District Highlights

Newtown Public Schools

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Over the past several years, Newtown administrators, teachers and staff have been preparing for a shift in how students are educated within the classroom. As technology became more ubiquitous throughout our community, these education leaders have been experimenting with the use of – and planning student access to – technology that enriches classroom curriculum and instruction. The onset of the pandemic has forced an acceleration of these efforts.

In this issue we are focusing on technology in the district during "normal" times. We look at the use of technology in the delivery of the regular classroom instruction to students as well as explore how students are taught to use technology in life both within and beyond the school setting. We also review how the district deploys and maintains technology in the district. Finally, we have a spotlight on not one, but two, staff members who are advanced users of educational technology in our schools.

Daniel Cruson Jr. and Deborra Zukowski
BoE Communications Subcommittee

Board of Education Communications Sub-Committee

Members:
Daniel Cruson - Chair
Deborra Zukowski

You can email the board at:

newtownboe@newtown.k12.ct.us

Teaching With Technology

By Daniel Cruson

Over the last several years, technology has grown to become an important tool in the delivery of curriculum to students. Computers have gone from being something that were once available one per classroom, to a classroom having access to a cart of Chromebooks for students to share, to something that every student has assigned to them for their time at school. As the availability of devices has grown, so too has the ways in which teachers use the technology in regular classroom teaching and learning.

Drew Hall, a Grade 6 Math and Science teacher at Reed Intermediate School, calls one to one devices a game changer because they allow technology to be used freely by teachers without having to navigate the logistics of signing out a cart and distributing devices for specific lessons. It has simply become a question of how to utilize the devices. His co-teacher, Erika Michaels, who teaches Grade 6 Language Arts and Social Studies, feels that along with the one to one devices, the addition of Google Suite to the district has been important because it works in real time. It allows staff to see items as students work on them and give feedback as they do. Especially during days of distance learning, that kind of instant feedback is valuable, just like would occur if the teachers were right there in the classroom with the students.

Another tool that is being used in the schools is EdPuzzle. Jeff Schupp, who teaches 8th grade science at the Middle School, describes it as a tool that lets the teacher assign a YouTube video, or similar multimedia source, as an assignment and it will guide the student through with questions that they need to answer. The software will then track their progress so the teacher can see that they finished the assignment and gauge what they got from it. He also mentioned working with PearDeck which allows interactive participation between students during presentations. Students can answer questions and post comments and the teacher can put them up on the screen anonymously for the whole class to see. The anonymity has the added advantage of coaxing students who are anxious or shy to participate in activities.

Teachers are also using technology to allow other educators and experts to elaborate on a lesson. Using tools such as TedTalks allows someone else to reinforce a concept with the students while the teacher supervises. These virtual "guest speakers" have the added benefit of being more engaging to students because it is a new person teaching to them, instead of the same voice they have gotten used to listening to every day. A lot like how a child tends to tune out their own parents, the same can happen with students and teachers. So having a virtual guest speaker is a great tool to reengage students.

The integration of technology into the delivery of curriculum has not come without some reluctance and pitfalls. Many parents have been concerned about the ability of younger students to handle new technology. However, Michael Wight, a 2nd grade teacher at Head O' Meadow elementary school, has seen firsthand the ability of his students to figure out the technology and how quickly their confidence grows as they do. Even younger students, who have had to start using Chromebooks earlier than usual because of the pandemic, have shown their adaptability when it comes to technology.

Staff members have also had challenges adapting to increasing use of technology, some of which can be attributed to a fear of failing in front of their students and some to the perceived impact it will have on a curriculum or teaching styles that has been carefully developed over many years. In every building though, there have been "power users" who have risen up to help their colleagues overcome these uncertainties. Erika Carlson, Hawley's Library Media Specialist, has taken the approach of setting up one on one appointments with staff members in her building that had problems or uncertainties so she could help them overcome them. Mr. Wight has often jumped in to help when an off the cuff conversation brings to his attention that a colleague is struggling with something that he happens to be familiar with.

All in all, despite challenges and reluctance, the growth of technology has brought a lot of positive outcomes to the delivery of curriculum within the schools. As staff finds the workflow and tools that work best for them, and students continue to exceed the expectations of adults, technology has become an important and ever present part of the classroom. It is clear that it will continue to be so in the future as well.

I would like to thank Erika Carlson, Drew Hall, Erika Michaels, Jeff Schupp, and Mike Wight for sitting down to talk with me. They are all "power users" in their buildings who were willing to discuss the positives and negatives of technology use.

Technology Plan

By Deborra Zukowski

The Newtown Public School's Technology Department is charged with ensuring that our district has the devices, communications infrastructure, and guidance needed for a vibrant and well-managed educational system. As part of this, the department equips teachers and students with the technology tools and infrastructure needed for an engaging and enriching educational experience. In addition, it oversees a robust and secure business and communications infrastructure for our administrators to operate the district efficiently and reliably. And finally, it provides a place where staff and students can go when their systems do not work as expected. This article describes the department's Technology Plan for equipping the district with devices, including the "One Device per Student" initiative as well as other educational and operational uses.

"One Device per Student" Update

A prior "District Highlights" newsletter first reported on the district's "One Device per Student" initiative in April 2020 (available at: https://www.newtown.k12.ct.us/BoardofEducationNewsletters). The rigors of distance learning have not only challenged our staff and students, but also the technology used to deliver the curriculum. While the overall plan remains the same, many of the details have changed.

The April 2020 article described a district plan that would supply Chromebooks to every student in grades 2-8 and provide dedicated Chromebooks to ninth graders thereafter to use for the remainder of their time with the district. The overall technology plan back then was to provide less powerful devices to the earlier grades, assuming younger students would not need the more costly higher-level capabilities needed by the older students. Also, the plan called for graduates to keep their devices since the devices would have minimal usability left, since Google provided system updates for only 5 years. In addition, kindergartners and first-graders would have access to devices when supplemental instruction was beneficial, though iPads would be used because of their simpler interface. These iPads were expected to be in-school resources and not one-to-one per student.

Today, the plan is to eventually provide all K-12 students in the district with Chromebooks that are capable of supporting the software needed for distance learning. The cheaper devices previously used in the earlier grades were not powerful enough for distance learning, so had to be upgraded. In addition, kindergarten and first-grade students also needed Chromebooks for distance learning, and it turned out that they were able to use those devices much better than expected.
The plan has also changed regarding individually-assigned devices. In April, the plan was to equip all ninth graders with dedicated devices in the fall of 2020 to use throughout their high school years. However, because of the need for more powerful devices throughout the district, devices were not able to be supplied to ninth graders as previously stated. Also, Google recently revisited its system update policy and now updates devices for 8 years instead of 5. As a result, the district now plans to collect devices from graduating seniors to reuse.

Going forward, students will be provided with devices from a limited number of vendors that provide ease-of-use features like a 13-inch or greater display and touch-screen capability. Such uniformity helps overall management of the devices and also helps to ensure the homogeneity of devices within a classroom. The latter is important to ensure common instruction practices to students within a class and to help the teacher better assist students with using their devices. Currently Dell Chromebook is the platform of choice though availability this year was limited because of pandemic-related demand. This

past year the district provided both Dell and Lenovo devices to the students.

By the end of this school year, every K-8 student along with those in grades 9-12 who were in need will have had a device available to them. Starting in the fall of 2021, devices will be given to all grade 9 students to use for the remainder of their time with the district. All students in the high school will have dedicated devices as of the 2024-2025 school year. Devices used in K-8 that are reaching the end of Google's support period will be replaced. For the next few years this means that devices will be replaced after 4 to 5 years. Eventually, K-8 devices will be replaced every 6-8 years. At all times, the district will also maintain a reserve of about 5% of student devices to ensure that devices can be provided for new students and broken devices can be replaced with limited impact to learning.

Other Educational and Operational Uses

Prior to the pandemic, every K-12 teacher had access to one device. K-8 teachers each had a multi-media teaching station equipped with a desktop computer, camera, projector, document camera, and smartboard or projecting screen in their assigned classrooms. High school teachers, who often changed classrooms from period to period, were assigned laptops that could be carried with them.

Since school opened in September 2020, teachers have sometimes had to teach within the classroom and sometimes at their homes. And in both cases, at least some of the students have joined from remote locations. At this time, each teacher is effectively assigned two devices. Every K-12 classroom now has a multi-media teaching station to support remote instruction within the classroom. Teachers also have a personal Chromebook to be able to teach from home when necessary. Classroom-based para-educators have also been provided with Chromebooks during the pandemic so that they would be more familiar with the Chromebook system and the educational software used during lessons, enabling them to more effectively assist the teacher and students. For the time being these allocations of devices will continue, but they will be reviewed once the schools get back to full in-person learning.

In addition to traditional classroom instruction, the district provides a series of labs and courses that use specialized devices and/or software. Now that Chromebooks are an integral part of classroom education, computer labs in K-4 have been eliminated. Class-based labs for grades 5-8 have been refocused to emphasize added activities, including graphic design, video editing, web site development, etc., using Adobe Photoshop and Creative Cloud Suite. The students are also introduced to programming concepts and coding. The high school expands these activities by offering electives in areas like architectural design using CAD systems, digital music composition, software design, phone app development, and more extensive graphics and video production, for example. All of the specialized devices used in these courses are shared among participating students.

Devices are also needed for administration and operations. These devices support communications needs, business operations like payroll and accounting, and facilities functions like managing maintenance and shipping. Administrators and their support staff are provided with dedicated devices. Some staff, like security personnel and custodians, share devices.

As of just a short time ago Carmella Amodeo, our Director of Technology, has decided it is time for her to step back to a part-time Software Specialist position. She leaves the department leadership having shepherded the district though the turmoil of the pandemic and having honed the technology plan, presented here, that supports education needs of the 21st century. Our thanks to her for all that she has done for our schools.

Teaching Technology to Students

By Dan Cruson Jr.

Technology has been taking an increasingly larger role in our society for many years, and with it the need to ensure that students are prepared to use technology when they leave school has become more important. In addition, the number of students interested in exploring hobbies and even careers in technology-focused areas such as computer programming and information technology is growing. To address these trends, Newtown schools have been expanding opportunities for younger students to learn about technology-based concepts and uses.

Katie Mauro, the Library Media Specialist at Sandy Hook Elementary School, shared with me that students begin learning basic computer skills in K-4 during their Library Media classes. These classes focus on teaching basic knowledge, which the students will then take back to the classroom and apply when using iPads or Chromebooks.

Ms. Mauro also shared that starting in Kindergarten, coding is introduced to students through programs such as Dash & Dot Robot and Go Mouse. Once the students reach 3rd grade they begin to experience code.org where they can begin exploring creating programs. Those who are interested in further exploring coding are given the opportunity to join an after school coding club that runs for 12 weeks for 3rd and 4th graders.

Once students enter 5th grade, they begin to take dedicated computer classes as one of their specials. These classes are taught by Michael Corvello, the Computer Integrations Teacher at Reed Intermediate School. Students have 30 classes per year in 5th grade, and then again in 6th grade. In 5th grade the curriculum focuses on reinforcing basic skills and shoring up core competencies that the students may not have mastered at the elementary level, such as working with GSuite (Google Suite). This is necessary because students are coming from different elementary schools and each school may have approached technology differently. The goal is to make sure that technology is not holding students back as their use of technology in classes increases. By the end of 5th grade some coding with code.org, and more recently Code Monkey, added to the curriculum.

As the students move into 6th grade they are able to explore more creative uses for technology. Work continues with code.org but also moves into using Photoshop, Scratch and Google Earth. There is also an added focus on creating multimedia projects and exploring what technology can do instead of just cutting and pasting.

The students then move on to 7th grade where they join Austin Cirella, Computer Integrations Teacher at Newtown Middle School. There, he continues to reinforce the skills that were taught in 6th grade such as coding using Code Monkey, and includes lessons on balancing screen time. In 8th grade students get a chance to work with robots, using SPHERO block-based coding to control the robots in the real world. Ultimately students have to code their robot to successfully run a course created by Mr. Cirella, which allows them to learn about the difficulties of controlling a robot in the real world using just code.

Unfortunately under the current schedule, students only receive about 18 classes per year each in 7th and 8th grade. However under the schedule that the Board of Education approved to begin next year, more classes will be added, allowing Mr. Cirella to add a new unit to each grade levels curriculum. He plans to add two units that students have expressed a lot of interest in, Photo/Video editing for 7th graders (which

has the potential to build off of the work done in 6th grade) and the basics of computer hardware for 8th graders. Both of these are subjects that are available as electives to students when they enter the High School, allowing for an earlier exploration into possible fields they might like to delve into before graduating from Newtown Public Schools.

One important element that is consistently covered starting in 3rd grade and continuing through 8th grade is digital citizenship. This is taught beginning with students in 3rd grade, before they are handed the "keys" to their GSuite accounts. It is then reinforced every year, making sure they understand the importance of conducting themselves appropriately online and following basic manners in their interactions on social media. In the past, parents have also been given the opportunity to attend a presentation by Scott Driscoll about Digital Citizenship as well as Internet Safety to help them understand the same topics that students are learning in class.

Teaching all of this technology to students is not without its complications. One of the biggest hurdles is the state's privacy laws which restrict what applications and systems students are allowed to use in a school setting. Unfortunately this problem has been amplified by the COVID pandemic as it has restricted the use of in-school resources because of mitigation measures that are in place. For instance, in the past students at Reed had used Tour Builder to plan out tours of different locations in Google Earth. Unfortunately Tour Builder no longer meets the state's security statutes meaning it can no longer be used. Under normal circumstances Google Earth could be used to replace it, but the students can only save their work if it is used on the desktop computers in the computer lab which can't be used due to current pandemic mitigation strategies. Online Google Earth can't be saved without an account and State privacy laws don't allow for students to create one.

A lot of work has been put into teaching technology to grades K-8, building the foundation that students need to succeed as they move to the high school and beyond. The staff has worked hard, not only to provide important information and lessons, but to also help students explore the different things that can be done with technology so they can form and explore their own individual interests. They have managed to overcome obstacles and continue to expand their curriculum to fit the ever changing technological landscape, preparing students for the world they will encounter as they move on to whatever they decide to pursue after graduation.

I would like to thank Katie Mauro, Michael Corvello, and Austin Cirella for taking the time to talk to me about teaching technology to students in grades K-8.

For this edition of "A Closer Look," we present two voices from within our classrooms that describe how technology impacts our students' everyday educational experiences in the course of normal instruction. That is, this is not about using technology to provide distance learning. Rather, it is about how technology is blended with in-person, classroom-based curriculum and instruction.

A Closer Look

with Gina Cappelli, Hawley Kindergarten Teacher

By Deborra Zukowski

Please give a brief history of your time with the Newtown Public School District

This is my 6th year teaching in Newtown. I have been part of the awesome Hawley team as a Kindergarten and First Grade teacher since I started in 2015. I currently teach Kindergarten. Prior to teaching in Newtown, I taught for 8 years at East School in New Canaan. I also have two children, Ava (Third Grade) and Jack (K) who attend HOM school.

How familiar are children with computing technology when they enter kindergarten? What do they think computers are used for?

It always amazes me how much our younger students know about technology at the age of 5 when they enter Kindergarten. Understandably, they are most familiar with technology such as tablets and touch screens, rather than computers and laptops. They are VERY quick to learn though! When they come to Kindergarten I don't think many of them know what computers can do. They often talk about how their "mommy and daddy have one and use it for work emails." They are always proud and excited to work on their own device in the classroom.

How has the access to computing technology changed what is taught in the classroom?

I wouldn't say that technology has changed what is taught in the classroom as much as it has enhanced what is taught. For example, having access to devices which allow students to access various online programs such as Lexia (language arts) and IXL(math and language arts) creates a tailored learning experience for each student, as they are able to easily work at their own pace and level when they are not working with the teacher. It also provides teachers with accurate and usable data to inform our instruction.

How often do students directly use a computer and what types of activities do they use it for?

Currently the students in my class use an iPad about 3-4 times a week, typically during the language arts and math block to utilize programs such as Lexia, IXL, SeeSaw (interactive activities across a broad range of subjects) and Reading A-Z. They also have the option to play fun learning games on our iPads during our playcenter block. It is incredible to see how using technology comes naturally to children!

Is there anything you have done to improve distance learning (DL) that might also enhance in-person classroom learning?

Absolutely! As difficult as distance learning is for Kindergarten there are aspects of it that have already enhanced in-person class learning - for example, all of the programs that the students have access to such as IXL, Lexia, Reading A-Z, and See Saw. The wonderful thing about these programs is the fact that

students can easily access them from any device.

In what ways do you find that computing technology is better able to engage students? In what ways might it inhibit engagement?
If you turn a video on or let a student work on a device, you typically have 100% student engagement. That being said, I do have my students spend most of their day interacting with each other through reading, writing and math partnerships as well as playing good old fashioned board games! In my opinion, interacting with other children is the most important aspect of my students' day.

Is there anything else that you feel should be included in this conversation?
We are so very fortunate in Newtown to have access to such wonderful technology that enhances the day to day learning for our students at all ages!

A Closer Look

with Kelly Murphy, Newtown High School Math Teacher

By Deborra Zukowski

Please give a brief history of your time with the Newtown Public School District.
My name is Kelly Murphy and I am a Newtown Graduate! I came to teach in the Math department at the High School in 2013. I teach a range of classes to a range of abilities.

How has the access to computing technology changed what is taught in the classroom and how it is taught?
The access to computers in the classroom has changed quite a bit in the few short years since I've been teaching at Newtown High School, and therefore how we use the computers in the classroom has changed. The classes I teach rely heavily on seeing interactions that functions may have on a graph. A few years ago I was introduced to an online platform that I primarily used for students who did not have access to a graphing calculator, giving students who may not have a graphing calculator at home free access to essentially the same technology. This online platform helped many students practice what we were learning in class at home as well. In the last few years, that same platform has morphed to provide full interactive lessons that can be tailored by me as the teacher to best suit the needs of my classes. The platform has interactive games that use graphed images and a "Guess Who" style game to force students, in a very fun interactive manner, to practice their vocabulary skills. The same platform allows for more interactivity like simulating gravity on a graph and creating a makeshift marble slide, or playing a matching game electronically instead of cutting out paper and playing that way. The platform has remained free, and has invited teachers to help work together to create interactive activities that are accessible to classrooms all around the globe, work to translate activities into many languages, and add features to support the visually impaired.

In what ways do you find that computing technology helps the overall teaching and learning experience?
Other online platforms provide instantaneous, constructive, individualized feedback to each student, similar to the adaptive tests students take at the younger levels. We as a department have found a few

platforms that allow us as teachers to choose a topic, set a threshold of competency and then allow each student to work at their own pace, with questions that adapt as they either master the material, or need more remedial instruction. From the student perspective they are just doing practice on the computer, which in a normal year is a nice break from working with pencil and paper. From the teacher perspective we get a very itemized readout detailing how each student is doing, which we can use in real time to approach a struggling student, or push a student who might be excelling to the next level, all without their peers knowing what is going on.

For the last few years we have used technology available to us via the Google Suite to make interactive online activities, designed to give feedback to anyone who got any question wrong. This was done, not as a math exercise, but as an exercise in teaching students how to succeed through 'failure'. Having the ability to code in to an assessment "You might want to look more closely at your negative signs", or "go back and look at the notes we took on page #", is unique to online platforms. I can even link directly to a video, or a specific section of our electronic notes to help guide students. Using the same platform I can detect when a student is struggling based on their answer choice, and send them to a series of questions that might reroute them toward success, while other students move to the next level. Again, allowing students individualized instruction, while everyone is in the same room without bringing attention to anyone is a beautiful thing!

How often do students directly use a computer and what types of activities do they use it for?
Historically, I tried to have at least 3 online interactive activities scheduled for each unit, which worked out to be one interactive activity each week. Remote learning has force me to pick up that pace in units that lend themselves nicely to more visual approaches.

Is there anything you have done to improve distance learning that might also enhance in-person classroom learning?
Access to the computer both at home and in school, before remote learning allowed, us as teachers to very quickly identify the needs of each student within each topic reliably. Now with remote learning, it is allowing each student to have an equal playing field once we get over the concern of how to navigate each online platform. This year in particular, we spent quite a bit of time working with students on each of the different platforms we knew we would use, making sure they at least all had the same proficiency with the platform before asking them to do anything content related on their own. If we were planning on using videos, we spent time discussing how to learn from the example videos that the various platform providers might send us. For example, knowing we can pause a video and try a problem on our own might not be intuitive for the students.

As students prepare to graduate high school, do you have a sense of how students view the role that computing technology may play in their future education and careers?
As our students move on from our schools we know they will be using more technology, in more ways than we can imagine. I think it is important for our students to see us try a new online platform and fail, and try again, or search for a different platform that gives us more of what we need. They will need to learn new things constantly through their life especially using technology, and I think our students know that. Our students have mastered remote communication, they have seen their social media platforms grow from just a platform to post, to now have the ability to chat, and call, and have a video conference. Many of our students are ready to adapt as the technology around them changes.