadership in the Digital Age	Administrators	\$0	8/14 Summer Institute
2014 Oct	MOOC - Coaching Digital Learning	ITS	\$0	
2014-2017	Google Docs Training	District wide including administrative staff	\$0	
2014-2019	Google Apps Training	District wide including administrative staff	\$0	
2014-2017	Chromebook Management	District wide	\$0	
2014-2019	SmartBoard Training	District wide	\$0	
2014-2019	Flipped Learning	District wide	\$0	
2014-2019	Project-Based Learning	District wide	\$0	8/14
2014-2019	SAMR and TPACK	District wide	\$0	
2014-2019	Web 2.0 Tools	District wide	\$0	
2015-2019	iPads in the Classroom	District wide	\$0	
2015-2019	Powerful Personal Learning Networks	District wide	\$0	
2015-2019	The Globally Literate Classroom	District wide	\$0	
2015-2019	Digital Citizenship	District wide	\$0	
2015-2019	Who Owns the Learning?	Elementary Alan November the author will Skype into a mtg.	\$0	

2015-2019	Shaping Our Digital Footprint	District wide	\$0	
2015-2019	Using Video to Make Learning More Visible	District wide	\$0	
2015-2019	Blended Learning 101	District wide	\$0	
2015-2019	Writing a Quality Technology Grant	District wide	\$0	
2015-2019	Using Technology to Support Assessment for Learning	District wide	\$0	
2015-2019	Offering a Virtual Hand of Support Online with UDL	District wide	\$0	
School Years	Conference	Target Audience	Cost	
2014-2019	MassCUE	20 educators district wide	\$5,500 per year for 5 years	
2014-2019	Building Learning Communities	40 teachers and administrators a year for 5 years. Alan November will meet with the teachers at the conference and come to Westford to give feedback to teachers about the projects they have implemented.	TBA	
2014-2019	MassCUE Leadership Symposium	10 administrators	\$2,500 per year for 5 years	

Conference Costs

Investing in professional development for conferences is essential for this plan to succeed. One of our goals is to shift the mindset and create a culture of collaboration and sharing, and to do this educators need to see what is possible by discovering and experiencing what teachers and schools are doing outside of Westford. Alan November's Building Learning Communities Conference in July in Boston is particularly important. By taking forty educators together on a bus to this conference we will create a critical mass of teacher leaders who will be excited to share and collaborate. Attending the conference will be tied into participating in professional development, teachers applying new learning from the conference into the classroom and joining a district wide community of practice. Alan November will present to the group from Westford at the conference. He will also come to Westford to hear from each

teacher in the group about the implementation of their new learning. This model has worked very successfully in Pembroke and Franklin.

Digital Learning PD Budget

Given the important part attending conferences plays in professional development in this plan we recommend that the district review the value of establishing a district wide technology professional development budget.

Pilot Mobile Learning Programs

Rationale

Given that our focus is on learning goals and objectives and selecting the device that best supports our curriculum needs, a one size fits all across the district for all grades is unlikely to be a good fit. Therefore, we plan to set up a variety of pilot programs which are tailored to align with our curriculum needs in order to find out what types of devices work best for which age level. These pilot programs will be evaluated to find the best options for Westford Public Schools moving forward. These pilot programs are designed to allow educators and administrators to explore and experiment and to answer questions about what combination of devices will strengthen student learning the best at which grade levels.

The Role of the Instructional Technology Specialists

Instructional Technology Specialists will be closely involved in the planning process and implementation of the pilot programs. Indeed, four Instructional Technology Integration Specialists have partnered with teams of teachers and are participating on the 21st Century Project-Based Learning Course.

Evaluating the Pilot Programs

The pilot programs will be evaluated by surveying the teachers, students, parents and administrators. The pilot programs for the school year 2014-2015 make use of the existing devices that we have in the schools, so there is no impact on budget. The evaluation of these pilot programs will impact decisions regarding purchasing of devices for the school years 2015-2016 and 2016-2017.

The Power of One: Bring Your Own Device/21st Century Project-Based Learning

The pilot program at Westford Academy started in August 2014. It is an elective called the Power of One. It is about making a difference in the world and is the first blended learning course at Westford Academy. This means that some of the curriculum is online. The class does not meet in the traditional manner everyday. The reason for this is that some class time is designated non-face-to-face time. At these times the students continue their studies online independently or in groups in specified areas of the school, the teacher is always available online.

Mrs. Libby Porter and Julie Baudreau are co-teaching the course which is piloting the use of OBA, a Learning Management System (virtual classroom). As the students need access to devices for all classes the students bring in their own device and spares are available for those students who are unable to bring a device to school.

Stony Brook: 21st Century Project-Based Learning Pilot

This pilot program started at Stony Brook in August 2014 and runs until June 2016. Two teachers from Stony Brook, who share access to 25 Chromebooks, are participating in the 21st Century Project-Based Learning Course. Regular access to devices will enable them to apply their new learning on a daily basis. The 21st Century Project-Based Learning Course is focused on teams of teachers collaborating on developing blended learning projects that address the essential question: How do teachers design and implement high quality blended projects that support all learners, address the common core standards and 21st century skills? Between January and March these teams will be implementing projects in the classroom. (The syllabus can be found in the appendix.)

Alignment to the Vision for Digital Learning

Both these courses, 21st Century Project-Based Learning and The Power of One, are aligned to the Vision for Digital Learning which is focused on 21st century skills such as the 4Cs: collaboration, communication, critical thinking and creativity. They are project-based and student centered. The goal is for the projects to include a global aspect if possible.

District Chromebook Cart

In the school year 2013 - 2014 the district purchased a cart of 26 Chromebooks to support PARCC testing. When not used for PARCC testing this cart is available to schools for pilot programs. In the school year 2014- 2015 Nabnasset, Miller, Robinson and Crisafulli will use the cart.

13 Pilot Programs for School Year 2014 - 2015

School	Type	Level	Duration	Number of Teachers	Number of Students
WA	Teachers given a laptop to use in school and at home	Foreign Language and Science Dept	Started 8/14	29 Teachers	0
WA	Bring Your Own Device (No cost)	Grade 12	8/14 to 11/14	1 working with Julie Baudreau	15
WA	One teacher iPad Flipped Learning (Grant 2014)	Grade 11	8/14 to 6/15	1 working with the ITS and Julie Baudreau	25
Stony Brook	25 Chromebooks- (School budget)	Grade 6	8/14 to 6/16	2 share the cart both on the 21st century PBL Course	8 classes of approx 25-28 students
Stony Brook	25 iPads (School budget)	Grade 7	8/13 to 6/15	1 has iPad cart in room	4 classes of 25-28 students
Stony Brook	30 Chromebooks (School budget)	Library	8/14 ongoing	All teachers have access to the devices in the Library	All students
Blanchard	75 Chromebooks (District technology replacement budget 2014-2015)	Learning Commons	8/14 ongoing	All teachers have access to the devices in the Learning Commons	All students

Blanchard	12 teachers with one iPad each for instructional purposes (Grant 2014)	6-8	8/14 to 6/14	Teachers working with the ITS	
Crisafulli	20 Chromebooks and 15 iPads (Grant 2014)	Grade 3	8/14 ongoing	3 share the cart	3 classes of approx 20 students
Nabnasset	26 Chromebook PARCC Cart (District budget 2013)	Grade 2	10/14	ITS working with 2nd grade teachers in their classrooms	2nd grade students
Miller	26 Chromebook PARCC Cart (District budget 2013)	Grade 2	11/14	ITS working with 2nd grade teachers in their classrooms	2nd grade students
Robinson	26 Chromebook PARCC Cart (District budget 2013)	Grade 2	12/14	ITS working with 2nd grade teachers in their classrooms	2nd grade students
Crisafulli	26 Chromebook PARCC Cart (District budget 2013)	Grade 3, 4 and 5	1/15 to 6/15	ITS working with teachers in their classrooms to help prepare students for PARCC testing and infusing technology into lessons.	3rd, 4th and 5th grade students

Progress to Date

Web-Based Software

Google Apps

In July 2014 the Westford Public Schools moved to a district wide Google domain. This means that students and teachers can use Google apps such as Google docs, Blogger and Google sheets without having information in the documents being data mined by Google. Data mining is where a company, such as Google, collects information about its users, which it then uses to create personalized searches and targeted advertising. Google docs will allow students to access their work at home and in school and to collaborate more easily. Teachers will be able to provide timely feedback in text and voice and gather information such as student questions quickly and easily.

Overtime, as teachers become more accustomed to using Google docs it is anticipated that we will be buying less software such as Microsoft Word.

BrainPOP

All of the elementary schools were buying annual subscriptions for BrainPOP which is a website with animated characters who help introduce new topics and illustrate complex concepts. Teachers and students are able to keep a record of learning accomplishments through quizzes, game play, and activities. In July 2014 a district license was purchased from an existing district wide budget, creating a cost savings while providing access to more features on the BrainPOP site.

Keyboarding

The Instructional Technology Program Review recommended the introduction of keyboarding into the elementary curriculum. During the school year 2013-2014 the Technology Integration Specialists piloted several programs. Starting in November 2014 all 1-5 students will have access to a web-based keyboarding program, Keyboarding Without Tears. This product is in the same series as the Handwriting Without Tears, which is already used in all schools. The cost of this initiative is being funded from existing budgets.

Professional Development and Courses for Students

1. Summer Institute 2014

Full day of professional development for the leadership team:
Being an Educational Leader in the Digital Age

2. 21st Century Project-Based Learning (3 credits)

Started August 2014 – Ends June 2015

18 Teachers from Pre-K to Grade 12 are participating

3. October 14th 2014

Full day of hands-on technology professional development district-wide, the goal is to establish a common understanding of our Vision for Digital Learning

4. The Power of One (Blended Project-Based Learning)

Started August 2014 – Ends December 2014

15 high school students are participating

Devices

Where appropriate the desktops in the 2014-2015 school year replacement cycle have been replaced with mobile devices. All costs have been funded from existing budgets. All decisions were aligned to our Vision for Digital Learning.

1. Abbot

The computer lab has been replaced with a mobile learning lab. The Instructional Technology Specialist now travels to classrooms with the mobile cart for her lessons. This had the additional benefit of creating an extra classroom, which was desperately needed.

2. Blanchard

The 24 desktops in the library have been replaced with 75 Chromebooks. The new Learning Commons can now accommodate 3 classes simultaneously in a mobile learning environment.

3. Westford Academy

Teachers in the science and foreign language departments at Westford Academy now each have a laptop. This will give them 24/7 access to a device.

Infrastructure

The Instructional Technology Program Review carried out in the 2013-2014 school year highlighted a number of recommendations, one of which is to improve its technology infrastructure over the near-term future. It recommended that as an immediate goal, the district should upgrade its network bandwidth to be consistent in all schools. Then, subsequently, it recommended that the wireless infrastructure in all schools be upgraded to industry-standard commercial quality. The installation of these more robust wireless network systems should coincide with the implementation of a device management plan, particularly in each school, which plans to have a 1:1 or BYOD mobile learning policy. Several steps have been taken to improve the speed of the Internet and the reliability of the wireless infrastructure from existing funds.

Improvements Made in the School Year 2013-2014 and Summer 2014:

- At Westford Academy the wireless access points have been upgraded and replaced with higher capacity units, using funds approved for the purpose from 2013 - 2014 budget.
- The access points that were taken out of Westford Academy have been installed in Stony Brook so there is no additional cost to the budget. Stony Brook had issues with wireless connections through the building, which was impacting the teachers' ability to use the laptop carts effectively.
- Seven more wireless airports have been installed at the Day School using existing budget funds to support the additional devices purchased through fundraising. This makes a total of 17.
- Fios has been implemented at Miller and Stony Brook as there were serious speed issues at both schools.

**Current Status of Technology Infrastructure
Post Improvements During 2013-2014 School Year**

School	Internet Connection	Wireless	Is there sufficient wireless coverage?	Is there sufficient wireless capacity?
Pre-school	Via CO office - town FIOS			
Miller	Fios	9 airports	No	No
Nabnasset	Comcast	13 airports	No	No
Robinson	Comcast	6 airports	No	No
Abbot	Comcast	16 airports	No	No
Day	Comcast (shared with Blanchard)	17 airports	YES	No
Crisafulli	Comcast	14 airports	No	No
Blanchard	Comcast	20 Blue Socket access points	No 5-6 more units are needed for 100% coverage	No
Stony Brook	Fios	24 Blue Socket access points	No 5-6 more units are needed for 100% coverage	No
Westford Academy	Fios	49 Blue socket access points	Yes	Yes

Please note: Airports are not commercial quality wireless units and the plan is to upgrade them over the next 3 years to Blue Socket access points.

Budget for Improvements for School Years 2014-2017

School Year	Improvement	Start	End	Cost	Total Cost Over 3 years
2014-2017	Upgrade the wireless networks in all schools to commercial quality.	10/14	6/17	\$65,000 per year (assumes 260 units and 4 year life cycle)	\$65000 X 3 years = \$195,000
2014-2017	Develop wireless network device management plans for the schools that ensure quality of service.	10/14	6/17	\$15,000 (based on Casper BYOD suite)	\$15,000
2014-2017	Assess and resolve bandwidth issues: 1) Review bandwidth needs for each building and determine the proper specifications and connectivity (cable, DSL, FIOS etc)	9/14	6/16	\$50,000 for switches and up to \$120,000 for cabling. Plus up to \$12,000 per year in Internet Service Provider charges.	\$170,000 + \$36,000
					\$416,000

Financial Impact Over 3 Years:

Professional Development (Subscriptions, Partnerships, PD, Conferences) = \$44,600

Infrastructure = \$416,000

Measurement = \$15,840

Subscriptions

School Years	Subscriptions	Target Audience	Total Cost Over 3 Years
2014-2017	Make a district wide decision on which learning management platform to use at which age levels.	District Wide	\$2200 X 3 = \$6600

Partnerships

School Years	Partnerships	Target Audience	Total Cost Over 3 Years
2015-2018	Explore partnership opportunities with external businesses and academic institutions such as Olin College of Engineering	District Wide	\$6000

Professional Development

School Years	Professional Development	Target Audience	Total Cost Over 3 Years
2014-2017	PD from the Highlander Institute - Blended Learning Station Rotation Model	Elementary Teachers	\$6000
2014-2017	Establish a district wide online community of practice for teachers and administrators for sharing technology infused lessons.	District Wide (Stipends for creating the online environment)	\$2000

School Years	Conference	Target Audience	Cost Per Year	Total Cost Over 3 Years
2014-2017	MassCUE	20 educators district wide	\$5,500 per year for 3 years	\$16,500
2014-2017	Building Learning Communities	40 teachers and administrators a year for 5 years. Alan November will meet with the teachers at the conference and come	TBA	TBA

		to Westford to give feedback to teachers about the projects they have implemented.		
2014-2017	MassCUE Leadership Symposium	10 administrators	\$2,500 per year for 3 years	\$7,500
				\$44,600

Infrastructure

School Year	Improvement	Start	End	Cost	Total Cost Over 3 years
2014-2017	Upgrade the wireless networks in all schools to commercial quality.	10/14	6/17	\$65,000 per year (assumes 260 units and 4 year life cycle)	\$65000 X 3 years = \$195,000
2014-2017	Develop wireless network device management plans for the schools that ensure quality of service.	10/14	6/17	\$15,000 (based on Casper BYOD suite)	\$15,000
2014-2016	Assess and resolve bandwidth issues: 1) Review bandwidth needs for each building and determine the proper specifications and connectivity (cable, DSL, FIOS etc)	9/14	6/16	\$50,000 for switches and up to \$120,000 for cabling. Plus up to \$12,000 per year in Internet Service Provider charges.	\$170,000 + \$36,000
					\$416,000

Measurement

Year	Action Item	Start	Completion Date	Anticipated Cost	Lead Person/Group(s) Contributing	Cost over 3 years
2014-2017	Implement Clarity by BrightBytes surveys twice a year. Review the results with the schools and make adjustments accordingly.	9/14	6/17	\$5,280 per year	Baudreau, ITS, School DL Task Teams, Administrators, Teachers, District DL Advisory Team, Informal Teacher Leaders, Teachers	\$15,840