



Communicate. Collaborate. Innovate.

Mendon-Upton Regional Schools Technology Plan, 2016-2021

June 2016

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Section 1 - Executive Summary

Belief Statements

The Mendon-Upton Regional School District is committed to providing a high quality to all students so they may have a competitive advantage in a 21st century global economy. An integral component of that education is the smart, purposeful integration of technology. We believe the following about technology:

- We believe to prepare our students for the 21st century, we must purposefully integrate technology to provide the most innovative instruction so all students may effectively communicate, collaborate, and create.
- We believe that technology opens doors for students and creates learning experiences that were once unthinkable, extending learning beyond the classroom in order to develop an understanding of different people and cultures.
- We believe that the district infrastructure should support the use of technology in all classrooms.
- We believe technology should be used to foster critical thinking that challenges the status quo, to

encourage creativity, and to enhance opportunities to collaborate.

- We believe an individual's ability to effectively use and integrate technology into daily life is critical toward his/her future success.
- We believe that students should be held to high standards when using technology in a responsible, ethical, and safe manner.
- We believe that technology provides access to tools that promote equal opportunities for all students through personalized, authentic learning.
- We believe that classrooms should incorporate a balance between technology and hands-on, interpersonal experiences to engage students in subject matter.
- We believe that technology integration should begin in preschool with a clear progression to extend through high school

Vision

The Mendon-Upton Regional School District utilizes technology to communicate, collaborate, and innovate, creating an exceptional, personalized learning experience so all will realize their potential.

Statement of Philosophy

The ability to use technology as a way to communicate, collaborate, and innovate is a critical skill in providing a competitive advantage in the 21st Century. The Mendon-Upton Regional School District uses technology as a tool for student-centered learning by providing authentic, project-based opportunities. Such opportunities promote innovative practices, create unique learning experiences that foster critical thinking, encourage creativity and risk taking, and enhance collaborative opportunities both within and beyond the boundaries of classroom walls. As all students must have these opportunities, all students must have equal access to technology, including the use of assistive technology when appropriate.

In addition to leveraging technology to enhance teaching and learning, our schools must teach students how to use technology in a safe, ethical, and responsible manner. For the district, technology use is a means, not an end. The ultimate goal of instruction is personalized learning experiences that promote

higher order thinking. Hence, a balanced approach that incorporates research-based pedagogies with purposeful technology integration should be employed.

The district must provide the necessary support and infrastructure so meaningful integration may occur. Equally important is ongoing, job-embedded professional development for all staff members so they purposefully utilize innovative technology that improves teaching and learning. Only through this professional development will our staff stay at the forefront with current research and best practices in digital learning.

Strategic Technology Goals & Initiatives, 2016-21

The MURSD Technology Plan is supported by four overarching strategic goals. These strategic goals speak to the “big picture” for technology use to enhance teaching and learning. The goals are *outcomes* that in all likelihood, will entail a multi-year process for successful achievement. Each of the goals are supported by several initiatives that are specific and action-oriented. The technology initiatives may or may not be completed in a year; however, each will be seen to fruition through annual action plans that detail action steps, timelines, resources to be allocated, person(s) responsible, and assessment of results.

The Strategic Technology Goals and Initiatives are the following:

Goal 1: The district will prepare its students to be productive digital citizens, empowering them to think critically, behave safely, and participate responsibly in the digital world.

Initiatives:

- *Ensure clear expectations and guidelines for students’ acceptable use in a revised MURSD Acceptable Use Policy*
- *Design and implement a comprehensive K-12 Digital Citizenship Curriculum*
- *Provide information and training to parents and staff on the responsible and safe use of technology*
- *Create a database of technology resources available for students*

Goal 2: The district will improve its curriculum as well as the instructional and assessment practices of professional staff through balanced, purposeful, and developmentally-appropriate technology integration across all grade levels and content areas.

Initiatives:

- *Integrate the SAMR (Substitution Augmentation Modification Redefinition) Model of effective technology integration across all grade levels*
- *Review and revise the technology curriculum so it is aligned with state and national standards*

- *Expand learning opportunities through technology integration such as blended learning, online learning, and project-based learning*

Goal 3: The district will upgrade its technology equipment, network, and infrastructure so all students may have equal opportunities for access and effective technology integration may be maximized.

Initiatives:

- *Improve WiFi access at the district's elementary schools and internet bandwidth at all four district schools*
- *Provide sufficient IT support and integration support throughout the district*
- *Explore other 1:1 learning platforms/devices that will maximize student progression of skills and allow for flexibility in district purchasing and implementation*
- *Conduct an annual assessment of equipment needs to ensure equal access and opportunity*

Goal 4: The district will use technology to consistently improve communication and collaboration with all stakeholders.

Initiatives:

- *Select one learning management system (LMS) and use it consistently at all schools and grade levels*
- *Communicate with parents/families how technology is enhancing student learning*
- *Promote the use of technology tools so timely feedback on learning is provided*
- *Establish the district as leader in technology integration regionally and statewide through ongoing professional development, communications, and networking opportunities*

Section 2 - DESE Benchmarks

Benchmark 1 - Commitment to Clear Vision and Implementation Strategies

Vision

The vision of instructional technology in the Mendon-Upton Regional School District is the following:

The Mendon-Upton Regional School district utilizes technology to communicate, collaborate, and innovate, creating an exceptional, personalized learning experience so all will realize their potential.

MURSD Technology Planning Committee

Throughout the 2015-16 school year this plan was drafted by a Technology Planning Committee consisting of 23 teachers, students, parents, administrators, and community members. Each member brought a unique perspective and level of expertise to the process. The committee membership is the following:

Name	Position	School
Anthony Amitrano	Director of Tech Integration	District
Karen Arnold	Library Media Specialist	Miscoe Hill MS
Jim Charest	Social Studies Teacher	Miscoe Hill MS
John Clements	Principal	Nipmuc Regional HS
Maureen Cohen	Director of Curriculum	District
Diane Duncan	Regional School Committee	District
Kati Dunton	Technology Specialist	Memorial ES
Karlynn Gale	Library Media Specialist	Memorial ES
Jan Gallagher	Principal	H.P. Clough ES
Alice Gentili	Teacher of Visual Art	Miscoe Hill MS
Vicki Grisanti	Parent	H.P. Clough MS
Dev Gujarathi	8th Grade Student	Miscoe Hill MS
Emma Hensler	ELA Teacher	Nipmuc Regional HS

Katie Jordan	Technology Specialist	H.P. Clough ES
Joseph Leacu	Director of Tech Operations	District
Lauren Mack	Parent	Memorial ES/Miscoe Hill MS
Joseph Maruszczak	Superintendent of Schools	District
Kate Merten	Parent	Nipmuc Regional HS
Ann Meyer	Principal	Miscoe Hill MS
Brock Moore	Parent	HP Clough ES/Miscoe Hill MS
Mary Anne Moran	Associate Principal	Nipmuc Regional HS
Jillian Penfield	12th Grade Student	Nipmuc Regional HS
Debra Swain	Principal	Memorial ES

MURSD Technology Visioning Committee

Additionally there were many parents who served on a visioning committee to brainstorm key future directions for technology within our district. The committee membership was the following:

Muralidhar Balcha	Jen Bodzinski	Bryan Burdzel
Megan Collins	Chris Corbett	Michelle Fournier
Mark Geremia	Matthew Gibbons	Sara Gladu
Eric Hodge	Bryan House	Justin Kenney
Susan Marshall	Lisa McNamara	Nathan Miller
Brian Pazol	Peter Salenius	Michelle Simpson
Jim Slattery	Paul Stasio	Brian Tetreault
Dennis Walsh		

Needs Assessment

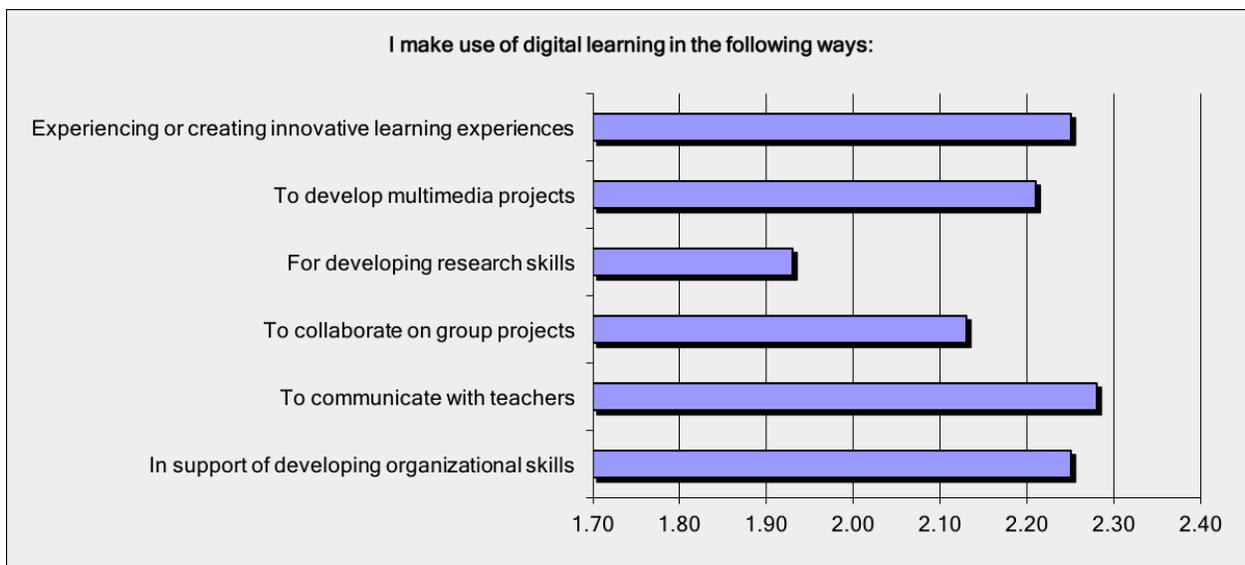
Current Status of Technology Use in Mendon-Upton Regional School District

The technology currently available for staff and student use in the district varies by the school and grade level. At the elementary level (grades K-4), every classroom has a SMART Board that is used on a regular basis in support of teaching and learning. Teachers prepare lessons using the available software, and students are able to effectively manipulate the SMART Boards to accomplish the tasks outlined by the teacher.

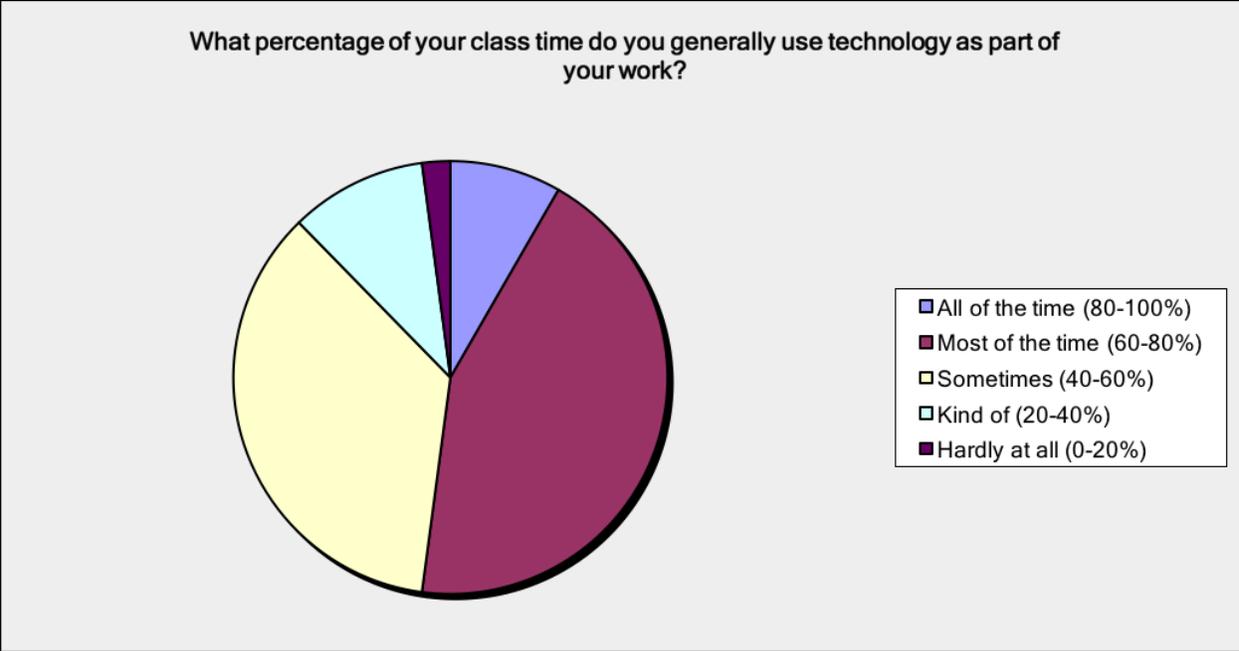
In grades 5-12, each student and staff member has access to an iPad that is used on a daily basis as part of the curriculum. There are a select number of paid apps that are available for use to the students and staff including Explain Everything, Book Creator, and Notability, in addition to the Apple iWork and iLife apps, and the suite of Google apps. These apps serve as the core set of apps that all staff and students are expected to use on a regular basis. Additional apps are distributed and available for use through our mobile device management system (MDM), AirWatch. Depending on subject area, students in grades 5-12 have access to the Pearson eText for Schools app that provides access to online versions of the textbooks used in their classes. Additionally, each classroom at the middle and high school has access to a projector with an AppleTV, to easily display material on the iPads for presentation and other purposes.

Student Use

Students in grades 5-12 were asked a number of questions on a mid-year survey (2015-16) relating to their technology use for school purposes. Within this survey, students were asked to rate how frequently they use technology to address a number of aspects of their learning.



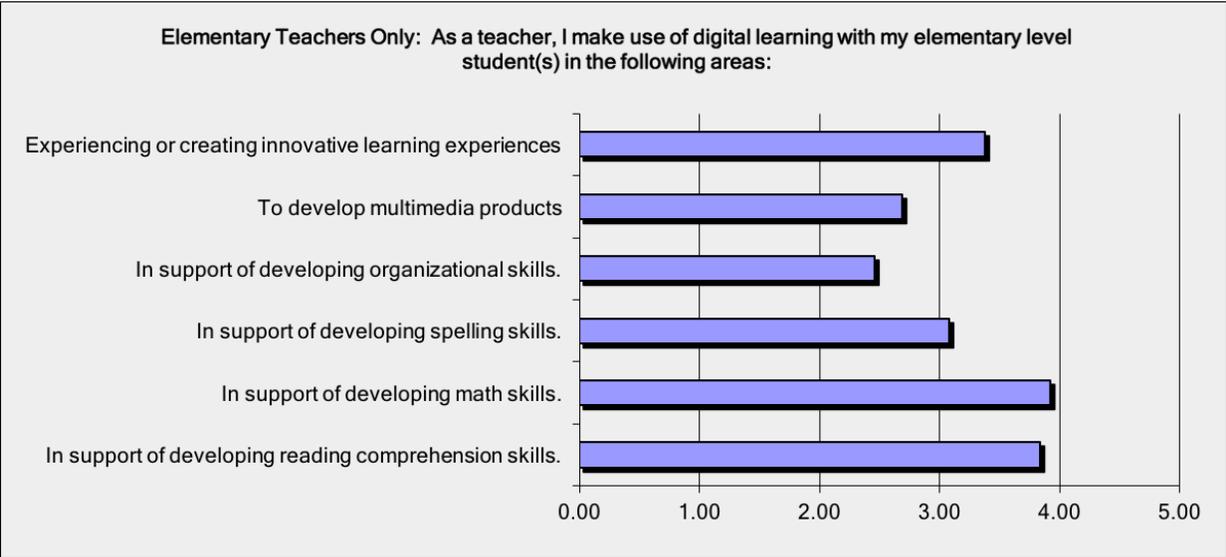
For each of the above, students rated each on a scale of 1 (Frequently) to 5 (Rarely). Overall, students responded that they somewhat frequently or frequently engaged in digital learning in all of the above areas, with devices being used most frequently “for developing research skills”.

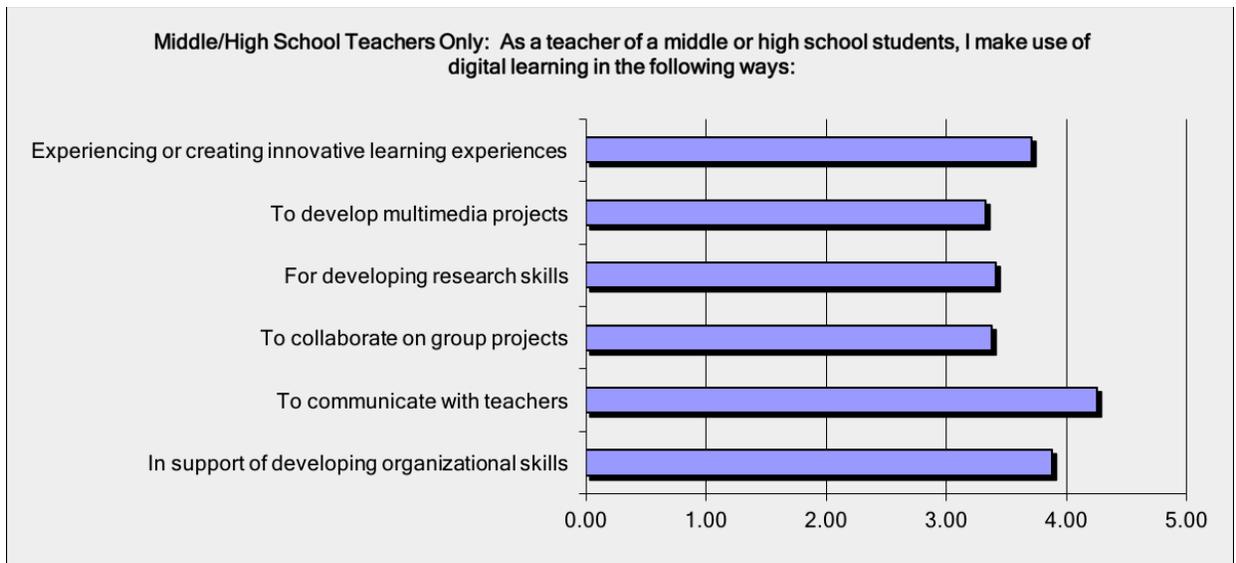


Students were also asked about how much time is spent using the devices in class. The overwhelming majority (78%) responded that they use their devices sometimes or most of the time, indicating that teachers encourage and expect the students to have access and effectively use their devices as part of their coursework.

Teacher Use

Teachers similarly reported that they are using technology as part of teaching and learning in their classes, using a scale of 1 (Rarely) to 5 (Frequently). At the elementary level, this is primarily done by using the SMART Boards available in each room, and teachers reported that they used the devices most frequently “in support of developing math skills”. At the middle and high school level, teachers reported that they and the students used the iPads available for communication most frequently, while also using them as part of innovative learning experiences and in support of developing organizational skills.





The majority of teachers (55%) at all levels responded that they use the devices available 20-60% of the time. This data indicates, again, that teachers expect to use the technology available to them on a regular basis as part of teaching and learning.

Budget

In recent years the district has made a significant investment in technology. For the current fiscal year (FY16), the overall technology expenditure budgeted is \$1,322,633 (not including instructional staff), which equates to 4.2% of the district’s \$31,838,981 FY16 operational budget. Major expenditures include the renewal of annual lease payments on approximately 600 personal computers and peripheral devices, software licensing fees, instructional hardware (e.g., SMARTBoards, digital projectors, servers, etc.), copier leases/maintenance, and Internet service provision. Additionally, the district continues its investment in the 1:1 learning program as we transition to a strictly-district ownership model of all devices within the next two years. Below the operational budget since FY13 and adopted budget for FY17 are delineated.

Technology Expenditure Summary					
	FY13 Actual	FY14 Actual	FY15 Actual	FY16 Adopted	FY17 Adopted
Technology Leadership	\$381,048	\$432,977	\$404,716	\$586,779	\$583,018
Instructional Services	\$167,837	\$77,888	\$344,569	\$270,360	\$183,800
Data Management &	\$57,660	\$58,381	\$59,549	\$60,592	\$61,652

Reporting					
Office Equipment	\$104,744	\$89,535	\$73,738	\$79,700	\$78,400
Fixed Assets	\$353,986	\$302,890	\$240,559	\$325,202	\$349,206
	\$1,065,274	\$961,671	\$1,123,131	\$1,322,633	\$1,256,076

Benchmark 2 - Technology Integration and Literacy

Technology Integration

Technology is used regularly throughout the district. In every elementary classroom (K-4), students and teachers have access to a SMART Board (an interactive whiteboard). The SMART Boards are used on a daily basis for skills reinforcement, hands-on manipulation as part of the Math and ELA curriculum, and exploring content in the Social Studies and Science curriculum.

At the secondary level (5-12), each student and teacher has access to an iPad as part of the curriculum in all areas. Students use the iPad as a gateway to access online databases, curriculum information through learning management systems such as Google Classroom, Edmodo, and Moodle, and to communicate regularly with teachers and staff to address issues, concerns, and get clarification. Teachers use the devices regularly in classrooms for formative assessment purposes, to have the students create multimedia works, collaborate with staff on curriculum development as well as complete daily tasks like attendance, grade input, and communication with colleagues, students, and families.

Throughout the school year, teachers are engaged in professional development during scheduled PD days, as well as embedded during the school day through trainings led by fellow staff members. Online PD such as training to become Google Certified Educators, webinars, and in-person events like edcamps are also offered regularly throughout the year.

Technology Literacy

By the end of 8th grade, in preparation for high school, all students gain valuable skills in the core areas of the Draft Digital Literacy and Computer Science Standards including:

- Computing and Society
- Digital Tools and Collaboration
- Computing Systems

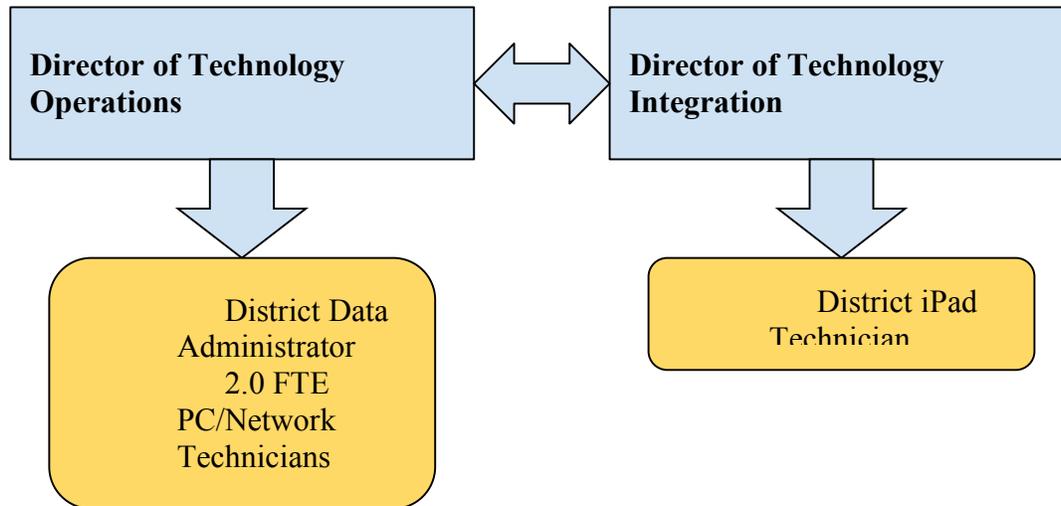
- Computational Thinking

Through the 1:1 Learning program in place at the secondary level, regular access to technology throughout all levels, and technology specialists and PD available for teachers, students gain experience in each of these areas.

Staffing

The Technology Department of the Mendon-Upton Regional School District is led by two directors; the Director of Technology Operations and the Director of Technology Integration. The operations director leads the areas of network support, infrastructure, and IT support, while the integration director leads the areas of 1:1 Learning, teacher training, and direct support to students and families in the district.

The organizational chart is the following:



There are currently three IT support specialists assigned to address various technical support issues for students and teachers throughout the district. There is additionally one staff member assigned to data administration. There are also 4.0 FTE technology specialists throughout the district that teach technology classes to students as well as support teachers through technology integration at each school with a ratio of 1 technology specialist for every 40 teachers.

Benchmark 3 - Technology Professional Development

Professional Development Models

The district offers a wide variety of professional development for its staff members. There are scheduled professional development days throughout the school year. The plans for these days are developed under the direction of the Director of Curriculum and a committee of teaching staff and administration from throughout the district. These days are developed to focus on the specific needs of the staff in the district, focusing on curriculum, the use of technology tools as part of that curriculum, and any necessary training of new tools made available to staff and students.

Additionally, professional development occurs during team meeting, department meeting, and faculty meeting times. These professional development opportunities are often run by school level administration, with support from the Directors of Technology and related staff. Professional development during these times often revolves around modeling of effective use of technology, tutorials on using Google Apps or other related tools, and general functionality of the available devices.

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 for learning, and research-based models of technology integration.

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

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.

TSAT Data

In the spring of 2016 MURSD staff members were encouraged to use the *Technology Self-Assessment Tool (TSAT)* (see results in [Appendix I](#)) to gauge their general comfort-level and understanding of technology in the educational environment. An overwhelming majority of participants indicated that they were comfortable using technology as part of their work as educators, especially in terms of *Standard 3, Teaching and Learning with Technology*. Participants indicated that use technology regularly for teaching and learning, are able to identify their areas of strengths and weaknesses, and know where to go to get training and additional help. Staff members also indicated a need for some direction in terms of gathering and analyzing data to make informed decisions of their impact on learning, as well as in the area of available advanced search features.

The district will use the data gained through the administration of the TSAT in conjunction with survey data gathered from stakeholders, formative and summative data from assessments given throughout the district, and third-party evaluators to support further growth and future professional development.

Benchmark 4 - Accessibility of Technology

Hardware Access

The Mendon Upton Regional School District provides equal access to technology at all grade levels. The current ratios of students to computers are 1:1 in grades 5-12, and 8:1 in grades K-4. Students are using emerging technologies, such as cloud-based communication and collaboration tools, and are encouraged to find new tools that will assist them in their daily classroom studies. The district administrators work collaboratively to ensure that all students have a common experience, regardless of disability, social, or financial issues. Students have access to additional assistive devices and software under the advisement of the Student Support Services department. The district has made significant investments in classroom technologies such as SMARTBoards at the elementary level, and multimedia projectors and Apple TVs at the middle and high schools. The district has a four year hardware lifecycle that ensures that students are always using the most current technologies available.

Internet Access

The Mendon Upton Regional School district provides free internet access at all four schools. Each school has a minimum internet speed of 100 MBps over a commercial fiber Ethernet connection. Each classroom has wired internet speeds of 1 Gbps per port. During the summer of 2016, all four district schools will have their WiFi bandwidth upgraded so the two schools in Mendon will share 1 Gbps and the two schools in Upton will also

Networking - LAN/WAN

The district is actively expanding its wireless LAN infrastructure to remain current with the latest technologies. The high school and middle school have 802.11n wireless LAN connectivity available to authenticated students and faculty. The district is currently adding WLAN connectivity to both elementary schools. The district installed and maintains a fiber optic wide-area-network that connects all four school sites. This provides building to building communication at speeds of 10Gbps. Both students and faculty have access to email, calendar, collaboration tools through Google Apps and Microsoft Office 365 cloud-based tools.

Access to Internet Outside the School Day

The Mendon Upton Regional Schools is committed to providing equal access to all students. The district offers several options for internet access outside of the school day. Library media centers and computer labs at each school are available to students at posted times both before and after school during the school year. Students are informed of outside locations where internet access is available, such as the town library. Low cost home internet options are available through each town's cable provider, and information is available on the district's technology website.

Staffing

The district employs two experienced technology administrators, the Director of Technology Operations and the Director of Technology Integration. Student information such as schedules, grading, and attendance is overseen by the District Data Administrator. The district employs three technology support staff members that repair day-to-day problems that arise from over 2000+ devices on the district's computer network. The district contracts with outside vendors for larger projects and more specialized repairs.

Benchmark 5 - Virtual Learning and Communication

The Mendon Upton Regional School District uses the latest online collaboration tools to promote innovation through communication and collaboration. Courses are delivered through a blend of classroom instruction and the use of learning management software such as Google Classroom. Classroom teachers have access to several online catalogs of digital content they can embed into their daily lessons. This provides more interactive lessons, and opportunities for collaboration with other schools. The high school is a member of the [Virtual High School](#) and offers advanced study online course opportunities to students throughout the year.

The district maintains a website that has current district information, and links to each individual school website. Each school posts current school information, forms, and calendar events online for the school community. In addition, each principal communicates to staff daily through email and blog posts.

Benchmark 6 - Safety Security and Data Retention

The district's CIPA complaint acceptable use policy can be found in the school committee policy manual ([here](#)) and is published in each school's student and parent handbook. Students and faculty are required to review and consent to the terms of the policy before using the school network.

The technology teaching staff provides instruction on internet safety as part of the technology K-12 technology curriculum. The district complies with all relevant state and local laws regarding data security and retention. Student data is provided only to authorized staff members and direct family members. Email communications are archived in compliance with public record law, and are provided to requesters in accordance with the Freedom of Information Act.

Section 3 - Trends and National Standards

Summary of Research

What is on the five-year horizon for K-12 schools worldwide? Which trends and technologies will drive educational change?

These are two of the key essential questions that have been posed in the [NMC Horizon Report: 2015 K-12 Edition](#). The [New Media Consortium \(NMC\)](#) is a consortium of hundreds of leading universities, colleges, museums, and research centers. The NMC stimulates and furthers the exploration and use of new media and technologies for both K-12 and higher education learning and creative expression. For the past 13 years NMC has worked in collaboration with the [Consortium for School Networking \(CoSN\)](#), the premier professional association for K-12 district technology leaders to chart both short-term and long-term trends in technology and how they will affect school communities across the globe

The report cites two *long-term impact trends* that will drive K-12 educational technology adoption for the next five or more years. These trends are:

- **Rethinking How Schools Work:** From many professional organizations and thought leaders there is a movement to reinvent the traditional classroom paradigm with more innovative learning approaches. Traditional learning environments (content divided by subject areas, traditional school schedules with bells, etc.) are viewed to be relics of an antiquated era. More contemporary approaches where students learn using a multidisciplinary approach in a fluid (non-time bound) and student-centered manner are supported by research on how students retain learning best.

- Shift to Deeper Learning Approaches: There is a new emphasis on deeper learning approaches. In fact, the Common Core State Standards emphasize greater depth of understanding rather than breadth of content coverage. Thus, students should have content delivered in innovative ways so they may apply what they have learned in a meaningful way. Project-based learning, problem-based learning, and inquiry-based learning are approaches that foster more active learning experiences. Technologies such as tablets and smartphones should be leveraged to create student-centered learning approaches that connect the curriculum with real life applications. Students should be able to brainstorm and implement solutions to pressing local and global problems.

Also cited are *mid-term impact trends* that will drive K-12 educational technology adoption for the next three to five years. These trends are:

- Increasing Use of Collaborative Learning Approaches: Most adults in the workforce do not work in isolation; they work in teams. Research studies reveal that teamwork exercises and collaborative learning environments bolster student engagement and performance. Hence, students should be collaborating to solve meaningful problems or achieve a collective goal. Approaches such as project-based learning promote collaboration and should be employed systemically.
- Shift from Students as Consumers to Students as Creators: Across all content areas, state and national standards are increasingly calling for students to learn by making and creating rather than merely consuming content. Emerging are pedagogical approaches that call for the student created videos and multimedia, the use of maker spaces and communities, and crowdfunded spaces. These approaches facilitate active, hands-on learning.

Finally, the Horizon Report details *short-term impact trends* that should drive K-12 educational technology adoption over the next one to two years. They are:

- Increasing Use of Hybrid/Blended Learning Designs: Blended or “hybrid” learning, where educators use a combination online learning and face-to-face learning, is on the rise in K-12 schools as it has been for years in higher education. The affordances blended learning offers are now well understood, and its flexibility, ease of access, and the integration of sophisticated multimedia and technologies are high among the list of appeals. Progress in learning analytics, adaptive learning, and a combination of cutting-edge asynchronous and synchronous tools will continue to advance the state of online learning.
- Rise of STEAM Learning: Nationally, and especially in our state, there have been many calls for an acceleration of STEM (science, technology, engineering, and mathematics) education due to the current labor market gap in STEM-related careers and skilled, qualified candidates. This gap must be closed as a step to stimulate the economy and create a more competitive global marketplace. However, a growing number of voices have articulated the need to better integrate

humanities and the arts education into STEM classes and programs, hence the movement of STEAM learning. STEAM programs promote multi- and cross-disciplinary learning, thus showing students how seemingly disparate subjects are interconnected. Experiencing the full spectrum of STEAM education can help students generate more well-rounded skill sets and views of the world.

The MURSD Technology Plan, 2016-2021, aims to address each of these trends through specific action plans that support programming, technology acquisition, infrastructure, and support, and practices to enhance teaching and learning across the district.

ISTE Standards

An effective technology plan must be rooted in standards that are based upon current research and best practices. Hence, the concepts contained MURSD Technology Plan aligned with the standards developed by the [International Society for Technology in Education \(ISTE\)](#). ISTE is an association dedicated in educating teachers and administrators on how to integrate technology effectively for quality student learning and teaching practices.

The most current [ISTE Standards](#) (2014) are a blueprint of practices and habits of mind to support students, educators and leaders in using educational technology in a smart, purposeful manner. The Standards provide clear guidelines for the skills, knowledge and approaches they need to succeed in the digital age.

The ISTE Standards are crafted in a parallel fashion, as similar competencies are detailed for students, teachers, and administrators alike. The standards for each group are delineated below:

ISTE Standards for Students

Standard 1

Creativity & Innovation: Students demonstrate creative thinking, construct knowledge & develop innovative products and processes using technology. Students:

- a. Apply existing knowledge to generate new ideas, products, or processes
 - b. Create original works as a means of personal or group expression
 - c. Use models and simulations to explore complex systems and issues
 - d. Identify trends and forecast possibilities
-

Standard 2

Communication & Collaboration: Students use digital media & environments to communicate & work collaboratively, including at a distance, to support individual learning & contribute to the learning of others. Students:

- a. Interact, collaborate & publish with peers, experts or others employing a variety of digital environments & media

- b. Communicate information & ideas effectively to multiple audiences using a variety of media and formats
 - c. Develop cultural understanding and global awareness by engaging with learners of other cultures
 - d. Contribute to project teams to produce original works or solve problems
-

Standard 3

Research & Information Fluency: Students apply digital tools to gather, evaluate & use information. Students:

- a. Plan strategies to guide inquiry
 - b. Locate, organize, analyze, evaluate, synthesize & ethically use information from a variety of sources and media
 - c. Evaluate & select information sources & digital tools based on the appropriateness to specific tasks
 - d. Process data & report results
-

Standard 4

Critical Thinking, Problem Solving & Decision Making: Students use critical thinking skills to plan & conduct research, manage projects, solve problems & make informed decisions using appropriate digital tools & resources. Students:

- a. Identify and define authentic problems & significant questions for investigation
 - b. Plan and manage activities to develop a solution or complete a project
 - c. Collect and analyze data to identify solutions and/or make informed decisions
 - d. Use multiple processes and diverse perspectives to explore alternative solutions
-

Standard 5

Digital Citizenship: Students understand human, cultural & societal issues related to technology & practice legal & ethical behavior. Students:

- a. Advocate and practice safe, legal & responsible use of information & technology
 - b. Exhibit a positive attitude toward using technology that supports collaboration, learning & productivity
 - c. Demonstrate personal responsibility for lifelong learning
 - d. Exhibit leadership for digital citizenship
-

Standard 6

Technology Operations & Concepts: Students demonstrate a sound understanding of technology concepts, systems & operations. Students:

- a. Understand & use technology systems
- b. Select & use applications effectively & productively
- c. Troubleshoot systems and applications

- d. Transfer current knowledge to learning of new technologies
-

ISTE Standards for Teachers

Standard 1

Facilitate and Inspire Student Learning and Creativity: Teachers use their knowledge of subject matter, teaching and learning, and technology to facilitate experiences that advance student learning, creativity, and innovation in both face-to-face and virtual environments. Teachers:

- a. Promote, support, and model creative and innovative thinking and inventiveness
 - b. Engage students in exploring real-world issues and solving authentic problems using digital tools and resources
 - c. Promote student reflection using collaborative tools to reveal and clarify students' conceptual understanding and thinking, planning, and creative processes
 - d. Model collaborative knowledge construction by engaging in learning with students, colleagues, and others in face-to-face and virtual environments
-

Standard 2

Design and Develop Digital Age Learning Experiences and Assessments: Teachers design, develop, and evaluate authentic learning experiences and assessments incorporating contemporary tools and resources to maximize content learning in context and to develop the knowledge, skills, and attitudes identified in the Standards. Teachers:

- a. Design or adapt relevant learning experiences that incorporate digital tools and resources to promote student learning and creativity
 - b. Develop technology-enriched learning environments that enable all students to pursue their individual curiosities and become active participants in setting their own educational goals, managing their own learning, and assessing their own progress
 - c. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources
 - d. Provide students with multiple and varied formative and summative assessments aligned with content and technology standards, and use resulting data to inform learning and teaching
-

Standard 3

Model Digital Age Work and Learning: Teachers exhibit knowledge, skills, and work processes representative of an innovative professional in a global and digital society. Teachers:

- a. Demonstrate fluency in technology systems and the transfer of current knowledge to new technologies and situations

- b. Collaborate with students, peers, parents, and community members using digital tools and resources to support student success and innovation
 - c. Communicate relevant information and ideas effectively to students, parents, and peers using a variety of digital age media and formats
 - d. Model and facilitate effective use of current and emerging tools to locate, analyze, evaluate, and use information resources to support research and learning
-

Standard 4

Promote and Model Digital Citizenship and Responsibility: Teachers understand local and global societal issues and responsibilities in an evolving digital culture and exhibit legal and ethical behavior in their professional practices. Teachers:

- a. Advocate, model, and teach safe, legal, and ethical use of digital information and technology, including respect for copyright, intellectual property, and the appropriate documentation of sources
 - b. Address the diverse needs of all learners by using learner-centered strategies providing equitable access to digital tools and resources
 - c. Promote and model digital etiquette and responsible social interactions related to the use of technology and information
 - d. Develop and model cultural understanding and global awareness by engaging with colleagues and students of other cultures using digital age communication and collaboration tools
-

Standard 5

Engage in Professional Growth and Leadership: Teachers continuously improve their professional practice, model lifelong learning, and exhibit leadership in their school and professional community by promoting and demonstrating the effective use of digital tools and resources. Teachers:

- a. Participate in local and global learning communities to explore creative applications of technology to improve student learning
 - b. Exhibit leadership by demonstrating a vision of technology infusion, participating in shared decision making and community building, and developing the leadership and technology skills of others
 - c. Evaluate and reflect on current research and professional practice on a regular basis to make effective use of existing and emerging digital tools and resources in support of student learning
 - d. Contribute to the effectiveness, vitality, and self-renewal of the teaching profession and of their school and community
-

ISTE Standards for Administrators

Standard 1

Visionary Leadership: Educational Administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization. Administrators:

- a. Inspire and facilitate among all stakeholders a shared vision of purposeful change that maximizes use of digital-age resources to meet and exceed learning goals, support effective instructional practice, and maximize performance of district and school leaders
 - b. Engage in an ongoing process to develop, implement, and communicate technology-infused strategic plans aligned with a shared vision
 - c. Advocate on local, state and national levels for policies, programs, and funding to support implementation of a technology-infused vision and strategic plan
-

Standard 2

Digital Age Learning Culture: Educational Administrators create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students. Administrators:

- a. Ensure instructional innovation focused on continuous improvement of digital-age learning
 - b. Model and promote the frequent and effective use of technology for learning
 - c. Customize and personalize learning activities to address students' diverse learning styles, working strategies, and abilities using digital tools and resources
 - d. Provide learner-centered environments equipped with technology and learning resources to meet the individual, diverse needs of all learners
 - e. Promote and participate in local, national, and global learning communities that stimulate innovation, creativity, and digital age collaboration
-

Standard 3

Excellence in Professional Practice: Educational Administrators promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources. Administrators:

- a. Allocate time, resources, and access to ensure ongoing professional growth in technology fluency and integration
 - b. Facilitate and participate in learning communities that stimulate, nurture and support administrators, faculty, and staff in the study and use of technology
 - c. Promote and model effective communication and collaboration among stakeholders using digital age tools
 - d. Stay abreast of educational research and emerging trends regarding effective use of technology and encourage evaluation of new technologies for their potential to improve student learning
-

Standard 4

Systemic Improvement: Educational Administrators provide digital age leadership and management to continuously improve the organization through the effective use of information and technology resources. Administrators:

- a. Lead purposeful change to maximize the achievement of learning goals through the appropriate use of technology and media-rich resources

- b. Collaborate to establish metrics, collect and analyze data, interpret results, and share findings to improve staff performance and student learning
 - c. Recruit and retain highly competent personnel who use technology creatively and proficiently to advance academic and operational goals
 - d. Establish and leverage strategic partnerships to support systemic improvement
 - e. Establish and maintain a robust infrastructure for technology, including integrated, interoperable technology systems to support management, operations, teaching, and learning
-

Standard 5

Digital Citizenship: Educational Administrators model and facilitate understanding of social, ethical and legal issues and responsibilities related to an evolving digital culture. Administrators:

- a. Ensure equitable access to appropriate digital tools and resources to meet the needs of all learners
- b. Promote, model and establish policies for safe, legal, and ethical use of digital information and technology
- c. Promote and model responsible social interactions related to the use of technology and information
- d. Model and facilitate the development of a shared cultural understanding and involvement in global issues through the use of contemporary communication and collaboration tool

Draft Massachusetts Digital Literacy & Computer Science Standards

Currently the Massachusetts Department of Elementary & Secondary Education (DESE) has in draft form a set of *Digital Literacy & Computer Science Standards*. The *Digital Literacy and Computer Science (DL&CS) Standards* articulate critical learning outcomes for kindergarten through grade 12 to help prepare students for the world that awaits them after high school. The standards represent the core elements of digital literacy and computer science and are intended to drive coherent, rigorous instruction that results in the mastery and application of digital literacy and computer science knowledge, reasoning, and skills. Once they are finalized, they will be a foundational underpinning of the review and revision of the district's K-12 technology curriculum as well as specific strands that will be embedded into the K-12 curricula of other content areas.

Key Features of the DL&CS Standards

The Kindergarten through grade 12 content standards in this framework are organized by **grade span**: Kindergarten to grade 2, grade 3 to grade 5, grade 6 to grade 8, and grade 9 to grade 12. Within each grade span, standards are grouped into four strands: Computing and Society, Digital Tools and Collaboration, Computing Systems, and Computational Thinking. Each strand has specific standards that emphasize a focused and coherent progression of knowledge and skills. As students progress through their K-12 education, they acquire increasingly sophisticated knowledge, skills and dispositions in digital literacy and computer science. Each strand is further subdivided into topics comprised of related

standards. Standards define performance expectations and what students should know and be able to do. Standards from different strands or topics may sometimes be closely related.

The Four Strands of DL&SC Standards

1. Computing and Society (CAS):

Computing impacts all people and has global consequences on such things as communications, assistive technology, social networking, and the economy. Computing innovations are valued by society. Computing is a key component of many professions and the content of digital media influences all citizens and society. Global disparities in access to the Internet, media, and devices may lead to an imbalance in equity and power. Principles of privacy, ethics, security, and copyright law influence digital safety and security, as well as interpersonal and societal relations.

- a. **Safety and Security:** Responsible citizens in the modern world apply principles of personal privacy and network security to the use of computing systems, software, the Internet, media, and data.
- b. **Ethics and Laws:** Ethics include standards of conduct, fairness, and responsible use of the Internet, data, media, and computing devices. An understanding of principles and laws of software licenses, copyrights, and acceptable use policies are necessary to be responsible citizens in the modern world.
- c. **Interpersonal and Societal Impact:** The use of computing devices, assistive technologies and applying a computational perspective to solving problems changes the way people think, work, live, and play. Computational approaches lead to new understanding, discoveries, challenges, and questions. Most professions rely on technology and advances in computing foster innovations in many fields. Differential access to principles of computing, computing devices, digital tools, and media in the global society, has potentially significant effects.

2. Digital Tools and Collaboration (DTC):

Digital tools are applications that produce, manipulate, or store data in a digital format, e.g., word processors, drawing programs, image/video/music editors, simulators, Computer-Aided Design (CAD) applications, publishing programs, etc. Digital tools are critical for conducting research, communicating, collaborating and creating in social, work, and personal environments. The use of digital tools is integral to success in school and career.

- a. **Digital Tools:** Digital tools are used to create, manipulate, analyze, edit, publish, or develop artifacts. Individuals and groups identify, evaluate, select, and adapt new tools as they emerge.
- b. **Collaboration and Communication:** A variety of digital tools are used to work collaboratively anytime and anywhere, inside and outside the classroom, both synchronously and asynchronously, to develop artifacts or solve problems, contribute to the learning of others, and communicate.

- c. **Research:** A variety of digital tools are used to conduct research, answer questions, and develop artifacts to facilitate learning and convey understanding. Access to the Internet and digital tools allows people to gather, evaluate (for validity, bias, relevance, accuracy, etc.), organize, analyze, and synthesize information, data and other media from a variety of sources. Effective use of information, data, and media requires consideration of validity, ethics and attribution of sources.

3. Computing Systems (CS):

Computing systems are comprised of components, such as devices, software, interfaces, and networks that connect communities, devices, people, and services. They empower people to create, collaborate and learn via human-computer partnerships. The design of many computing systems empowers people to debug, extend, and create new systems. Computing systems require troubleshooting and maintenance to consistently function.

- a. **Computing Devices:** Computing devices take many forms (e.g., car, insulin pump, or robot), not just personal computers, phones and tablets. They use many types of input data (collected via gesture, voice, movement, location, and other data) and run instructions in the form of programs to produce certain outputs (e.g., images, sounds, and actions). Computing will continue to be increasingly embedded into devices that are used in social, recreational, personal, and workplace environments.
- b. **Human and Computer Partnerships:** Some tasks, such as repetitive tasks, or those involving complex computations, are best done by computers, while other tasks that don't have defined rules or are dynamic in nature, are best done by humans, however, many tasks are done through human-computer partnerships. Human-computer partnerships are characterized by the interaction of humans with devices and systems that work together to achieve a purpose or solution that would not be independently possible.
- c. **Networks:** Network components, including hardware and software, carry out specific functions to connect computing devices, people and services. The Internet facilitates global communication and relies on considerations of network functionality and security.
- d. **Services:** Data storage and computing occurs in many interconnected devices creating computational "services" that are the building blocks of computing systems. These services make use of data, algorithms, hardware, and connectivity that may occur on remote systems.

4. Computational Thinking (CT):

Computational thinking is a problem solving process that requires people to think in new ways to enable effective use of computing to solve problems and create solutions. The capacity of computers to rapidly and precisely execute programs makes new ways of designing, creating, and problem solving possible. Computational thinking is characterized by:

- Analyzing, modeling, and abstracting ideas and problems so people and computers can work with them;

- Designing solutions and algorithms to manipulate these abstract representations (including data structures); and
 - Identifying and executing solutions (e.g., via programming).
- a. **Abstraction:** Abstraction is a process of reducing complexity by focusing on the main idea. By hiding details irrelevant to the question at hand and bringing together related and useful details, abstraction reduces complexity and allows one to focus on the problem. This process creates a new representation which successfully reframes the problem. At the most basic level of abstraction, data structures are used to represent information so that algorithms can operate on the data to create a result.
 - b. **Algorithms:** An algorithm is a sequence of precisely defined steps to solve a particular problem. Carefully designed algorithms are essential to solving complex problems using computers. Effective algorithms are efficient, clear, reusable, and accurate.
 - c. **Data:** Collecting, managing, and interpreting a vast amount of raw data is part of the foundation of our information society and economy. The storage of data impacts how data is used and accessed. Computational tools enable insights and decisions through new techniques for data collection and analysis.
 - d. **Modeling and Simulation:** Computational modeling and simulation help people to represent and understand complex processes and phenomena. Computational models and simulations are used, modified, and created to analyze, identify patterns, and answer questions of real phenomena and hypothetical scenarios.
 - e. **Programming and Development:** Programming articulates and communicates instructions in such a way that a computer can execute a task. Programming makes use of abstractions, algorithms, and data to implement ideas and solutions as executable code through an iterative process of design and debugging. The process of creating software includes understanding the development life cycle, such as testing, usability, documentation, and release. Software development is the application of engineering principles (usually by a team) to produce useful, reliable software at scale and to integrate software into other engineered artifacts.

Section 4 - 2016-2021 Strategic Goals and Action Plans

Strategic Goals

The Strategic Technology Goals and Initiatives are the following:

Goal 1: The district will prepare its students to be productive digital citizens, empowering them to think critically, behave safely, and participate responsibly in the digital world.

Initiatives:

- *Ensure clear expectations and guidelines for students' acceptable use in a revised MURSD Acceptable Use Policy*
- *Design and implement a comprehensive K-12 Digital Citizenship Curriculum*
- *Provide information and training to parents and staff on the responsible and safe use of technology*
- *Create a database of technology resources available for students*

Goal 2: The district will improve its curriculum as well as the instructional and assessment practices of professional staff through balanced, purposeful, and developmentally-appropriate technology integration across all grade levels and content areas.

Initiatives:

- *Integrate the SAMR (Substitution Augmentation Modification Redefinition) Model of effective technology integration across all grade levels*
- *Review and revise the technology curriculum so it is aligned with state and national standards*
- *Expand learning opportunities through technology integration such as blended learning, online learning, and project-based learning*

Goal 3: The district will upgrade its technology equipment, network, and infrastructure so all students may have equal opportunities for access and effective technology integration may be maximized.

Initiatives:

- *Improve WiFi access at the district's elementary schools and internet bandwidth at all four district schools*
- *Provide sufficient IT support and integration support throughout the district*
- *Explore other 1:1 learning platforms/devices that will maximize student progression of skills and allow for flexibility in district purchasing and implementation*
- *Conduct an annual assessment of equipment needs to ensure equal access and opportunity*

Goal 4: The district will use technology to consistently improve communication and collaboration with all stakeholders.

Initiatives:

- *Select one learning management system (LMS) and use it consistently at all schools and grade levels*
- *Communicate with parents/families how technology is enhancing student learning*
- *Promote the use of technology tools so timely feedback on learning is provided*
- *Establish the district as leader in technology integration regionally and statewide through ongoing professional development, communications, and networking opportunities*

Action Plans

Section 5 - Evaluation of Technology Use in the MURSD

Evaluation Process

Over the past several years, the Mendon-Upton Regional School District has regularly evaluated technology use throughout the district by surveying all stakeholders, including staff, parents, and students. These surveys have helped guide policy, purchases, and programming at all levels.

Moving forward, the district will regularly evaluate the degree of successful technology integration throughout all four schools. The general evaluative guidepost for technology integration will be how well the district is creating and promoting the [ISTE Essential Conditions](#) needed to effectively leverage technology for learning. The district will also evaluate how successful we have been in meeting the goals and initiatives of this Technology Plan. Through the use of tools such as surveys, the TSAT (Technology Self-Assessment Tool), the *ISTE Lead & Transform Diagnostic Tool*, multiple student performance data sources, classroom observations, and outside third-party evaluators, we will be proactive in responding to the needs of all stakeholders.

The table below outline the areas where we will measure the impact that this Technology Plan is having in schools and classrooms across the district. Also delineated is a general timeline for evaluation. On an annual basis, the district will formatively and summatively report to all stakeholders on the impact of technology on teaching and learning. This will allow the district to respond and fine-tune the various goals and initiatives outlined in the plan, ensuring effective use of the technology available within the schools.

Areas of Evaluation

Area	Tools/Data Collected	Methods	Person(s) Responsible
Student Centered Learning	Evaluation of MURSD 1:1 Learning Program ISTE-S Performance Indicator Rubric Exemplars of K-12 Technology Infused Lessons Nipmuc 21st Century Skill Rubrics	Third-party outside evaluation Administration & Review of Rubrics & Aggregate Results Collection & Review of Technology Exemplar Lessons	MURSD Technology Committee Director of Technology Integration Principals Director of Curriculum
Ongoing High Quality Professional Development	TSAT Results PD Survey Results ISTE-T and ISTE-A Performance Indicator Rubric Self-Assessment Summary of PDP hours in Technology	Review of progress of students towards expectations. Revise PD plans as needed to meet staff needs	Technology Plan Update Committee Director of Curriculum Director of Technology Integration MURSD PD Committee
Supportive Policies	MURSD Acceptable Use Policy MURSD 1:1 Learning Policies & Procedures Student Handbooks <i>K12 Insight</i> Survey Results	Policy review to meet all stakeholders' needs Revise policies as needed	MURSD Technology Committee MURSD Leadership Team Policy Subcommittee of MURSD School Committee
Equitable Access	Classroom walk-through forms aggregate results on tech integration MURSD Technology Survey Results <i>ISTE Lead & Transform Diagnostic Tool</i>	Review unit / lesson plans and observation records for progress of staff towards expectations Revise plan as needed	MURSD Technology Committee MURSD Leadership Team

Technology Acquisition and Infrastructure	District inventory and usage statistics Technology Budget Review/Analysis <i>ISTE Lead & Transform Diagnostic Tool</i>	Review of district inventory and usage Prioritize needs and budget accordingly using data as rationale	Director of Technology Operations MURSD Leadership Team MURSD School Committee
Technology Support	Work order log & completion from <i>SchoolDude</i> (online tech support request system) Review of work order log from Miscoe & Nipmuc Student Help Desks	Review customer surveys & work request system to determine level & quality of support to school & district users Propose changes, if necessary	Director of Technology Operations MURSD Leadership Team MURSD School Committee
Model Technology Projects	Surveys on blended learning and elementary makerspaces	Review surveys and student performance data to assess efficacy of model technology projects	Director of Technology Integration MURSD Leadership Team Technology Teachers & Specialists
Engaged Stakeholders	Attendance Records At Parent Technology Sessions MURSD Tech Survey results <i>K12 Insight</i> Survey Results	Review levels of partnership involvement Adjust plan as needed to maximize engagement and support	Director of Technology Integration MURSD Technology Committee Principals

Timeline of Evaluation Activities

Plan Year		Evaluation Activity	
	Spring 2016	Baseline Data Collection	Analysis of <i>K12 Insight</i> Survey results on technology; Initial <i>ISTE Lead & Transform Diagnostic Tool</i> results tabulated
	Summer 2016	Publish <i>MURSD Technology Plan, 2016-2021</i>	

1	Fall 2016	3rd Party Evaluation of MURSD 1:1 Learning Program Review/Revision of MURSD AUP Formative Assessment of 2016-17 Action Plans	Modifications to 1:1 Learning Program and AUP based upon study/analysis of data
	Spring 2017	Administration of <i>K12 Insight</i> Survey, MURSD Surveys; Qualitative & Quantitative Student Performance Data Formulation of 2017-18 Technology Action Plans	Public Reporting of 2016-17 Action Plan Progress at Regional SC Meeting
2	Summer 2017	Collection of Quantitative and Qualitative Data re. Student Performance & Teacher Practices with Technology Integration	
	Fall 2017	Formative Assessment of 2017-18 Action Plans	
	Spring 2018	Data collection, including surveys and feedback for new MURSD Strategic Plan Formulation of 2018-19 Technology Action Plans	Public Reporting of 2017-18 Action Plan Progress at Regional SC Meeting
3	Summer 2018	Collection of Quantitative and Qualitative Data re. Student Performance & Teacher Practices with Technology Integration	
	Fall 2018	Mid-Plan Formal Review	Present Formal Update on Status of Technology Plan to Regional School Committee and Communicate to Community
	Spring 2019	Formulation of 2019-20 Technology Action Plans	Public Reporting of 2018-19 Action Plan Progress at Regional SC Meeting
4	Summer 2019	Collection of Quantitative and Qualitative Data re. Student Performance & Teacher Practices with Technology Integration	<i>ISTE Lead & Transform Diagnostic Tool</i> results tabulated
	Fall 2019	Formative Assessment of 2019-20 Action Plans	
	Spring 2020	Formulation of 2020-21 Technology	Public Reporting of 2019-20 Action

		Action Plans	Plan Progress at Regional SC Meeting
5	Summer 2020	Collection of Quantitative and Qualitative Data re. Student Performance & Teacher Practices with Technology Integration	
	Fall 2020	Formulate committee/processes for the a successor MURSD Technology Plan	Evaluation of Quantitative and Qualitative Data to be used as Critical Tools in formulation Goals & Initiatives
	Spring 2021	Finalization of a successor Technology Plan	Public Reporting of 2020-21 Action Plan Progress at Regional SC Meeting
	Spring 2021	End of 2016-21 Plan: Formal Review of Plan and Report to Regional SC, Community	SC Approval of New Five-Year Technology Plan

Section 6 - Technology Infrastructure

Overview

The Mendon Upton Regional School District maintains technology in four schools and the district's central administration office. Each site has a main data room and one or more secondary rooms that house the infrastructure that connects the devices in the building to the local network and beyond.

Cabling and switching

Each classroom and office connects to one of these rooms using category 5e or better cabling, and terminates at a modern, gigabit switch with Power over Ethernet (PoE). This provides the capability of providing high speed ethernet data transfer to each desktop and the option of adding additional devices such as Voice over IP telephones, printers, or wireless access points in each classroom or office.

Wireless Access Points (Wi-Fi Access)

The district is currently in the process of replacing the existing wireless infrastructure to update it to the latest technology. When completed, all four sites and the district office will have access an interconnected 802.11ac wireless network with high speed internet access.

Desktop Computers

Each classroom has at least one desktop PC installed in the room for teacher use. This computer is part of 3-4 year leased replacement cycle to ensure that the most current technologies are available to the teaching staff. Offices and small group instruction areas may have more than one PC depending on their needs and requirements.

Apple iPads and related equipment

The district maintains a fleet of Apple iPad tablet devices for student use inside and outside of the classroom. There are currently more than 1000 devices deployed and managed by the district. Using a mobile device management (MDM) application (AirWatch by vmware), the district can install apps, manage users, and monitor internet usage for compliance with the acceptable use policy. The district maintains a small fleet of Apple laptops and desktops assigned to specific users for specific instructional or administrative needs.

Other instructional technologies

The district owns and maintains many other instructional technology devices such as projectors, Apple TVs, and interactive whiteboards. They are purchased in conjunction with the desktop and tablet/laptop leasing schedule and follow a similar lifecycle for replacement.

Printing

The district maintains a lease with a print/copy vendor who provides printer and copier equipment per the district's specifications. These copiers are configured to receive print jobs from the classroom workstations and other devices the district sees fit to connect to the printers. Some offices have additional standalone printers for specific purposes, however most devices are connected to copier/printer system. The district strives to be as paper-less as possible, and continues to educate staff on paper waste reduction options available to them.

Internet Access

The district uses two commercial fiber optic internet connections, one in each town, to connect the schools and offices to the internet. As faster speeds become available, the district continues to update and upgrade these services to take advantage of the faster speeds and available bandwidth. Currently there is a 100Mbps connection in Mendon, and a 300Mbps connection in Upton. The district utilizes multiple providers to leverage the best pricing available in the local market. The district also participates in the federal E-Rate program and receives federal grant money to subsidize the costs of these services.

Routing/Content filtering

The district maintains an annual contract with a vendor who provides routing and internet content filtering services to comply with the [Children's Internet Protection Act \(2000\)](#). Content filtering is configured at each internet connection point, and is monitored and logged in compliance with the law.

Safety and Security

The district maintains and monitors safety and security with several internal video monitoring systems and access control. In addition to physical security, the district uses an access control system with alarms at each site. Several different security providers monitor and maintain these systems to keep the district safe and secure.

Additionally, the district subscribes to a telephone notification service to inform parents and community members of cancellations, emergencies, and other noteworthy events via traditional telephone calls, text messages, and email.

Appendix I - Technology Self-Assessment Tool (TSAT) Results

The [Technology Self-Assessment Tool \(TSAT\)](#) is a self-assessment tool developed by the Massachusetts Department of Elementary & Secondary Education's [Office of Digital Learning](#). Administered to MURSD Professional Staff in Spring 2016, the intent was twofold: to determine baseline data on our staff's levels of technology proficiency, and to identify technology professional development needs.

Standard 1 - Technology Operations and Concepts

Early Technology

Can you...	Yes	No
Identify components of a computer system and its operating system (e.g., drives, memory, window). Explain the functions of the components, and use appropriate terminology in speaking about them. Identify components of a computer system and its operating system (e.g., drives, memory, window). Explain the functions of the components, and use appropriate terminology in speaking about them.	60	27
Connect the cables and cords correctly so that a computer is functional. Reduce the risk of hardware failure through proper care of the components.	63	24
Demonstrate basic skills for using hardware and applications (e.g., start up and shut down computer system and peripherals, open and close a file, start an application and create a document).	87	0
Follow the proper district/school procedures in the event of technical difficulties.	82	5
Navigate using scroll bars, arrow keys, special keys, trackpads/touchpads, and mice.	86	1
Save/backup and retrieve a file to/from local hard drive, portable disk/device, and/or online storage location.	84	3
Select a printer and print a document with appropriate resolution and orientation (portrait or landscape).	87	0
Use basic editing and formatting features of a word processing program (e.g., centering, spacing, fonts, enter text, edit, copy and paste, and insert graphics).	86	1
Explain the concept of a database, and provide examples from everyday life (e.g., library catalogs, school records, telephone directories).	79	8
Use correct terminology in speaking about Internet communications (e.g., browser, search engine, website, URL, domain, links).	69	18
Explain terms related to the use of networks (e.g., username, password, network, server, domain).	72	15

Select a strong (secure) password and keep it safe.	86	1
Access the Web and identify and use navigation features of an Internet (e.g., "home," "back," "forward," hyperlinks, and multiple tabs).	83	4
Add a website to Favorites or Bookmark it for future reference.	84	3
Create and send a message using email. Retrieve and read email. Reply to sender and forward an email and attach a file. Save, print and delete an email. Differentiate between "reply" and "reply to all."	87	0
Send an email attachment. Receive an attachment, open it, and save it to an appropriate location.	87	0
Use correct terminology in speaking about Internet communications (e.g., browser, search engine, website, URL, domain, links).	67	20

Developing Technology

Can you...	Yes	No
Connect a computer to peripheral equipment(e.g., scanner, printer, projector).	65	22
Identify and use a variety of storage media (e.g., CD/DVD, flash drives, network servers, online storage spaces). Explain why a particular medium is or is not suited for a particular storage task.	73	14
Resolve basic technical difficulties (e.g., reboot computer, clear paper jam, replace ink cartridge replacement).	85	2
Use built-in help and other available support resources to learn about hardware and software features and to troubleshoot problems.	78	9
Use proper terminology to communicate commonly occurring technology problems (e.g., frozen screen, disk error, printing problems).	83	4
Use editing and formatting features (margins, spelling, and tabs) in a word processing application.. Insert images (e.g., downloaded from the Web or copied from a removable device) into documents.	86	1
Create a report or newsletter using word-processing or desktop publishing software.	83	4
Describe the structure and function of spreadsheet (e.g., cells, rows, columns, and formulas).	75	12
Create an original spreadsheet, entering simple formulas (various number formats, equations, percentages,). Reposition columns and rows; apply formatting features.	67	20
Interpret spreadsheet information, and produce simple charts from data.	72	15
Perform basic searches (including multiple key words) on digital and online databases (e.g., library card catalog, encyclopedia). Use available tools to refine and limit the results of a search.	85	2
Create and manipulate graphics using a drawing or painting program (e.g., adjust	73	14

scale, size, shape, resolution).		
Create a simple multimedia presentation and explain the terminology (e.g., slide, transition, build.)	79	8
Organize Bookmarks or Favorites into folders for future reference.	72	15
Identify and use basic search strategies on the Internet.	85	2
Create an address book in an e-mail program.	78	9

Proficient

Can you...	Yes	No	Blank
Recognize and work with a variety of different multimedia and document formats (e.g., jpg, html, mp3, pdf, doc, odt).	58	22	7
Determine the size and format of files, to identify the storage space remaining on drives, and to identify the version of an application in use.	52	27	8
Install new software from a variety of sources (e.g., CD, DVD and the Internet) per district policies.	62	18	7
Resolve commonly occurring technology problems (e.g., frozen screen, disk error, printing problems).	62	17	8
Demonstrate intermediate word processing skills (e.g., indents, headers and footers, end notes, bullets and numbering, tables, track changes, insert comments).	75	5	7
Use built-in calculating functions (e.g., sum, average) in a spreadsheet application.	49	31	7
Customize formatting of charts or graphs created in spreadsheet. Define and use built-in data functions of a spreadsheet such as sort, filter, find.	43	38	6
Differentiate between formulas with absolute cell references and relative cell references in a spreadsheet.	21	60	6
Use multiple sheets within a spreadsheet and link cells together across sheets.	31	50	6
Define terms (field, table, record, query, etc.) and functions related to databases.	32	48	7
Perform simple operations in a database (e.g., browse, sort, search, delete, add data, define field formats).	57	23	7
Create a multimedia presentation that includes a design template, tables, imported audio, and graphics.	49	31	7
Demonstrate advanced search strategies to locate and retrieve electronic information (e.g., use syntax and Boolean logic operators such as "and/or") correctly.	26	55	7

Share links among users via a variety of technologies (e.g., email, instant messaging, social networks, message boards).	66	14	7
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Advanced

Can you...	Yes	No	Blank
Install and troubleshoot new hardware.	26	52	10
Understand the differences between common file types, and identify the appropriate use of each. Identify methods of converting one file to another type. Use different graphic file formats where appropriate (e.g., jpg to png, wav to mp3).	24	55	8
Import/export and link data between spreadsheet, databases and other applications, including presentation applications.	24	55	8
Explain and demonstrate effective strategies for backing up and restoring personal computer data.	41	38	8
Design, create, modify and manipulate an original database.	16	64	7
Be able to do queries and create reports from a database.	15	63	9
Explain and properly use terms related to networks and Internet infrastructure (e.g., LAN, WAN, DSL, T1, router, firewall, IP address, DHCP, DNS, POP, IMAP).	12	69	7

Standard 2 - Ethics and Safety

Early Technology

Can you...	Yes	No
Explain and comply with the Acceptable Use Policy in your district and describe the consequences of failing to comply.	87	0
Explain and apply classroom/lab rules for responsible and equitable use of technology.	81	6
Explain potential problems viruses and other malware create and practical methods of prevention (including exercising caution in opening email attachments and installing software).	78	9
Identify key intellectual property issues that apply to technology use in education, the workplace and society (e.g., fair use, copyright, software licensing, plagiarism).	80	7
Follow appropriate licensing for all software and content used.	84	3
Discuss the basic concept of assistive technologies and Universal Design for Learning (UDL).	55	32
Evaluate the proper physical setting for technology use (ergonomics).	69	18
Explain how media and technology can be used to distort or exaggerate information.	81	6

Developing Technology

Can you...	Yes	No
Ensure equitable access to technology resources for all students in the class.	82	5
Use basic assistive technology features of operating systems and applications. For example, change text size in a word processor, use text-to-speech features, change mouse controls, use on-screen calculators.	83	4
Cite electronic sources correctly in accordance with academic standards (e.g., APA); explain and model this in the classroom.	74	13
Explain and demonstrate ethical and legal behavior (including fair use guidelines) in copying/downloading files, applications, and media.	78	9
Evaluate a website's validity as a source of information (e.g., find site sponsor, author, date the site was last updated, etc.).	76	11
Explain the safe, responsible use of email, instant messaging, chat rooms, and other electronic communications (including strategies for avoiding and responding to cyberbullying and for avoiding malware/phishing schemes).	84	3

Proficient

Can you...	Yes	No	Blank
Use assistive technology software (e.g., text-to-speech, word prediction, voice recognition, word-symbol, communication software).	51	29	7
Address situations where inappropriate technology use occurs, and contact proper district personnel to take action.	74	6	7
Demonstrate and teach students the principals of ergonomics (e.g., avoiding repetitive stress injuries maintaining proper posture) as well as how to use equipment safely.	54	26	8

Advanced

Can you...	Yes	No	Blank
Manage assistive technology equipment and install peripherals for diverse learners (e.g., alternative keyboards, point devices, and scanners with OCR software).	20	59	9
Explain basic practices that contribute to a website's accessibility to people with disabilities (e.g., use of alternative text to describe graphics, providing captions for audio, maintaining consistency in the interface).	24	56	8
Discuss how copyright law and fair use is affected by, and affects, the use of the Internet.	49	31	8

Standard 3 - Teaching & Learning with Technology

Early Technology

Can you...	Yes	No
Discuss current best practices on teaching and learning with technology in order to plan rich learning environments and experiences.	76	11
Use technology to gather curriculum-specific information from online and/or local digital sources.	83	4
Integrate technology into the curriculum of one's subject and/or grade level with assistance of a coach, mentor or other staff member.	81	6
Use digital and online tools to communicate with teachers, parents, and other stakeholders and to create/distribute classroom materials.]	81	6
Identify your personal technology professional development needs.	84	3

Developing Technology

Can you...	Yes	No
Design and develop lessons and activities that integrate technology in a variety of instructional settings for all students.	73	14
Use appropriate technology to differentiate instruction (e.g., multimedia presentations, concept maps) for all learners.	78	9
Identify and locate technology resources including online curriculum resources (Massachusetts Curriculum Frameworks and/or district curriculum guides) for planning.	76	11
Manage student technology activities to optimize learning with available resources (e.g., in a one-computer classroom, a computer lab, or with portable/wireless technology).	77	10
Use applications (spreadsheets, databases, etc.) to organize curriculum-specific information into charts, tables and diagrams.	72	15
Create multimedia presentations to communicate curriculum content.	74	13
Integrate results of electronic research into classroom instruction with proper citations as appropriate to the grade level.	72	15
Locate and participate in appropriate technology professional development activities offered by the district, local college/university, or online provider.	78	9

Proficient

Can you...	Yes	No	Blank
Plan for the management of technology resources within the context of learning activities (e.g., schedule use of computer lab, wireless laptops, whiteboard).	63	14	10
Evaluate technology resources, including online resources for accuracy and suitability for your curriculum area and the students you teach.	65	13	9
Identify and discuss the technology proficiencies needed in the workplace, as well as strategies for acquiring these proficiencies.	53	25	9
Use appropriate technology tools to enhance your curriculum (e.g., digital projectors, wireless laptops, handhelds, environmental probes).	66	12	9
Facilitate technology-enhanced lessons that address content standards and student technology literacy standards, while addressing a variety of learning styles.	62	15	10
Use technology resources to collect and analyze data, interpret results, and communicate findings to improve instructional practice and maximize student learning.	61	17	9
Identify and evaluate developing technologies as they relate to your subject area, grade level and student population.	62	16	9
Assess student learning using a variety of district, school or individual technology tools and strategies (e.g., the state Data Warehouse, progress spreadsheets, or commercial gradebook applications).	47	31	9
Provide assistance to colleagues in using multimedia presentations, WebQuests, and other technology-rich lessons in the classroom.	45	33	9
Manipulate data using charting tools and graphic organizers (e.g., concept mapping, and outlining software) to connect ideas and organize information.	37	41	9
Use electronic communication tools (e.g., message boards, email, virtual classrooms) to enhance teaching and learning.	60	18	9
Use the Internet to network with other teachers and learn about effective use of technology in teaching your subject(s).	64	12	11
Explain and correctly use terms related to online learning (e.g., upload, download, forum, journal, post, thread, intranet, drop box, account).	62	16	9
Facilitate student use of online tools (e.g., blogs, wikis, message boards) to gather and share information collaboratively.	51	26	10

Advanced

Can you...	Yes	No	Blank
Routinely and rigorously identify, evaluate, and apply emerging technologies as	38	40	10

they relate to teaching and learning.			
Use specialized technology tools for problem solving, decision-making, and creativity (e.g., simulation software, geographic information systems, dynamic geometric software, art and music composition software).	23	56	9
Develop tools and online content (e.g., web pages, blogs, wikis, mailing lists) for instruction and communication among students and faculty.	40	38	9
Use technology (e.g., applets that require the use of logic to solve problems) to challenge students to develop higher order thinking skills and creativity.	31	48	9
Plan and implement collaborative projects with other classrooms or schools using interactive tools (e.g., email, discussion forums, groupware, interactive websites, VoIP, videoconferencing).	32	47	9
Present ideas using the most appropriate communications technologies (e.g., multimedia presentations, web pages, desktop-published documents).	44	34	9
Distinguish between effective and ineffective design and presentation in electronic format (e.g., websites, multimedia, charts).	39	40	9
Explain and demonstrate the use of metadata (e.g., tagging, EXIF) to help students and teachers organize information on their computers and/or the Internet.	12	67	9
Design and deliver effective staff development in technology and its integration into the curriculum.	23	56	9