

**Montachusett Regional  
Vocational Technical School District  
1050 Westminster Street  
Fitchburg, MA 01420**

**Technology Plan**

**2014-2015  
to  
2016-2017**



**Serving the towns of:  
Ashburnham • Ashby • Athol • Barre • Fitchburg • Gardner • Harvard  
Holden • Hubbardston • Lunenburg • Petersham • Phillipston • Princeton  
Royalston • Sterling • Templeton • Westminster • Winchendon**



**Technology Plan**  
**for the**  
**Montachusett Regional Vocational Technical School**  
**2014- 2015**  
**to**  
**2016-2017**



version 6.0

Montachusett Regional Vocational Technical School District  
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- REVISION SUMMARY -

Technology Plan (1) - June 1991  
Technology Plan II - June 1996  
Technology Plan II revision: April 2002  
Technology Plan II revision: June 2003  
Technology Plan III - Draft: June 2004  
Technology Plan III Version 3.0 -Released: October 2004  
Technology Plan III Version 4.0 - Released: October 2006  
Technology Plan – Version 5.0 – released: October 2007  
Technology Plan – Version 5.1 – December 2009  
Technology Plan – Version 5.2 – December 2010  
Technology Plan – Version 5.3 – December 2011  
Technology Plan – Version 5.4 – December 2012  
Technology Plan – Version 5.5 – December 2013  
Technology Plan – Version 5.6 – December 2014  
Technology Plan – Version 6.0 – Draft March 2016

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## **Background Information**

### **1.1 School/District and Community Demographics**

The Montachusett Regional Vocational Technical School (“Monty Tech”) is a four-year career and technical high school serving the member towns of Ashburnham, Ashby, Athol, Barre, Fitchburg, Gardner, Harvard, Holden, Hubbardston, Lunenburg, Petersham, Phillipston, Princeton, Royalston, Sterling, Templeton, Westminster, and Winchendon.

The Montachusett Regional Vocational Technical School District was established in 1965 with 10 local cities and towns<sup>1</sup> comprising its membership. That number was expanded to include seven additional communities<sup>2</sup>. Most recently the town of Holden joined the district. The District covers a very large geographical area and serves communities bordering the Quabbin Reservoir on the south and the New Hampshire border on the north. The school is one hour from Boston and the Atlantic Ocean, five minutes from the ski slopes of Wachusett Mountain, and two hours from the New Hampshire mountains.

Monty Tech annually services a student population of approximately 1,435 in grades nine through twelve. The school’s vocational offerings include Auto Body, Automotive Technology, Business Technology, Cabinetmaking, Cosmetology, Culinary Arts, Dental Assistant, Drafting Technology, Early Childhood Education, Electrical, Engineering Technology, Graphic Communications, Health Occupations, House Carpentry, HVAC & Property Maintenance, Information Technology, Machine Technology, Masonry, Plumbing, and Welding/Metal Fabrication. Successful Montachusett Regional Vocational Technical School graduates are employed throughout the area.

In addition to the day school programs, Monty Tech educates the adult population of the area. Adult programs include a ten-month Mass. DESE Chapter 74 approved Practical Nursing Program, an Emergency Medical Technician Program, a Nurse Aide Training Course, as well as many vocational, enrichment, and self-improvement courses.

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<sup>1</sup> Ashby Barre Fitchburg Gardner Harvard Hubbardston Lunenburg Royalston Sterling Winchendon

<sup>2</sup> Ashburnham Athol Petersham Phillipston Princeton Templeton Westminster

## **1.2 Mission and Philosophy**

### **Mission**

Every student will graduate from Montachusett Regional Vocational Technical School with the skills, knowledge, and abilities to be a productive and effective member of an ever-changing society.

### **Philosophy**

The teachers, administrators, school committee members, and support staff of Montachusett Regional Vocational Technical School, in partnership with our students' families and the district communities, provide a progressive and safe learning environment for the intellectual and social development of every student.

The challenging career/technical and academic programs encourage individual excellence and foster the work ethic and life skills necessary to be successful at Monty Tech, post-secondary institutions, and in today's workplace. In accordance with state and national standards, the school is committed to high standards of instruction, relevancy of curricula, integration of programs, and the utilization of on-going assessment to improve student achievement. To attain this ideal, we provide meaningful learning activities in and out of the classroom as well as opportunities for students to develop critical thinking, problem solving, and decision-making skills.

Creating and maintaining a positive school environment is essential to the interpersonal and social development of our diverse student body. Through a variety of extracurricular and co-curricular offerings, students are exposed to opportunities that promote teamwork, communication, and leadership skills. Comprehensive counseling and special service programs complement the academic and career/technical programs.

Our faculty members work together to ensure that every student will have the capability to be a lifelong learner in a global community. We remain committed to prepare graduates to be respectful, tolerant, knowledgeable citizens who demonstrate civic responsibility.



### 1.3 Technology Plan Guidelines

The Massachusetts Department of Elementary and Secondary Education publishes a document entitled “Local Technology Plan Guidelines” on its website:

<http://www.doe.mass.edu/odl/planning.html>. The guidelines are voluntary and represent recommended conditions for effectively integrating technology into teaching and learning.

The most recent guidelines include the following benchmarks:

- Benchmark 1 Commitment to a Clear Vision and Implementation Strategies
- Benchmark 2 Technology Integration and Literacy
- Benchmark 3 Technology Professional Development
- Benchmark 4 Accessibility of Technology
- Benchmark 5 Virtual Learning and Communications
- Benchmark 6 Internet Safety and Data Retention

The Mass. DESE Office of Digital Learning, in its March 2015 newsletter, indicated that it was updating its guidelines to align with the State Educational Technology Directors Association (SETDA) broadband targets for 2017-2018 as well as to reflect new developments in digital learning. This includes guidance for districts that have a one-to-one or bring-your-own device (BYOD) program. The DESE states that districts must have a clear policy on personal use of devices, both on campus and off campus, including software installation, website access, and other uses. The guidance also states that districts ensure parents understand their responsibility for the devices and its role in the educational process.

The United States Office of Educational Technology has published a National Education Technology Plan entitled “Future Ready Learning”. The January 2016 document can be found at <http://tech.ed.gov>. The National Education Technology Plan (NETP) sets a national vision and plan for learning enabled by technology. The focus of the document is on learning, teaching, leadership, assessment, and infrastructure.

The Universal Service Administrative Company (USAC), the organization that oversees the Federal E-Rate program for schools and libraries, had previously posted technology plan reference material on its website <http://www.usac.org/sl> in the Reference Area section. However, the FCC’s 2014 E-Rate Modernization Order eliminated the application requirement for technology plan approval for Category 2 services beginning with funding year 2015 (2015-2016). The FCC eliminated the technology plan requirements for Category 1 services starting in funding year 2011 (2011-2012). It

will be important to monitor technology plan requirements of USAC as long as the district participates in the E-Rate program.

## **Strategic Direction and Implementation Strategies**

The Montachusett Regional Vocational Technical School is committed to support 21<sup>st</sup> century teaching and learning. The district's technology plan aligns with the District and School Improvement Plan and aims to develop teacher skills, and to facilitate teacher use of technologies new to the district.

An immediate goal is to implement a 1:1 Chromebook initiative for the 2016-2017 school year. Students were introduced to Chromebooks in May 2015 via mobile carts, and teachers were provided with Chromebooks in August 2015. The district provided staff with a full-day of Google for Education professional development in August 2015, and has provided on-going support since that time. Professional development plans for 2016-2017 will be finalized shortly.

The Director of Technology interfaces with a variety of stakeholders as goals and objectives are defined, and implementation strategies are discussed. The School Committee has long maintained subcommittees whose responsibility it is to meet with the Superintendent, district and school administrators, and jointly agree on overall goals and guidelines, especially as they affect the budgetary process and policy decisions. The Technology Ad-Hoc Subcommittee provides an avenue of support for technology initiatives to the full School Committee.

At various times the Superintendent, administrators, and instructional staff meet to discuss and recommend courses of action to improve the use of technology in the district. During periods of major revisions and/or updates to the Technology Plan a technology advisory committee, with representation from administration, instructional staff, library staff, support staff, students, parents and the community, has met to discuss the district's needs.

The school maintains advisory committees for its vocational programs, which consist of a broad cross section of the areas businesses (including former graduates and parents, as well as trade and industry representatives). Many of the vocational programs are technology based. The advisory committees make recommendations based on industry standards.

The Director of Technology meets with other technology directors throughout the school year at various workshops. Technology goals and initiatives are shared, and recommendations are made as to how to best integrate technology in the school systems. Technology staff employees also workshops and make recommendations for new equipment and services.

## **2.1 Budget**

The district budget includes line items for technology staffing, professional development, hardware, software, supplies and materials, travel, contract services, and maintenance in its operational budget under the following categories:

- Salaries
- Professional Improvement - Technology
- Admin - Hardware
- Admin - Software
- Principal Technology S&M
- Principal Technology Instate Travel
- Instructional Technology Instate Travel
- Instructional Technology Hardware (under \$5000)
- Instructional Technology Software (under \$5000)
- Network & Telcom S&M
- Technology Maintenance Contracted Services
- Technology Maintenance Equipment & Tools
- Instructional Technology S&M

The district financial software system has been specifically configured to support technology expenditure reporting requirements. District technology purchases must be approved by the Director of Technology, Superintendent-Director, and Business Manager to be sure they are appropriate, cost effective and sustainable.

The district has taken the position that all required technology as identified in this plan and elsewhere will be obtained by local operating budget. Grants and other sources of funding are used to supplement, enhance or provide alternative technology. Given that several of the items identified in the plan require funding, the implementation of those items will be contingent on available funds.

The planned Chromebook 1:1 initiative has been approved by the School Committee, and funding for the first year of a three-year lease has been included in the 2016-2017 budget.

## **2.2 Schools and Libraries E-rate Program (Universal Service Administrative Company - USAC)**

The Federal Schools and Libraries E-Rate program provides discounts of up to 90 percent to help schools and libraries obtain affordable telecommunications and Internet access, which are considered Category 1 services. The FCC July 2014 and December 2014 modernization orders eliminated discounts for email and website hosting effective 2015-2016. Discounts for telecommunications (phone service) are being phased down by 20 percent each year so that by 2019, Category 1 E-Rate discounts will only support Internet access and wireless services.

Category 2 projects are designed to upgrade school infrastructure, including internal wiring, switches, routers, racks, and wireless access points. Internal connections and services needed for broadband connectivity are considered Category 2 services. In order to expand the availability of Category 2 discounts the FCC has implemented a five-year budget for which schools seeking support for Category 2 services in funding years 2015 through 2019 will be eligible to request up to \$150 per student (pre-discount), over a five-year period. Monty Tech will be able to apply for approximately \$215,000 (pre-discount) over the five-year period. The school district will need to budget the school share (approximately 50%, or \$107,000). Montachusett Regional Vocational Technical School will be pursuing Category 2 funds for infrastructure upgrades effective 2016-2017.

In all but one year Montachusett Regional Vocational Technical School has qualified for a 50 percent reimbursement for Category 1 services. The discount rate for 2012-2013 was 60 percent, but it dropped back to 50 percent again in 2013-2014. Monty Tech's local budget pays for the non-discounted portion of costs related to services procured through E-Rate.

E-Rate funding requires that the district have a CIPA-compliant Acceptable Use Policy.

### **2.3 Evaluation**

The Director of Technology has overall responsibility for modification, implementation, and evaluation of Monty Tech's local Technology Plan. The Director of Technology works with the Superintendent-Director and administrators to confirm that the Technology Plan is aligned with the District and School Improvement Plan, Professional Development Plan, Capital Improvement Plan, Budget Plan, and vocational five-year plans. The Technology Plan is reviewed at least annually. Minutes of the Vocational Advisory Committees are reviewed at least annually so that the district can respond to new developments and technologies used in the workplace. The Director of Technology assesses the technology products and services that are needed to improve teaching and learning prior to initiating purchase requisitions.

The planned 1:1 Chromebook initiative will have an impact on teaching and learning. The district will monitor the impact on technology infrastructure, policies, and professional development needs. Surveys will be used to elicit feedback from the teaching staff regarding the degree to which technology implementation is meeting the needs of students and staff.

## **Technology Integration and Literacy**

### **3.1 Administrative and Management Goals and Initiatives**

#### **Safety and Security**

The safety and security of Monty Tech's students and staff is of utmost importance. The district has implemented procedures to provide a safe environment. All outside doors are locked. All visitors must enter the front door, which has a visitor management check-in kiosk that performs instant background checks. Staff and students may enter several doors using a proximity ID card access system. Every person in the building must wear an identification badge. Staff and students have picture IDs. The IDs are also used as part of our cafeteria payment system.

Monty Tech has "enhanced lockdown" procedures in place that include the use of a database designed to account for every student and staff member during a crisis situation. The procedures are tested at least annually to refine response times.

Monty Tech has an electronic video security camera system throughout the building, which adds to our ability to monitor events within the building as well as the surrounding grounds. Cameras are updated or added as needed.

The district continues to review, assess, and update the district's safety and security plans.

#### **Communication**

Communication and information access is central to all instructional goals. Monty Tech has long provided all staff and students with email accounts. In April 2015 the school transitioned to Gmail, which is provided free to schools. The Google for Education platform will provide many opportunities for communication and collaboration between teachers and students.

The school's School Messenger notification calling system has been updated to include parent/guardian email addresses so that communication can be sent out via phone and email.

In 2008 Monty Tech opened the Aspen student information system 'Family Portal', which gives parents access to student attendance, conduct, schedule, and grades information via a secure log in. Teachers have been encouraged to use the electronic Gradebook built into the student information system as a means to provide families with additional grades information, such as missing assignments. The school will consider opening the 'Student Portal', which will allow students to

view the same information as their parents and enter online course requests. The student portal also allows teachers to accept online assignments into their gradebooks.

### **Partnership for Assessment of Readiness for College and Careers (PARCC) and MCAS 2.0**

The school district prepared for the anticipated PARCC online assessment testing system by making improvements to the school district infrastructure and increasing Internet bandwidth before pilot testing began. Monty Tech completed a successful PARCC pilot test in March 2015 and May 2015.

The Massachusetts Department of Elementary and Secondary Education has since decided to create a next-generation MCAS 2.0 assessment, which will phase in computer-based testing. The district will continue to make improvements to Internet connectivity (bandwidth), firewall throughput, and wireless networking to meet the requirements of the new assessment testing.

### **Schools Interoperability Framework (SIF) for Mass. DESE SIMS, EPIMS, SCS, and SSTR**

The Massachusetts Department of Elementary and Secondary Education (DESE) began the process of improving its data collection process via an automated process called SIF in 2010. SIF is based on direct data pushes from the student information system to the DESE or direct data pulls from the DESE.

Race to the Top districts were the first to pilot the SIMS (student data) and SCS (student course schedule data) data collections via SIF. Montachusett Regional Vocational Technical School was selected to setup SIF in October 2014, and successfully submitted SIMS data using SIF during the March 2015, October 2015, and March 2016 data collections. Future SIMS and SCS data collections will be done via SIF.

In January 2016 the DESE announced that this year's School Safety and Discipline Report (SSDR) could be completed via SIF, but that schools would have to option to submit their data via a file upload. The school will decide which option will be used in the spring of 2016.

The DESE has not yet announced their timetable for piloting the submission of EPIMS (staff) data via SIF.

### **Infrastructure upgrades**

To support the 1:1 Chromebook initiative and other technology needs, plans for the coming years include adding fiber lines to provide redundancy, upgrading connections to fiber or Cat 6e, and adding 10 GB switch modules.



In addition to hardware, the school will need the following complementary software products to support the 1:1 initiative: Lightspeed web filtering and Aruba ClearPass. Lightspeed web filtering provides safe, fast access to the Internet and includes flexible policies, social media controls, bandwidth control, malware protection, anonymous proxy detection, mobile filtering, classroom management tools, and comprehensive reporting. The cost for the Lightspeed hosted solution is approximately \$27,000 for a three-year agreement. Aruba ClearPass will provide strong network access security for monitoring wireless devices, and provides enhanced options for guest access services. First year costs for Aruba Clearpass will be approximately \$25,570, plus \$1,200 annual support.

In addition to the 1:1 initiative, a second project that will require infrastructure funding is a proposed Veterinary Technician Program, which will be housed in a separate building on the school property. The district will need to determine if network services will be connected to the existing building, or if the building will run on a stand-alone network. Costs for network equipment and Internet services will vary, depending on which option is chosen.

### **3.2 Instructional and Curricular Goals and Initiatives**

As we quickly turn the pages of the 2015-2016 school calendar, administration is pleased to report that Monty Tech's on-going, school-wide efforts to review, improve and expand our use of instructional technology within and beyond our classrooms and career areas are meeting with much success and positive feedback.

With regards to technological hardware and software, as a vocational-technical school, our primary efforts as educators are to assure that our various vocational programs meet current industry standards for technology. Thus, we regularly meet with our community partners and consider feedback from our program advisory members in order to determine what equipment we should be purchasing in order to ensure that our students are career ready upon graduation. However, in order to ensure that we are supporting the professional practice of our teachers and the growth of our students, we also need to be vigilant about updating their day-to-day instructional technology needs as well.

New educational initiatives are often born through necessity, and the birth of our current technology focus at Monty Tech certainly falls under this category as the school's longtime email platform announced that it would cease support operations in June 2014. This led members of our administration, technology department and faculty to begin a series of site visits to a number of our neighboring vocational schools and, as a result of this effort, Monty Tech joined the growing number

of schools, colleges and universities that are becoming a “Google school”. Recent data indicates that there are more than 30 million active users of Google Apps for Education worldwide, and that 85% of all Chromebook sales are within the education market.

Thus, besides moving to Gmail, we are looking at a number of changes and proposals that hopefully will assist our faculty in their efforts to provide innovative instructional practices that will help elevate the college and career readiness of our students. The school year opened with all academic and vocational instructors receiving their own school-issued Chromebook devices. This was followed by a full day of professional development provided by a number of trainers for teachers, administrators and support staff that focused on introducing a variety of Google platforms and applications. This training was incredibly well received as 84% of teachers surveyed rated the quality of the day’s content as good or excellent. Since those opening day activities, teachers in all content areas have been implementing strategies such as group editing, online assessments and Google classroom activities that allow the students to work in a paperless and “in the moment” environment.

In consideration of the school’s success and Monty Tech’s desire to provide greater day-to-day access to essential educational technology across the school, the school recently received the approval of the School Committee to pursue a full 1:1 Chromebook initiative. The purpose of this initiative is to enhance student achievement by creating a student-centered learning environment where every student has a school-provided personal device that will allow instant access to the internet, email, publishing/presentation tools and “cloud” storage whether at school or at home. This would be achieved by developing a three-year leasing plan with a yet to be identified vendor. Such a system allows the district to distribute the cost of the initiative over three years, and the district is free to access lower pricing as the cost of Chromebooks continues to fall.

At this time, the next steps for this initiative include –

- Reviewing the various vendors that provide Chromebooks and determining that the potential leasing costs fall within the budget set by the School Committee.
- Finalizing a lease agreement with the chosen vendor.
- Determining a delivery date and establishing Chromebook roll-out procedures.
- Ensuring that supplemental software for filtering needs is in place.
- Implementing further professional development offerings to ensure teacher and classroom support.

- Distribution and utilization of 1,435 Chromebooks to all students in September, 2016.

LanSchool classroom management software is available school-wide and is being used in several computer-based shops, and is being made available to additional classrooms and computer labs each year. Classroom teachers are able to facilitate learning by displaying their computer screen, sharing audio, and assessing student understanding through testing. Teachers can also monitor student desktops and remove distractions by blocking access to the Internet or applications.

Assessment data provided by the Mass. Department of Elementary Education and other sources is analyzed to make recommendations to teachers that will improve student learning.

## **Academic Programs**

### **Classroom Technology**

In designing and planning classroom lessons, technology is an important component. Each classroom is equipped with at least one computer, a television, and a Smart Board. The interactive whiteboard systems are used to deliver dynamic lessons in all subject areas. Each instructor uses their desktop computer to store student information and resources. Teachers make use of online resources to research strategies and new approaches to teaching. Online resources and videos may be shared with students in class during a lesson in order to enhance or supplement the topic being explored.

### **Grading / Data Analysis**

Instructors also make use of online programs such as Lightening Grader to track student progress and to analyze student data more efficiently. The results are used to make modifications in curriculum as needed. Individual teachers also use the Lexmark machines to score and analyze student results on midterms, finals, assessments, tests and quizzes. The Test Wiz program is used to analyze 8th and 10th grade MCAS results as well as Monty Tech's MCAS Simulation results.

### **Computer Access / Chromebooks / Google Apps**

When available, students can use computers in the library or reserve the mobile laptop carts or the computer labs to reinforce lessons and explore topics further. In 2015, each instructor was given a Chromebook to use throughout the school year. At the beginning of the school year, all instructors received professional development on how to operate their Chromebook. Additional professional development opportunities have been provided in using the more advanced features of Google

Classroom. Many teachers also use “Remind.com” as a way to communicate upcoming deadlines and reminders for students. Instructors use the Remind.com application to interact with parents and students in a safe and secure way. This application keeps the lines of communication open between school and home, fostering a team approach to learning in which students are motivated to higher achievement.

In addition, there are over 125 graphing calculators and 24 IPADS in the Math Department available for students to utilize at their desks. Computers, IPADS, graphing calculators as well as online resources help to make the math come alive for our students in the classroom and promote real world connections. Math instructors use a large variety of software programs on the computers, including interactive programs like “ASSISTments”, online graphing calculators like “Desmos.com” and “Wolframalph.com”, Kuta and other “Test Generator” software programs.

### **Online Programs**

The Math Department uses iPads to access ASSISTments, an online formative assessment and tutoring program designed to provide students with individual feedback and instant reports. The English Department began using Achieve 3000, a technology integration product designed to increase reading comprehension based on differentiated instruction. Currently, all science and social studies teachers also use this program for increased exposure to nonfiction reading. In addition, we have approximately 12 Elmos for teaching student writing and sharing student work. The Business Department uses Microsoft Office and Google products as well as Banzai and GnuCash. The District also uses online courses as part of its summer school course offerings and credit recovery program.

### **Understanding Computer Safety**

The school has Grade 9 -11 elective courses for computer literacy instruction. The curriculum includes instruction on the safe and responsible use of technology and an understanding of ethics and safety issues in using electronic media at home, in school, and in society. Students are instructed in appropriate online behavior including interacting in chat rooms, cyberbullying, and responding to cyberbullying.

### **Vocational Programs**

The school district is committed to introducing computers and/or advanced technology into vocational technical programs. Teachers have computers in their shops, and many shops are equipped with SmartBoards. Many vocational programs are computer based and each student has the use of a computer. Other shops are equipped with one or more computers for student use.

Students in vocational programs use computer labs to participate in Career Cruising, an interactive career exploration and planning tool that identifies careers related to interests, abilities, and preferences. Students are also required to complete an online OSHA training program called CareerSafe.

Vocational teachers use Skills Plus, a web-based vocational competency system, to track student progress. During 2015-2016 vocational teachers began using Rubicon Atlas curriculum management software for curriculum mapping.

The Auto Body Collision Repair and Refinishing program has a new Pathway CCC (Calculate Cash Conversion Cycle) estimating system that allows students to write up-to-date estimates with current part prices and labor times. A SATA fresh air system was also installed for student safety. Our detailing bay was equipped with a Meguiar's automatic chemical mixing system, which allows us to buy detailing products in concentrated form and reduces them, as needed, while detailing customer's vehicles. We updated to a waterborne paint mixing system to stay on the cutting edge of refinish technology. Upon graduation, students' may receive a Pro-Level certification through I-CAR, which is done online, in both refinishing and non-structural areas.

The Automotive Technology program utilizes many computer-based and driven devices. Computerized engine analyzers and hand-held electronic diagnostic test equipment are used for automotive troubleshooting and repair. An alignment machine and Hunter computerized wheel balancers are utilized within the curriculum. Students use computers to interface with the Mitchell 1 program and to access other automotive troubleshooting/repair information. Desktop PC's also allow access to several online training programs, as well as tracking student competencies and daily communication needs. Smart Boards are used for training and instructional time. A Massachusetts Motor Vehicle State Inspection machine is another computer-based tool used in the program. Digital volt/ohm meters and oscilloscopes are contained within our program. In the future, the Auto Tech program would like to acquire 15 desktop computers and several updated basic and complex scan tools. Another requirement of the program is a laptop that is rugged enough to handle the rough service environment of the shop and handle the requirements of EASE Diagnostic Program. Other requirements are self-contained industry scan tools and an ELMO teaching projector.

The Business Technology program has computer workstations for each student. Students learn a variety of software products including Microsoft Office and QuickBooks (accounting software). The shop is equipped with two Smart Boards, a color printer and high-capacity copier. Students

from Business Technology run the school store, which has a retail point of sale (POS) system. Students are certified in MOS, IC3, and Customer Service and Sales.

The technology presently existing in the Cabinetmaking area consists of instructor computers with software for layout and design as well as computer aided instruction. On a weekly basis, mobile laptops are utilized for student research and drawing using Alphacam and SolidWorks. The shop uses a computer controlled router that rotates 360 degrees.

The Cosmetology curriculum is supported by multi-media, computerized technology. The Hairmax System, which is utilized on the clinic floor, is currently being upgraded. This is a computerized customer database and inventory control program. The upgrade will be installed on four other computers for the underclassmen. Our students are using Google Classroom, as well as Quizlet, to incorporate learning.

Students use computers in the Culinary Arts program as part of the point of sale (POS) system and to access software for inventory control, recipes and baking formulas. They also use a kitchen video monitor system to prepare a la carte food.

The students in the Dental Assistant program use computers in simulated office practice situations using software, such as third party billing practice, dental record practice and digital radiography. Dental Assisting has a mobile computer lab for student use. Computers are used daily for assignments, practice quizzes, as well as testing for medical terminology and chapter exams.

The Drafting Technology program is rapidly evolving with advances in technology. The program is primarily CAD based. Software and hardware upgrades are made regularly to keep the program aligned with industry trends and standards. Digital printing and vinyl sign cutting software and their associated plotters are used extensively for community projects and school events. The program makes regular use of large format plotting, scanning, copying and 3D printing. Software includes: Punch! Home & Landscape, Autodesk Suite (AutoCAD, Inventor, Vault, REVIT, Civil 3D, 3Ds Max and others), SolidWorks, CatalystEX, Microsoft Office Suite, Roland Versa Works, Letter Art, Cut Studio, and Google Applications.

Students in the Early Childhood Education program utilize computers for applications such as Microsoft Word, Powerpoint, Excel, and Acrobat, as well as computer aided instruction. A mobile lab is used to expand student access to the technology, enhance instruction and create professional portfolios. A computer lab with 30 laptops would be beneficial for access to the current programs, as

well as Photoshop and Design, to enhance student portfolio work. Instructors use a Smart Board as a teaching tool.

The Electrical program is rapidly evolving. Present technology in the program includes fiber optics, data transmission lines, programmable logic controllers and alarm systems of all types. Students use computers for computer aided instruction, layout and design, cost estimating and inventory.

The Engineering Technology program utilizes computers and multi-media technology in direct support of the program. The present use of computers by students provides design and testing simulation through the use of software such as SolidWorks and AutoDesk Inventor, 3D CAD design software, MultiSim circuit simulation software and RoboCell (Robotics Simulation). The program incorporates a wide variety of Project Lead the Way curriculum, tools and software.

The Graphic Communications program uses Adobe Design and Print Software, wide format printers, high capacity copiers, a digital envelope printer, as well as an Imagesetter/RIP station, which eliminates the need for cameras and a darkroom. A Smart Board has been added. The program is able to publish the school yearbook, as well as yearbooks for other schools.

The students in the Health Occupations program use computers in simulated office practice situations using software particular to the medical office. This software includes, but is not limited to, appointment scheduling, data entry and billing procedures. The Health Occupations program utilizes a Certified Nursing Assistant multi-media training system and other computer aided instruction. The shop has a mobile computer lab for student use. Online resources for project based learning, practice quizzes, assessments (Kahoot), virtual reality office work, videos, etc. are also utilized daily.

The technology presently existing in the House Carpentry area consists of instructor computers. In the future our shop will incorporate Computer Aided Design Software for our related classrooms. The staff and students use the Google platform to research projects throughout the school year.

The HVAC and Property Maintenance program utilizes a Smart Board as a teaching tool. Each Instructor has a Chromebook. The Related classes use Google Classroom for assigned work, as well as testing. Instructors have used webinar technology for the “Building Engines” program. Students may use computers for in-house research items.

The Information Technology program is fully equipped with high performing computer equipment. Students learn computer hardware and software troubleshooting, as well as computer networking, web design, and cyber security. Students run Help Desk services to support teacher needs. Students use database software as part of their help desk and provide technical support to computer users throughout the school. Both instructors have set up Google classrooms.

The Machine Technology program uses CNC controlled lathes, milling machines, and electrical discharge machines to teach machining and CNC programming. The program currently has a LASER engraver that is used to create engraved parts, 3D models and prototypes. The program has computer workstations equipped with Surfcam software, which the students use to design and program work pieces. The Machine Technology program also uses CNC simulators to write and analyze CNC code.

The Masonry program utilizes computers and software to assist students with the Career Safe Online program. The staff and students use the Google platform to research projects throughout the school year.

The Plumbing program utilizes computers for student use in Google Classroom, inventory control, pricing, job estimating and computer aided design. Spreadsheets or software are used to determine heat loss in buildings for hydronic heating systems.

The Welding/Metal Fabrication program includes state of the art welding stations. Equipment includes two CNC plasma cutting machines. The shop also has a NC computer controlled press brake, and computers for layout and design.

### **Student Support Services**

The Special Education department is constantly evaluating the assistive technologies needs of students, as well as administrative tools needed by staff. Special Education staff use a web-based information system to manage student educational plans.

Special Education classrooms are equipped with mobile computer labs comprised of PC and Mac laptops for student use. Kurzweil 3000, an assistance technology, text to speech, learning tool, is used by students that require reading, writing, test-taking, and study skills support. As the district transitions to the Google platform, special education teachers are exploring and implementing literacy applications for Chromebooks that may serve in a similar capacity.



Since 2013-2014 Special Education implemented the use of iPods for students with disabilities requiring audio books. The iPods replaced older assistive technology devices. Through the Learning Ally web-based program, electronic versions of the books and manuals utilized within the district are loaded onto the iPods with the assistance from the technology department. A mobile device management system allows for the devices to be secured and the content managed. The Special Education department works in conjunction with the technology department to ensure all students requiring electronic audio books receive the device and content necessary in a timely manner. Additionally, in 2015, the Special Education department purchased seven iPads so that the teachers could become familiar with, and implement, many of the apps that benefit students. Psychological testing moved to an application format as well. Therefore, iPads are also used for initial and three-year re-evaluations.

In 2014-2015 the Guidance Office began using Naviance, a college and career readiness software solution that helps students connect academic achievement to post-secondary goals. All students are actively establishing electronic portfolios, conducting career and college searches, developing resumes, and applying to colleges through this comprehensive program. The Naviance program allows for parental involvement and focused communication to occur around post secondary planning and goal setting. As the department becomes familiar with the program, further tools will be implemented to support our students as they define and develop their post-secondary pathways.

### **Library Services**

The library uses Follett Destiny, a software platform that integrates circulation, cataloging, searching, reporting, and other library management functions. The library's e-book and audiobook program, Follett Shelf, is also integrated into the program.

A physical renovation of the library was completed in December 2013. The library is equipped with 36 Chromebooks, a wide-screen projection system, and seating for 66 students. The library includes two small meeting rooms that are available to students and staff on a first-come, first-served basis. Electrical outlets for charging devices are available on the walls, floors, tables, and on the sides of the bench seats. An adjoining classroom, which has seating for 32 students, is equipped with a Smart Board and 30 PC laptops. The PC laptops are used by vocational classes that require specific software, such as AutoCad and Solidworks, that will not run on Chromebooks. Other classroom teachers may reserve the classroom as well.

The librarian supports staff and student access to educational media services via the library's website (LibGuides), staff newsletters, and through direct instruction resources such as research databases,

bibliographic software (Easybib), Follett Shelf e-books, audiobooks, and other educational tools. To promote literacy, academic and vocational departments work in conjunction with the librarian on specific projects to ensure that students understand how to use these resources. Grade 9 students and adult Practical Nursing students are provided with library orientation in September of each year. In addition, the Librarian provides instruction on website evaluation and web 2.0 technologies, such as Google Apps for Education, Prezi, Glogster, and other online programs.

As part of the district's 1:1 device initiative, which will start in 2016-2017, the librarian will support teachers, staff, and students in the orientation and implementation of the devices and online apps. The library will provide students with loaner devices, when necessary. The librarian will also assist students and teachers outside of the library with orientation, lessons, and technical assistance when the library is already reserved, or if the teacher prefers to use his/her classroom or shop.

The Librarian serves on the district's Technology Committee.

### **3.3 Technology Literacy**

The district provides ample professional development opportunities to staff so that they can meet proficiency standards. Teachers regularly use email to communicate with one another and with parents. Teachers are expected to use the Aspen student information system to record student attendance each day.

### **3.4 Staffing**

The district has a district-level Director of Technology. The Technology Office is staffed by three technical support specialists (3.0 FTE), and one network specialist (1.0 FTE). In past years the Technology Office employed one or more co-op students, who worked every other week during the school year (0.5 FTE).

The district also employs a media communications specialist, an audio visual technician, an academic assessment specialist, a librarian who is licensed in instructional technology, and a librarian's assistant.

The district is committed to provide timely in-classroom technical support. The Technology Office uses a web-based Help Desk ticket system to enter and track progress on problems reported by staff. The Information Technology shop also runs an online help desk, and assists staff with technical problems. If the student help desk cannot resolve the issue, the information is forwarded to the Technology Office. The majority of technology problems are resolved in 24 hours or less.

## **Technology Professional Development**

### **Professional Development**

The district has committed to provide the staff with high quality professional development, including training involving technological advancements in academic, vocational, special education, and administrative areas. Administration discusses professional development throughout the school year to structure a program that is in sync with the school's student learning objectives.

The Director of Development, who serves as the coordinator of professional development, works with vendors and the Technology Department to provide adequate training for staff in the use of new technologies. Training may be conducted during scheduled in-service time or within a time frame that meets the needs of a particular department or individual.

New staff orientation each year includes at least two hours of technology training. Individuals receive training on the use of email, the student information system, the school website including the staff intranet, signing up for computer labs, as well as the Acceptable Use Policy. Individual training is provided to teachers who wish to begin the school year using the online teacher gradebook.

Technology-based professional development for 2015-2016 centered around Google for Education, with a full-day at the beginning of the school year devoted to Google Classroom, Google Apps, Chromebooks, and Chrome Apps and Extensions. Other technology based training included Rubicon Atlas curriculum management, and Lightning Grader assessment and grading. Teachers have been encouraged to model best practices during faculty meetings. Professional development for 2016-2017 is currently being planned.

Many staff members take advantage of online webinar trainings related to technology, as well as training at workshops and conferences outside of the building.

## **Accessibility of Technology**

The Director of Technology reviews Internet connectivity and network access needs annually.

### **Internet Access**

The district provides connectivity to the Internet in all classrooms in the school. Wireless connectivity in all classrooms and administrative areas was added in July 2013.

The district has one Axia/MBI 250 Mbpsx250Mbps fiber connection, one Verizon 100 Mbpsx100 Mbps fiber connection, and one Comcast 100 Mbpsx20Mbps cable modem circuit. The district provides bandwidth of at least 10/100 MB to each classroom.

The district upgraded its firewall in July 2013 to increase throughput for several initiatives involving increased traffic, including online assessments. A second firewall was added in July 2014 for redundancy.

The district has a CIPA-compliant Internet filter.

### **Access to the Internet outside the School Day**

Students are encouraged to use the library on an individual and group basis before and after school.

The library opens at 7:00 a.m. and closes at 4:00 p.m. every school day, which provides students with a consistent source of information and technology assistance in a comfortable and safe environment. Students without reliable printers at home use the library's printers.

The school will be implementing a 1 to 1 Chromebook initiative in 2016-2017. Students will be able to charge their devices in the library before and after school. Students who are temporarily without their devices will be able to borrow one from the Library.

The district web site includes an up-to-date list of places in the district communities where students and staff can access the Internet after school hours.

### **Networking (LAN/WAN)**

In 2012-2013 Monty Tech updated the building's network infrastructure by replacing the network core switch as well as several other network switches. Additional network switches were replaced or added in 2014-2015.

The school added a managed wireless network building-wide in 2013-2014. Wireless access points were installed in classrooms, shops, and offices. Higher capacity wireless points were purchased in 2014-2015 to replace devices in high traffic areas and areas that did not previously have coverage.

Internet bandwidth was increased substantially during 2013-2014 and 2014-2015.

In 2014-2015 the Technology Office server room was upgraded with longer capacity UPS battery backup for its servers, and a standby generator was installed to maintain service during power interruptions.

In 2015-2016 the Technology Office server room was upgraded with a data center grade Liebert air conditioning system.

The district provides a minimum 10/100 MB Cat 6 switched network services and/or 802.11b/g wireless network.

The district provides services for secure file sharing, on-premise and off-site backups, e-mail, calendars, and web publishing, either internally or through contracted services.

### **Hardware Access**

The district has both Windows and Mac desktop or laptop computers in offices and classrooms, as well as in three computer labs that are available for student use. The district has many other mobile labs that are either designated for a particular classroom or vocational program, or are available for sign out via a networked database that allows teachers to select the date and/or periods the devices are needed.

In 2014-2015 the district added three Chromebook mobile labs (90 devices) for student use. Three additional Chromebook mobile labs (90 devices) were added in 2015-2016. In August 2015 the district provided instructional and administrative staff with a Chromebook, and the district has plans for a student 1:1 initiative for the 2016-2017 school year.

Classrooms are equipped with at least one computer, projector, electronic whiteboard, and flat-screen TV. Each administrator, teacher and paraprofessional has a Chromebook for use inside or outside the building. Printers and copiers are available in central locations.

The district maintains an inventory database of all computer related equipment including desktop computers, laptop computers, tablets, and e-readers, and printers. The district has 49 iPads for instructional and administrative use, and 129 iPods that are used as assistive technology devices.

At June 30, 2015 the computer inventory included 1,041 computers (desktops and laptops) as follows:

- 541 Windows operating system
- 410 Mac operating system
- 90 Chrome operating system

The district computer replacement plan has allowed replacement of computers on a 4 to 5 year cycle. A comprehensive computer replacement plan is updated annually.

### **Software**

The Technology Office supports the following major operating systems:

- Windows 7 and Windows 8
- Macintosh OS X

The Technology office also supports the following school wide licensed software:

- Google for Education
- Microsoft Office
- Internet Explorer, Chrome, Firefox, and Safari
- Acrobat Reader
- Smart Notebook
- LanSchool

In addition the technology office provides support for access to these products:

- BudgetSense/Infinite Visions (financial/human resources system)
- School Fusion (website/content management system)
- Follett x2 Aspen (web-based student information system)
- School Messenger (automated notification services)
- Filemaker Pro (database application)
- Adobe Creative Suite (graphic design, video editing, and web development software)
- Teachpoint (web-based educator evaluation system)
- Naviance (web-based college and career readiness system)
- TestWiz (web-based assessment reporting system)

Follett Destiny (library management)  
SurveyMonkey (web-based survey tool)  
Lightning Grader (student achievement and grading system)  
Rubicon Atlas (web-based curriculum management system)  
Skills Plus (web-based vocational competency system)  
NutriKids (school food services)  
SchoolDude and School Dude IT (web-based facilities and IT management system)

## **Virtual Learning and Communications**

The district provides teachers with access to the Internet so they may provide students with web-based and/or interactive video learning, including virtual field trips.

### **Virtual Learning**

The district provides students with the opportunity to make up course credits via an online credit recovery program.

### **District Website**

The district maintains an up-to-date website that includes information for parents and community members. The website includes information about the district including School Committee and subcommittee meeting notices, agendas, and minutes; the school calendar, announcements, school restaurant hours and menu for the day, and services offered to the public. The Parents/Students/Alumni tab provides a broad range of information including the student handbook, bus routes, cafeteria menu, newsletters, club information, and links to low cost Internet service. Parents may also access the student information system Family Portal, the Naviance Family Portal, and may elect to make online payments toward cafeteria lunches via a secure portal. Teachers can create a webpage to post information about their courses and create blogs for communication.

The district website includes web pages for our Practical Nurse program and evening School of Continuing Education program, which has online registration. The Continuing Education program offers a selection of technology-based courses including AutoDesk AutoCad, Adobe Dreamweaver, Computers for Senior Citizens and Social Media for Senior Citizens.

The website functionality also includes language translation, which is helpful to our non-English speaking families. The school website includes a secure Intranet page with a variety of resources for staff, including access to databases and school forms.

### **Telecommunications**

All teachers have classroom telephones, outside telephone access via an access code, and voice mail.

The school utilizes an automated notification system for no school and other announcements. Recordings can be made in multiple languages. Phone calls and email messages can be generated using the online interface or by calling the system.



## **Internet Safety and Data Retention**

The district has a CIPA-compliant Acceptable Use Policy (AUP), which is referenced in the Student Handbook and Faculty Guide. The district AUP is posted on the school website:

<http://www.montytech.net>, under the About Monty Tech>District Information>Technology tab. The AUP addresses the safety and security of students and staff as it relates to the Internet and digital data. The district has plans to purchase Lightspeed Systems web filter product, which will provide advanced security features, filtering for mobile devices, and teacher classroom filter controls.

The district educates teachers and students about appropriate online behavior, including cyberbullying, potential risks related to social networking sites and chat rooms, and the district has strategies for dealing with these issues. The school offers a Digital Citizenship course to students. Students are expected to demonstrate the safe and responsible use of technology and an understanding of security, privacy, and ethics. Students are also expected to demonstrate appropriate online behavior including interacting in chat rooms, cyberbullying, and responding to cyberbullying. The district posts Internet Safety information on the district website in the Parents/Students/Alumni section as well as on the staff intranet.

The district Acceptable Use Policy (AUP) addresses security and confidentiality of personal information of its students and staff. Access to software that contains personal information is restricted to those individuals whose position requires the information.

The district complies with federal and state law as it relates to archiving electronic communications produced by its staff and students. The district informs staff and students that any information distributed over the school network may be a public record via the Acceptable Use Policy (AUP).