



Office of Teaching and Learning  
Mary Eich, Assistant Superintendent

#### MEMORANDUM

To: David Fleishman  
From: Mary Eich, Assistant Superintendent for Teaching & Learning  
Steven Rattendi, Director of Information Technology and Library  
Date: February 7, 2019  
Re: Update on Information Technology and Libraries

Attached is our report on the Information Technology and Libraries Department work in the past year.

You'll see in the report that we've made a lot of progress since our last report in January 2018. Steven Rattendi and I will present a brief summary of our report at the School Committee meeting on Monday, with time available for questions and discussion.

We look forward to meeting with you on Monday.

**Department of Information Technology and Library Services  
Newton Public Schools**

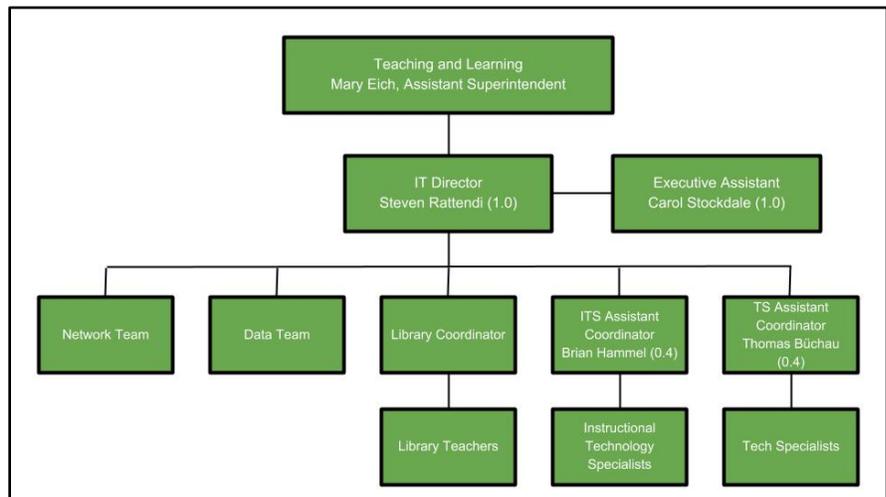
**Report to School Committee**

**Introduction**

The Department of Information Technology and Library Services (IT/Library) is responsible for instructing students, training faculty, supporting administration, and maintaining the systems and infrastructure that make it possible for teaching and learning to occur in today's digital world.

IT/Library falls within the Teaching and Learning branch of the Newton Public Schools. The department is lead by the Director of IT/Library with direct support of three part-time coordinators -- Coordinator of Library Services, Coordinator of Instructional Technology, and the Coordinator of Technical

Support Services. Evaluation responsibility for the department falls to the Director with the exception of library teachers who are evaluated jointly by the Coordinator of Libraries and school principals. For more information on the structure of the IT/Library please see the [IT School Committee Report from January 22, 2018](#).



The primary focus of the department is the improvement and support of teaching and learning in the Newton Public Schools. Much of our work is done directly with students through a robust library program and through the coaching/training of faculty by Instructional Technology Specialists in the use of technology in instruction and assessment. Both branches seek to build student capacity to research, reason and think critically, and to navigate the digital world with all of its electronic tools and resources. For a more detailed look at the learning standards directly supported by IT/Library, please see the [IT School Committee Report from January 22, 2018](#). The department indirectly supports learning through training and support in the use of technology to communicate with the NPS community and beyond, to analyze student data, and to make use of the digital resources available throughout the world. Of course, the department also takes on the more traditional role of an IT department supporting the devices, equipment, databases, software, and virtual connections needed within the classrooms and in the day-to-day administrative operations of a large and complex organization. In particular, the eight members of the Technical Support Services Team take primary responsibility for the abundance of

devices in the schools including over 14,000 computers, 840 document cameras, 850 printers, and 1200 projectors/TVs/Interactive Whiteboards.

## Major Initiatives

### 1:1 Device Initiative at the High Schools

During the 2017-2018 academic year, small pilot programs with 1:1 devices were held at both high schools. Students in selected classes (two groups at each school) were issued either MacBook Airs or Chromebooks alternating devices halfway through the year. The pilot demonstrated that the majority of uses for technology in the classroom could be handled by a Chromebook (\$300) rather than the more costly MacBook Air (\$900). The pilot also provided valuable information on managing devices within the classroom, integrating technology into teaching and learning, and teaching students to be responsible users of the 1:1 device. These findings informed the expansion of the pilot to all sophomores this year.

In January 2019, over 1,000 Chromebooks (Model: Lenovo 300e) were distributed to tenth graders across the district. As stated to parents and faculty in an introductory letter from the high school principals and the IT director:

*Technology can allow students to visualize content in unique ways, to be creators of their own learning rather than passive participants, and to demonstrate knowledge in authentic and meaningful formats. By incorporating technology into the classroom regularly and when appropriate for learning, we can better ensure students develop the skills necessary to be powerful and responsible users of technology in our digital world.*

Meaningful and consistent use of technology in the classroom occurs when access to the technology is immediate, convenient, and reliable. By distributing the same device to all students, teachers are ensured equitable and consistent access both in school and at home. The program aims to eliminate the barriers of integration including the need for advanced planning to sign-up for limited numbers of devices, lack of access for “on the fly” technology use, and technical issues of troubleshooting multiple device formats. The devices become a tool of learning equivalent to a textbook, a notebook, or a calculator.

Students take the device home at night and will keep them over the summer. The devices are to be returned upon graduation or if a student transfers out of the Newton Public Schools. The responsibility for maintaining the condition of the devices lies with students and their families with school-based support from IT staff. An optional insurance policy is available for parent purchase. For a nominal fee (approximately \$32 per year) the insurance will cover damages due to negligence and lost or stolen devices.

This year, sophomore teachers were provided with introductory workshops on using 1:1 technology in the classroom. In a letter to faculty this year from the high school principals and IT Director, expectations for the use of technology were established:

*We do not expect the devices to be used everyday. We do not expect immediate integration of the technology into your classes. We know this will be a learning process for all of us, and we hope and expect to grow together in figuring out new and productive ways to appropriately incorporate technology into the classroom.*

Technology is one of many tools teachers incorporate into the learning environment. Its integration must be meaningful and purposeful, and not simply done for the sake of doing so. As both teachers and students adapt to and have further experiences with technology in the classroom, we expect the use of the technology to grow. With online tools and the tablet capabilities of the chosen device the hope for a more paperless classroom is within reach.

The goal for next year (2019-2020) is to rollout an additional two grades (9th and 10th). This along with the devices already in the current 10th graders possession, will mean students in grades 9-11 will have 1:1 devices. The total cost for next year's implementation is approximately \$600,000. The following year (2020-2021) and each subsequent year thereafter Chromebooks will be distributed to incoming grade 9 students. The total cost per year of implementation for FY'21 and beyond is approximately \$300,000 per year.

Along with supporting the cost of device distribution, the IT/Library Department will lend its support to both high schools in training teachers on effective and appropriate integration of technology in the classroom.

For more information on the 1:1 Program, please visit the [1:1 Informational Pages](#) on the Newton Public Schools Website.

## **Classroom Technology Standards and Equity**

Around 2011, the Newton Public Schools along with the School Committee began to address the inequitable distribution of resources across the schools. The inequities were often a result of outside funding (for example, PTO grants to schools) supplementing resources at individual schools. Technology was one aspect of the work of the district-wide Equity Committee. A side effect of the work to address technology inequities was the creation of Classroom Technology Standards for the Elementary Schools (see Appendix A). Starting in FY'17, the principals of each elementary school received an annual letter from IT/Library describing their school's position relative to the Classroom Technology Standard along with the types and number of devices and equipment that could be funded by the school or other sources including the PTO. The device list includes those needed for the school to reach the appropriate standard as well as the number of devices that could be replaced due to age (more than five years old).

The department is happy to report that all elementary schools meet the classroom standards for 5-packs, document cameras and LCD projection units in each classroom. The 5-packs are groups of iPads, Chromebooks, or MacAirs housed in each classroom and available for use by students as planned by the classroom teacher. Not all schools are, yet, at standard for the number of shared student device carts (25 devices per cart) used for whole class instruction with technology. Below is a listing of the schools and their current status with device carts:

School	Current Count of Shared Student Device Carts <sup>1</sup>	Carts Needed according to the Standard	Carts Short of the Standard
Angier	6	6	0
Bowen	5	6	1
Burr	6	6	0
Cabot <sup>2</sup>	4	6	2
Countryside	4	6	2
Franklin	6	6	0
Horace Mann <sup>2</sup>	5	6	1
Lincoln Eliot	6?	6	0
Mason Rice	6	6	0
Memorial Spaulding	4	6	2
Peirce	3	4	1
Underwood	4	4	0
Ward	4	4	0
Williams	4	4	0
Zervas	6	6	0

Currently, PTOs are able to contribute as much as they can towards the purchase of technology at the elementary schools so long as that purchase does not exceed the Classroom Technology Standard. PTOs could also contribute funding with approval for particular items that are not on the standard and that would not impact the learning experience for students between the schools (examples of this include digital signage in cafeterias or lobby areas). Changes to the Equity Policy for FY'20 will limit PTO funding to \$15.00 per student per year.

<sup>1</sup> Device carts currently approved for purchasing process in FY'19 and in the procurement process are included in these counts.

<sup>2</sup> Cabot and Horace Mann will move into buildings for September 2019 that meet the Classroom Standard in terms of the number of student device carts.

Equity is not only an issue at the elementary schools, though it becomes less pronounced as students and community resources are increasingly consolidated in a smaller number of middle schools and high schools. However, there is still a need for defined Classroom Technology Standards to guide purchases as well as respond to the technology needs of teaching and learning. A draft exists for standards at the middle school, and one must be developed for the high schools in conjunction with the 1:1 Initiative. In the coming years, the department will develop middle and high school standards, and conduct regular reviews of all the classroom technology standards. While building the Technology Standards is the easy part, work is also needed to clearly articulate and budget for a plan to replace and maintain classroom equipment.

## **Network Hardware and Infrastructure**

The vast majority of work done in schools from teaching and learning to transportation relies on the reliability and robustness of our network hardware and infrastructure. Over the past few years, our network team has made major upgrades to our network infrastructure in the four areas below. It is worth noting that the department spent over \$900,000 in FY'18 funds to upgrade hardware supporting our network.

### ***Internet Connection, Redundancy, and Security***

The NPS network now has two connection points to the internet, one through the Education Center and one through the Newton North. These connections are able to support each other if one is overtaxed and/or one should fail. Additional work on network redundancy is scheduled for February vacation. Our network is served by multiple Internet Service Providers (ISP) to provide sufficient bandwidth and redundancy (if one ISP goes down, the others can pick up the load).

The Network Team is upgrading hardware and related software to secure and appropriately filter both outbound and inbound network traffic. Our next major upgrade to our firewall systems will occur over February vacation.

### ***Internal Networks and Wireless Connectivity***

We upgraded Network controllers, switches and access points with a particular emphasis during the summer of 2018 on replacing wireless access points and related hardware at the two high schools. Improving reliability and access at the high schools is essential given implementation of the 1:1 Initiative. The end result is a system capable of handling more devices with greater reliability.

### ***Servers and Data Backups***

Our network team installed upgraded servers and related hardware with backup storage for all systems last year to increase the reliability of internal systems including the Student Information System, Personnel Records, and other databases.

### ***Phones Systems***

Several years ago, the city shifted responsibility for the maintenance and repair of phone systems to the IT/Library Department. Most schools are operating on older phone systems requiring constant maintenance. Over time, schools will be converted to Voice over Internet Protocol (VoIP). VoIP systems are more reliable than our current aging systems. All newly constructed schools (Angier and Zervas) along with the Education Center, Jackson Road (NECP), and Nevada St (current Carr and future Horace Mann) have been converted to VoIP. The new Cabot will also have VoIP installed. During the summer of 2018, we were able to use funds to convert office phone systems at Bowen, Countryside, and Ward along with both office and classroom phones at Mason Rice. Plans are in the works to convert Williams this spring at a cost of approximately \$35,000.

School	Status	Notes
Ed Center	VoIP	
NECP	VoIP	
Angier	VoIP	
Bowen	VoIP	Office Phones Complete - Needs Classroom Phones
Burr	Legacy	
<i>Cabot - New</i>	VoIP	<i>New Building</i>
Countryside	VoIP	Office Phones Complete - Needs Classroom Phones
Franklin	Legacy	
<i>Horace Mann - New</i>	VoIP	<i>Nevada Street is already VoIP</i>
Horace Mann (current)	Legacy	
Lincoln Eliot	Legacy	
Mason-Rice	VoIP	
Memorial-Spaulding	Legacy	
Peirce	Legacy	
Underwood	Legacy	
Ward	VoIP	Office Phones Complete - Needs Classroom Phones
Williams	Legacy	Planned VoIP Conversion Spring FY'19
Zervas	VoIP	
Bigelow	Legacy	
Brown	Legacy	
Day	Legacy	
Oak Hill	Legacy	
North	Partial	Core switch complete - office and classroom phones still needed
South	Partial	Core switch complete - office and classroom phones still needed

The plan is to convert two to three schools per year to VoIP starting with the systems most in need of upgrading while also taking into consideration future plans for building renovations. The number of buildings that can be completed in a year depends both on funding and the amount of work that can be done during off-school hours as the installation of VoIP in many locations requires running new wiring within the buildings.

## **G Suite Expansion / Gmail Implementation**

Newton Public Schools has been using G Suite for Education for a number of years. G Suite for Education is free for K-12 schools, and provides faculty and students access to Google Drive, Docs, Sheets, Forms, Slides and many other tools for productivity and learning. In the classroom, G Suite is used to promote collaboration among students through tasks such as project-based assessment and the sharing of resources. For teachers, G Suite increases collaboration on unit and lesson design within and between school buildings. On the school administration side, G Suite allows for the more efficient sharing and collecting of data and resources. Yet, we have only begun to use the tools available.

In the fall of 2018, the IT Leadership Team finalized plans to transition from FirstClass as our email system to Gmail. However, this transition is not something that can be done overnight given the reliance of the district on the tools included in FirstClass such as:

- Email
- File storage and sharing among job-alike individuals
- District wide internal email lists
- Internal conference/discussion folders at the district and school levels
- Personal and shared calendars
- Teacher websites for sharing class information with students and their families

While many in the district have already begun using G Suite as a replacement for many of the items listed above (except for Email), there is still training and time needed to help everyone make the change. See Appendix B for a copy of the letter sent out to faculty and staff outlining the transition plan. This winter and spring, through a combination of in-person trainings and online offerings the Instructional technology specialists throughout the district, with the support of the entire IT/Library department, will take responsibility for training staff on the various tools in G Suite that will replace similar functionality from FirstClass. Full transition will be complete by October of 2019 when the switch is flipped turning off FirstClass as our email system and turning on Gmail.

From the infrastructure perspective, the transition to Gmail will require minimal work beyond software configuration, which is still a considerable time commitment, as Gmail is an entirely cloud-based product. We will continue to maintain our FirstClass server as an archive system as required by law, or until we can convert the data to another format.

The benefits of shifting to Gmail include:

- Complete integration of G Suite Tools (this reason alone would be sufficient as many G Suite products work better when integrated with Gmail)
- Decreased costs in the long-term of maintaining internal physical servers
- Possibility of expanding NPS Email accounts to students
- Better web-based interface for Email

The most significant cost beyond time for training individual users and converting data and files from one system to another by individual users, will be the need to purchase an enhancement to the backup features within G Suite for Education. By doing so, we will be able to better manage backup and restoration of data created and stored within G Suite. This system is estimated to cost \$25,000-35,000 per year. Much of this cost will be recouped in the long term as we phase out FirstClass (annual cost of \$19,000 per year for the software) and the servers used to house the system.

## **School Building Projects**

This summer, the Technical Support Services and Network Teams will be deeply involved in the setup of devices and equipment in the new Cabot and in the Horace Mann move. Plans call for both schools to be stocked with equipment meeting the Elementary Classroom Technology Standards. Purchasing technology for both schools is underway. Cabot's planned budget will meet all needs, and the district has allocated approximately \$130,000 to upgrade equipment (mostly student devices) at Nevada St. for when it becomes the new Horace Mann Elementary School.

## **Student Information System**

In the middle of 2017-2018, the district implemented a new Student Information System - Aspen. The department is proud to report that the transition was smooth, and this year's start to the school year was one of the smoothest in the recent memory of the Database Management Team. State reporting was completed successfully and on-time through the transfer of data from Aspen to State reporting systems. Students across the district were registered for school and scheduled for classes with few issues encountered.

The greatest accomplishment this year was the rollout of Aspen's Special Education IEP module. Through a joint effort between Student Services and IT/Library, this fall we trained all special education faculty in the use of the Special Education Module in Aspen. This module allows for the creation and tracking of IEPs in Aspen, and gives faculty easier access to the information and data needed to support the teaching and learning of students.

Additional functionality we implemented this year includes fee tracking; transportation information; the creation of additional reports for use by school and district personnel; and the

expanded use of the parent portal allowing parents to update contact information and student permissions/ release of information settings. In the years to come, the Database Management Team will continue to refine the use of the SIS and improve its functionality for users in the district. Planned projects include adding and refining reports for end-users, streamlining account creation and management, implementing assessment tracking, and improving data updates from families (i.e., contacts and permissions).

The adoption of Aspen and shift away from our previous system, Skyward, by all accounts was the right decision at the right time.

### **Data Analytics Project**

In 2017-2018, the District Data Team continued to work on a vision for implementing a more refined and expanded use of Data Analytics throughout the district. Various products were brought in for demonstrations, yet a clear vision for the project was elusive. Outstanding questions for this project are:

- What is the purpose of bringing in an outside Data Analytics Software Package?
- Who is the intended audience for a Data Analytics Project?

The sheer volume of projects already on the agenda in the IT/Library department, including the rollout of a new SIS, slowed down progress in refining a vision and implementing a plan.

This year, the more clearly defined purpose of increasing faculty and staff capacity to access and analyze data to improve teaching and learning has taken hold. In the spring and into the summer the department will begin developing training on the use of already accessible tools for data analysis including the use of our SIS and G Suite while continuing to explore the possibility of implementing a more complete Data Analytics Software Solution. The goal is to begin training faculty and staff in the Fall of 2020 on tools already available.

### **MCAS Next Generation -- Online Testing Update**

The state continues to expand MCAS Next Generation Online Testing bringing on board Grade 10 exams in ELA and mathematics this spring. This will be the first round of “high-stakes” testing. High Schools will conduct infrastructure trials on February 14 to test our network configurations. This will involve all tenth graders across the district participating in a practice test designed to fully replicate testing conditions. While we do not anticipate any issues, this trial will provide data on any adjustments needed in our systems to support testing this year. The district has learned much from implementation of MCAS Next Gen in the elementary and middle school grades, and will be putting that knowledge to use to improve this year’s testing protocols.

In June of 2019, the high schools are required to pilot the Next Generation MCAS in Physics with all 9th graders in anticipation of the exam's full implementation in the Spring of 2020.

The IT/Library Department remains committed to ensuring a stable network and reliable devices to provide the most optimal testing environments possible.

### **Financial Database and Records System - MUNIS**

The City of Newton is in the process of a major project to convert from our current Financial Management Software, Finance Plus, to a system called MUNIS. The district is a major user of the City's system for purchasing, payroll, and benefits management. As such, the Database Management Team within the district has and will be deeply involved in setting up the system to be used successfully by the district. The purchasing side of the system is set for implementation on July 1, 2019 meaning that all FY'20 purchases will be entered into MUNIS. In January of 2020, human resource systems will be converted to MUNIS. This phased in process will allow time for training and proper setup of the system.

### **Next Steps**

- Continue the expansion of the 1:1 Initiative at the high schools including professional development for faculty and staff.
- Complete the expansion of the districts use of G Suite with final implementation of Gmail by October 2019.
- Complete the development of a new three-year technology plan for the district.
- Review and refine the pre-K-12 Classroom Technology Standards.
- Continue the implementation and expanded functionality of the SIS, Aspen.
- Continue to convert legacy phone systems to VoIP in school buildings.
- Provide ongoing support and technical assistance to the city and to school departments on the MUNIS conversion
- Train faculty and staff in the use of existing data analytics tools while continuing the search for additional software systems.
- Refine a process for replacing student devices and network equipment.

APPENDIX A

Elementary Technology Access Standard 2018-2019

<b>Student Devices</b>	<b>Standard</b>
Kindergarten	5 iPads
Grade 1	5 iPads
Grade 2	5 iPads or Chromebooks
Grade 3	5 Chromebooks or Laptops
Grade 4	5 Chromebooks or Laptops
Grade 5	5 Chromebooks or Laptops
Library	Combination of 26 devices
Art	5 iPads
<b>Classroom Devices</b>	<b>Standard</b>
LCD Projectors	1 per classroom including Art, Music, Library
Document Camera	1 per classroom including Art, Music, Gym, Library
<b>School-wide Devices</b>	<b>Standard</b>
Carts (25 devices per cart)	Schools with 18 or more classrooms - 6 carts Schools under 18 classrooms - 4 carts
Printers - black & white	Schools with 18 or more classrooms - 4 printers Schools under 18 classrooms - 3 printers
Printers - color	1 in art room 1 in library 1 in main office

## APPENDIX B



*Steven Rattendi, Interim Director*  
**Department of Information Technology &  
Library Services**

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To: NPS Faculty and Staff

RE: Implementation of GMail and phase out of FirstClass Email

Date: January 14, 2019

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The IT/Library Department is excited to announce that Newton Public Schools will soon begin the transition from First Class email to Gmail. This important step will increase the functionality and accessibility of our email system while also expanding the use of G Suite tools to enhance and support learning and productivity. We expect the conversion to Gmail to be complete by Fall 2019.

The end of the FirstClass system and the conversion to Gmail brings with it a number of changes in the tools we use for communication (e.g. conferences and email) and productivity (e.g. calendar). We know that over the years, you have built systems within First Class (contacts, calendars, email archives) that enable you to communicate and share important information on a daily basis, as well as access historical data. To ease the transition, we will be phasing in the use of Gmail and accompanying tools with thoughtful consideration. Technology Department staff will be offering support, training, and technical back-end work to assist users in the transition process. While in many cases users will be responsible for migrating information from one system to another (ie, moving files or setting up a Google Site), you will do so with clear guidance, directions and tutorials from our department.

On the next page you will find a description of the tool in First Class and the corresponding tool to be used in Gmail. You will also find the expected timeline for transition. We will be providing much more information in the coming months and we look forward to guiding you through the process.

**Newton Public Schools  
G Suite Tools and Gmail Implementation Timeline**

Current Tool	New Tool	Timeline
FirstClass Conferences for File Sharing (e.g. curriculum folders)	Google Team Drives	Phased in February 1 through May 31
FirstClass Conferences for Discussion/Information (e.g. school news folders)	Google Groups	Phased in February 1 through May 31
Shared FirstClass Calendars	Google Shared Calendars	Complete by 3/1/2019
Personal FirstClass Calendar	Google Calendar	Complete by 3/15/2019
FirstClass Websites	Google Sites	Complete by 9/1/2019
All FirstClass Services will be set to internal READ only Email FirstClass Contacts Personal File Storage	Gmail Implementation Complete Gmail Google Contacts Google Drive*	Complete by 10/15/2019
File Storage on Silo2	Google Drive or Team Drive	Complete by 12/1/2019