On Monday, December 5, 2022, I will be joined by members of our Instructional Technology Specialist team to share an update with the school committee. While past presentations have included information on network infrastructure, hardware, student devices, and technical support, the focus of this  presentation is on the use of technology for teaching and learning in the classroom as a result of our 1:1 program.

Below I will outline some of the impact of the 1:1 program on current classroom instruction, professional development activities to support educators, and work we hope to do in the future. Also included at the end of this document is a **Brief History of Student Access to Devices**. For those not familiar with this history, the write-up provides a comparison to our current 1:1 model.

As part of this report, there are two additional resources for you to watch and read. You can choose one or both depending on your preferences and available time. Similar themes emerge within both resources.

- **Video of Teacher Voices**: Instructional Technology Staff interviewed and/or asked teachers to describe how they use technology in their classrooms. The videos will include teachers from across all school levels. This video is approximately 25 minutes long.

- **Observations of Technology Use in the Classroom**: This includes short written statements of technology use observed by principals and myself. For principals, these observations were captured over a week of their typical observations of learning. In my case, these observations were captured over a number of weeks of 1-hour visits to various schools each week.

I hope the video clips and observations will help provide information on how technology is being used to support learning in the classroom.

## NPS District-Wide Goals

The use of technology in classroom instruction is most closely associated with Education Goal #1:

*Academic Excellence: Cultivate a culture of excellence for all through powerful, responsive, and sustaining learning experiences that lead students to be productive, thriving citizens in the world.*

With a focus area of:

*Strengthen instructional systems and practices to meet the diverse needs of all learners*

Most relevant to our work in the ITLS (Information technology and Library Services) department, the district has a targeted action step of providing professional learning experiences to educators that result in the *enhanced use of digital tools to increase student access and engagement with learning and as a tool to expand student demonstration of knowledge.*

In addition, classroom technology plays a role in a number of other targeted actions including the use of data to inform instruction, and creating and facilitating universally designed tiered supports for all learners.

## Professional Learning

The Instructional Technology Specialists (ITS) are the primary source of support for teachers wishing to integrate technology into their lessons. ITS are certified classroom teachers specializing in designing and implementing technology-based lessons and are responsible for the majority of professional learning related to instructional technology in the district.

The ITS team consisting of 11 teachers (9.75 FTE) assigned to schools as follows:

| | |
|---|---|
| Donna Busa (1.0 FTE): | NECP, Franklin, Mason-Rice, Underwood |
| Lauren Dietz (1.0 FTE): | Bowen, Horace Mann, Zervas |
| Brenda Doucette (1.0 FTE): | FA Day, Oak Hill |
| Jackie Dupuis (1.0 FTE): | Newton North, Bigelow |
| Angela Galbraith (1.0 FTE): | Burr, Brown, Williams |
| Peter Hamel (0.25 FTE): | Newton North (Peter is also a 0.75 FTE Chemistry Teacher) |
| Brian Hammel (1.0 FTE): | Newton South |
| Eileen Keane (0.5 FTE): | Angier, Ed Center  (Eileen is also the Library Coordinator at 0.5 FTE) |
| Trisha Kelleher (.2 FTE): | Bigelow  (Trisha is the Web Facilitator and Online Learning Specialist at 0.8 FTE) |
| Jennifer Roy (0.8 FTE): | Cabot, Lincoln-Eliot, Peirce |
| Lisa Vancans (0.8 FTE): | Countryside, Memorial-Spaulding, Ward |

Professional Learning provided by the ITS comes in many forms from formal district-wide workshops with larger groups to trainings at the school level with small groups or 1:1 opportunities. In addition, the ITS team produces numerous documents and communications in support of technology integration.

## Workshops Provided This Year by the ITLS Department

Formal workshops make up a relatively small portion of instructional technology professional learning this year. Challenges with teacher coverage are still an issue due to limited class coverage options and the continued impact of the pandemic. However, we have been able to offer a number of opportunities so far this year, some in conjunction with curriculum coordinators.

**Schoology Showcase Course** (Summer of 2022) - Schoology is the learning management system (LMS) used at the secondary level. You can think of an LMS as a digital classroom where content, grades, student work, online discussions, and other materials can be collected and organized.

**New Educator Orientation** (August) - New teachers received an overview of instructional technology in the Newton Public Schools followed by breakout sessions by grade span to introduce staff to some of the technology tools available to them. The breakout sessions incorporated tools to promote universal design, digital citizenship, and student engagement while also providing some practical ways to get started in the classroom.

**Work with Elementary Math on Spreadsheets** (September/October) - This training provided an option for elementary teachers to learn more about the basics of Google Spreadsheets. Google Spreadsheets form the basis of our data collection for elementary ELA and Mathematics assessments. Teacher proficiency with spreadsheets promotes a critical component of teacher inquiry cycles to improve instruction.

**Incorporating Technology in Middle School Visual Arts** (December) - Middle School ITS will join Middle School Art Teachers for their December professional learning. Topics will include best practices for using and managing their class set of iPads, and time to explore and share tech tools that support the media arts curriculum.

**Incorporating Newsela in World-Language Instruction** (via an asynchronous slide deck teachers could use at their own pace) - Newsela is a wonderful tool that can provide students with access to news articles modified to match a student's reading level. The tool also offers a Spanish version of those articles. The Middle School World Language team hopes to learn more about this tool and how it can be incorporated into Middle School Spanish Classes.

Additional Workshops are still in development including elementary Music and Art in support of the new Media Arts Standards from the State, collaboration with Library and ITS on using research and presentation tools to support the Social Studies curriculum in Grade 7 (this is likely to be postponed due to time constraints), and work with elementary ELA on Foundational Literacy Skills.

## School-Based Professional Learning by the ITLS Department

The vast majority of professional development occurs in smaller groups and one-on-one with teachers in a coaching model with the building-based ITS. Examples of professional learning experiences provided this year are listed below.

- Apple Classroom Demonstrations and Tutorials
- Mastery Grading in Schoology
- Podcasting
- Read and Write Training
- Using WeVideo in the classroom
- Chromebook features including accessibility features (text to speech and speech to text)
- Using apps such as Canva, Buncee, and Google Apps as tools to demonstrate student understanding
- Using Google Maps to explore both map features and geography concepts
- Using MyStory to document student work digitally

At times this work is prompted by the ITS. Other times the teacher approaches an ITS saying, "I would like to accomplish…, how can I do that?"

## Additional Professional Learning Opportunities

Additional Professional Learning involving technology integration occurs through subject-specific instructional coaches, district curriculum leaders, colleagues in professional learning teams, and external workshops/conferences teachers attend. As an example, the NPS Math Coaches support and promote the use of ST Math in elementary math classrooms. ST Math is a problem-based mathematics learning tool. Another example is the ELA Department's work with elementary educators and across subjects at the middle school to help teachers understand how to access and use iReady data to impact classroom learning.

In order to support district work with instructional technology, it is also important for the ITS team to remain current in their knowledge. The district was able to support all team members in attending in person or accessing the on-demand options at this year's Mass-Cue Fall Conference in Foxborough, MA.

**What does technology integration look like currently in the classroom and how does it promote student learning?**

I encourage you to read through the observation notes and watch the Video of Teacher Voices resources linked below to get a sense of how technology is being used in the classroom, and how it is impacting student learning.

- **Video of Teacher Voices**: Instructional Technology Staff interviewed and/or asked teachers to describe how they use technology in their classrooms. The videos will include teachers from across all school levels. This is a somewhat lengthy video. Feel free to use features on your device to playback the video at a faster speed should you wish to.

- **Observations of Technology Use in the Classroom**: This includes short written statements of technology use observed by principals and myself. For principals, these observations were captured over a week of their typical observations of learning. In my case, these observations were captured over a number of weeks of 1-hour visits to various schools each week.

Teachers captured in these videos and observations represented individuals with a wide array of technology comfort prior to the pandemic and our 1:1 program. While these are just a sample, the ease with which classes could be found using technology is indicative of, at a minimum, widespread use of technology throughout the district.

Here are some of takeaways from these resources:

- Technology is becoming one of the many tools used in the classroom – its use is not pervasive but it is certainly present
- In the general elementary classroom, technology is often used as one or multiple parts of ELA and Math instructional centers (station) work
- Technology can be used to promote student independence by guiding their learning
- 1:1 access to technology is a more effective model for using technology to learn content vs. our previous tech models where time was often repeatedly spent teaching the tech tool
- Interactive nature of technology and ability to more easily individualize activities helps promote student engagement
- Technology is being used to demonstrate and assess student understanding and provide feedback to students
- Technology is being used as a tool to both learn content and to "create content" (e.g., compose music)

# Challenges and Opportunities for Future Work

Below is a brief overview of current challenges and some ways we hope to address them this year and beyond.

- Availability of Professional Learning Time
  - We hope to build on efforts to collaborate with curriculum leaders in order to incorporate technology directly into curricular materials and allotted professional development time.
- Resources for Professional Learning
  - We have been approved for a *DESE Grant: Building Capacity for High-Quality Instruction through EdTech*. This grant is for just over $44,000 and will support the creation and running of a Tech Camp this summer for NPS teachers. The grant has the potential to be extended for another year pending funding approval at the state level. The focus of the Tech Camp will be training teachers on effective practices using digital tools to increase student access and engagement with learning and as a tool to expand methods for students to demonstrate knowledge.
  - Staffing Resources remain a challenge – we currently lack a Coordinator of Instructional Technology. This year's budget (FY2023) also decreased our instructional technology specialists by 1.0 FTE at a time when the use of technology in the classroom has increased.
- Gauging Effectiveness of Technology Integration
  - This starts with ensuring coaches and evaluators throughout NPS have a shared understanding of what effective instructional practices are, and how effective technology can be in enhancing the learning environment. We hope to begin to engage in this work in the coming months.
  - We would like to conduct a more thorough survey of teacher uses of technology in the classroom to more effectively understand current use.
  - We would like, long-term, to incorporate more student voices in evaluating the uses and effectiveness of technology integration.
- Equipment Budget Needs
  - Device and equipment budget remains a challenge. We currently are not fully funded for the 1:1 device program meaning we do not have a funding source to regularly replace devices. We will need to replace roughly 2000 devices on a yearly basis to maintain the program.
  - A 1:1 program also requires robust network services which also need a regular cycle of replacement to maintain functionality and stay current with expanding needs.

# Appendix: Brief History of Student Access to Devices

Prior to 2018-2019 this is what our student access to technology in the classroom looked like:

| School Level | Student Technology |
|---|---|
| Elementary | 5 devices in every classroom (iPads, Chromebooks, or MacBook Airs) |
| | 4 or 6 shared carts of 25 Chromebooks or MacBook Airs per building depending on the number of classrooms in the building. |
| | 5 iPads in every Art Classroom |
| | 26 Devices (a combination of iPads, Chromebooks and Macbook Airs, and Desktops) in every Library Media Center. |
| Middle | A mix of computer labs and shared computer carts that could be signed out for use by classroom teachers along with a limited number of specialized computer labs (engineering, for example). |
| | Libraries were equipped with desktops for student use. |
| High | A mix of computer labs and shared computer carts that could be signed out for use by classroom teachers along with a number of specialized labs (media lab, drafting, engineering, music, etc.) for particular programs. |

At the elementary level, the 5-packs of devices in each classroom offered flexibility in allowing teachers to plan the use of technology around student needs including designing learning stations where technology would be used to meet the needs of individual students (for example, access to speech-to-text for written materials). Otherwise, and, particularly, at the secondary level, technology was significantly more of an add-on for "special projects." Teacher use of devices with a whole class significantly depended on well-in-advance planning in order to ensure technology would be available. Teachers spent precious time repeatedly teaching the technology tools since regular, frequent student experience with technology was not the norm. With that said, many teachers did manage to overcome many of these challenges to do amazing work with technology including digital research projects, student presentations, book creation assignments, website and video creation, and technology-based explorations/simulations.

In the Winter of 2018-2019, we started a 1:1 pilot program at the high school providing every tenth grader with a Chromebook. That same Spring, we expanded the program giving all 9th graders a Chromebook. Part of the driving force for the 1:1 program at the high schools was the shift from paper-based to online MCAS testing requiring large groups of students to be tested on a device simultaneously. During that pilot period, teachers were encouraged to experiment with the new possibilities that increased access to technology provided.

The next major shift resulted from the Pandemic. The shift to remote and then hybrid learning models demonstrated the need for all students to have access to a device not only to learn from home but to also continue that learning in the classroom using similar tools as those they were expected to use at home. At the outset of the pandemic in the Spring of 2020, we used Chromebooks from the elementary 5-packs and from school carts to supply devices to those families that did not have devices available for student use at home. Initially, we provided 1 device per family when instruction was remote and asynchronous. The continuation of remote followed by hybrid learning in 2020-2021 brought in the need for more synchronous learning. For the fall of 2020, every student in the district was provided a device supplied by the Newton Public Schools leading into our current 1:1 model implemented fully in the Fall of 2021:

| School Level | Student Technology | Additional Notes |
|---|---|---|
| Elementary | Kindergarten classrooms: 1 iPad for every 2 students<br><br>Grade 1-2 classrooms: 1 iPad for every student (1:1)<br><br>Grade 3-5 classrooms: 1 Chromebook for every student<br><br>Art classrooms: 5 iPads | Devices primarily stay in the classroom. |
| Middle | 1 Chromebook for every student<br><br>Art classrooms: a class set of iPads | Devices travel to and from school and are kept over the summers except in the transition from grade 8 to 9. |
| High | 1 Chromebook for every student<br><br>Specialized computer labs continue to be used in places where more computing power is needed | |

Both teacher and student proficiency with technology as a learning tool increased during the pandemic years. Teachers have taken many of those new skills with them as we returned to the in-person learning environment with 1:1 technology.