

Beekmantown Central School district Instructional Technology Plan 2018 - 2021



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Submitted by Gary Lambert
Director of 21st Century Learning

DISTRICT TECHNOLOGY COMMITTEE MEMBERS

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EXECUTIVE SUMMARY & HISTORY

Student learning is at the heart of all we do in the Beekmantown Central School district. It is our long-held belief that student learning is improved with the use of technology as an instructional tool. This instructional technology plan begins with our vision for student learning, a philosophy of technology as well as associated goals and a rationale for continuing to build upon the successes of previous initiatives. Our plan continues with the current status for technology within our district and highlights and details the strategies which we plan to implement to attain our goals. Lastly, we provide a plan to continually assess and evaluate our program.

In 1997, educators and community members created a vision to implement the use of technology district-wide with the goal of increasing student skills in communication, information processing, and productivity. This vision was translated into action through the 2004 Capital Project, Phase III. As a result of this pivotal project, students and staff work were able to realize that vision of working within a networked environment, one in which all classrooms and offices areas are equipped with computers connected to the district's network as well as to the internet. This technology planning committee help form the foundation upon which all of the district's future actions regarding instructional technology would be built.

In 2009, the district was fortunate to be in a position to take advantage of funding through New York State's EXCEL program. The district used this funding to further enhance the technology environment provided to staff and students. Through this project several critical technology goals were accomplished. Among these were the complete refresh of the district's wired network switching infrastructure, the addition of interactive whiteboards (Mimio & SmartBoards) in all district classrooms, the replacement and/or addition of LCD projectors in classrooms and conference rooms, the virtualization of thirteen existing application and voice servers, and perhaps most importantly the addition of a district-wide wireless network. This wireless network, comprised of nearly 130 enterprise grade 802.11ac wireless access points would pave the way for the district to pursue new avenues of teaching and learning.

In 2014 the District Technology Committee (DTC) reconvened with the primary responsibility of researching, reviewing and revising the district's technology plan and providing recommendations of how the district would provide instructional technology to empower student learning. This committee, composed of teachers, administrators, parents and community members, Board of Education members and students, met both in person and via electronic correspondence during the 2014-2015 school year to discuss the direction of technology in the district with an eye toward sustainability. With the successful passage of the Smart Schools Bond Act, many of the committee's discussions revolved around how the district could make the most effective use of the funds which it is designated to receive. Attendance at a national educational technology conference as well as site visits were part of the process which informed the development of this plan as did the formulation of staff, student and community surveys. Thanks to the efforts of the DTC members, their recommendations charted the direction that teaching and learning took at Beekmantown CSD over the last four years. Their plan, like this one attempts to guide the district with what lies ahead both in the short and long-terms for the future of technology in the Beekmantown Central School district. The committee's recommendations helped articulate the vision for current Digital Literacy Initiative and the 1:1 device program which has been so immensely successful over the last few years.

VISION

Beekmantown Central School district is dedicated to using technology to provide world class learning to **engage** and **empower** all learners in a global society in order to improve student achievement and to foster a productive, innovative and ethical citizenry.

PHILOSOPHY

We as advocates and facilitators of learning believe that technology is a powerful tool that creates unique and relevant instructional experiences which has the power to provide enriching, engaging and varied sensory engagements that ultimately enhance the learning process. We are committed to nurturing active lifelong learners, preparing them to be responsible, contributing members of society and global citizens who can use technology as a tool to help shape their lives and their community.

Mission

It is the mission of the district and its community to educate every individual to be a quality contributor to society and self. With this mission in mind, our District Instructional Technology Plan seeks to provide a dynamic learning community in which:

- Learning has the freedom to take place anywhere, anytime.
- Whenever appropriate, technology will be seamlessly integrated into all aspects of teaching and learning.
- Technology is used as a tool to improve student motivation, engagement and learning.
- Through teacher guidance, students will utilize technology to become more active participants in their own learning.
- Diverse learning styles of students are better served by incorporating technology.
- New ways to evaluate and assess understanding and learning will be available through the use of technology.
- All students have regular and appropriate access to computers and computer-based technology for learning.
- The needs of all learners are met through the use of adaptive and assistive technologies.
- All students will be prepared for the challenges of an information-based society. They will be able to create, access, exchange, and analyze information readily from electronic sources.
- Teachers in the district will be able to use state-of-the-art technologies to prepare and deliver their lessons.
- Technology is a tool to assist students in meeting the New York State Learning Standards and district goals.
- It is essential for all learners, including educators, to process and manage information through the skillful use of technology.
- Skillful use of technology supports the development of process skills such as flexibility, adaptability, critical thinking, problem solving and collaboration.
- Networked technology systems permit efficient and effective communications within and outside the district.
- Technology maximizes productivity and efficiency and enables our schools to better prepare students for

future learning.

- Students become better prepared for today's technology-infused workplace and the workplace of the future.
- Our schools must prepare students to be lifelong learners who are responsible for their own learning, skilled in accessing and processing information, confident in using technological tools, able to solve complex problems alone or collaboratively, capable of being creative and innovative, and able to communicate locally as well as globally.

GOALS

To accomplish our mission for enhanced student learning through the integration of technology, our Instructional Technology Plan must include and lead to success in the following areas:

1. Maintain equal access for the learning community

- Establishes common technological networking capabilities at all sites.
- Provides for minimum standards of hardware and software for all students, staff, and sites.
- Assures that all students, staff and sites will be provided with and have equal access to minimum standards of hardware and software.
- Ensures equity of delivery to all students.
- Enables any time access to school learning resources through the use the district and school websites, teacher classroom web portals, online instructional services and a learning management system.
- Continue to improve our infrastructure, more specifically through the acquisition of a redundant internet connection to ensure our teachers and students have 21st Century tools to improve the educational process.
- Provides the learning community with greater opportunity for interaction, collaboration and information exchange. The school will continue to be a vital meeting place for a host of community services both on-site and virtually.
- Promotes equitable access to learning technology as a community investment and encourages an active partnership among schools, businesses, homes and the community.
- Provides suitable assistive devices for special needs students.
- Develops an equipment replacement plan for to ensure that technology based items are current and serviceable.
- A process for procurement of electronic resources (software and hardware) is adopted with a careful data driven review of utilization prior to retention decisions.

2. Develop lifelong learners

- Assures skillful use of technology to support the development of lifelong learning skills and process skills such as: flexibility, adaptability, critical thinking, problem solving, and collaboration, which are essential to success in our rapidly changing information age.

3. Integrate technology in the classroom

- Vastly expands classroom tools for teaching and learning.
- Fully explores opportunities for Virtual Reality (VR) and Augmented Reality (AR) in the classroom environment in order to maximize both instructional impact and the return on investment in hardware through high quality professional development.
- Provides for the integration of multiple resources for existing and emerging curriculum.
- Enables the learning community to communicate more effectively, access and process information, and

work productively.

- Links the classroom with educational resources within the building, community and worldwide.
- Creates a collaborative environment for project-oriented activities.
- Increases the productivity of students as they work toward attaining learning outcomes.
- Encourages the use of content-rich, multimedia tools, enabling students to become active and experiential learners.
- Furnishes instructional technology to students for use in and outside of the classroom.
- Enables learning to involve partnerships within the school, among schools, and with other organizations.

4. Build a culture of continuous learning for staff

- Establishes guidelines and specifications for staff development and training.
- Encourages district-based technology planning and learning.
- Builds online learning opportunities.
- Incorporates digital teaching and learning across all curricular areas.
- Offers incentives for staff to fully integrate technology and complete technology training.
- Relies on building-level Technology Integration Specialists to provide high quality training to staff on existing and emerging technologies.
- Provides information and funds for conferences and workshops.

5. Provide support for instructional change

- Facilitates access to collegial support and best practice information from a wide variety of resources.
- Expands the variety of teaching tools and strategies to support diverse learning styles.
- Supports productive and efficient management of student assessment and project data.
- Increases support for emerging instructional strategies: inter-disciplinary, collaborative, and active learning options.
- Enables curriculum, instruction and assessment to be developed and aligned with each other.
- Provides a system that helps students, parents and teachers work together to support educational outcomes.
- Pilot new teaching strategies, technologies, and instructional resources.
- Maintains sustainability for electronic learning resources such as Chromebooks, Chromebases, Chromeboxes and/or tablets for student and faculty use.

6. Provide technical support & training for all technology items - equipment and software

- Maintains a district-wide Technology Help Desk.
- Maintains a multi-level system to support all uses of educational technology.
- Includes staffing for district-employed Director of 21st Century Learning, Network & Systems Administrator, district technicians and school-based Technology Integration Specialists or others where appropriate.

7. Maintain Library Media Centers as hubs for technology use

- Professionally staffed by Library Media Specialists.
- Promotes information literacy.
- Prepares students, teachers and community with the skills and knowledge needed to retrieve, evaluate and ethically use electronic sources of information.
- Provides access to resources beyond the school.
- Provides access to and assistance with the available technologies.
- Serves as a center for students to explore and create in makerspaces.

- Functions as an integral resource for all content area instruction.

8. Monitor success and adherence to Technology Plan

- Provides ongoing development and exploration of emerging, as well as existing technologies and policies.
- Continues the work of the District Technology Committee as necessary.
- Implements tools that can be used to assess progress in implementation of this plan such as the BrightBytes platform.

STAFF DEVELOPMENT

A thriving learning community focuses on improving the learning experiences for all of its youth and adult members. In order for staff members to create powerful learning experiences for children, they need to be engaged in the same. The professional development strategies for improving learning and teaching with technology are a part of numerous district and school-based strategic plans and curriculum initiatives.

Areas for implementing technology goals:

1. Productivity

- Increase teaching time by using a Student Information System management program to streamline grades, attendance, health records, test scores and other logistical tasks.
- Use online data services such as SchoolMeter and other related tools to analyze and interpret student data to inform instructional decisions.
- Prepare and continuously revise high quality teaching materials at the desktop.
- Provide for the delivery of synchronous and asynchronous content through the use of learning management systems, such as Google Classroom and Moodle.

2. Communication

- Use electronic mail systems to communicate within the building and district.
- Use network access to connect with other educators to foster Professional Learning Networks (PLN) through online discussion groups, social media and professional listservs.
- Increase communication and engagement on the part of parents through multiple modalities such as telephone, text and email exchanges, social media and website postings, and district endorsed and supported apps.
- Provide for distance learning opportunities by partnering with outside agencies to both deliver and receive online courses.

3. Information

- Access electronic sources and online services as primary teaching resources to provide the most current information.
- Access professional journals, primary source documents and other information online.
- Transition to the extent possible away from printed textbooks towards online electronic resources.

4. Assessment

- Evaluate individual work and class progress with reporting options available on software programs.
- Report student achievement to students and parents through the use of learning management system and associated web portals.
- Review portfolios of student work and writing saved in electronic formats.

- Prepare written assessments of student progress with report card programs.

5. Instructional Resources

- Use a variety of content rich digital resources to more effectively differentiate instruction in order to reach students with diverse learning styles and needs.
- Plan individualized learning programs based on assessment data.
- Increase student motivation with expanded multimedia resources for classwork, assignments and projects.
- Provide regular opportunities for students to work collaboratively and actively.
- Provide for high quality learning materials posted on district learning management system classroom pages.
- Teachers or teacher teams choose high-quality appropriate sites to find select sources, in support of the district’s curriculum.
- Guide students towards deeper investigations by collaborating with other teachers to create online student projects.

6. Staff Needs Assessment

- The district will develop and employ a variety of needs assessments to plan for staff development opportunities.

7. Building a culture of continuous Staff Learning

- Technology Integration Specialist as well as staff “experts” and trainers in each school offer building-level support and in-service classes.
- The Educational Technology Center of the Department of 21st Century Learning supports staff learners with phone and web-based help resources as well as a robust ticketing system.
- Teachers will regularly attend and present at conferences (local, regional, state, and national)
- Staff members will serve as “Tech Mentors” for their colleagues in order to foster professional learning and growth.
- The district website will continue to be maintained as a rich resource for the district learning community.
- Encourages staff members to constantly increase their technology related skill sets in order to provide support for their colleagues.

8. Funding for Staff Development

- Funding for staff development has been understood by the Beekmantown Central School district to be critical to the successful implementation of technology throughout the district. To date the district has primarily funded staff development through district operating funds, NYS Learning Technology Grants, and Title I Technology Grants. This will need to continue for the foreseeable future. NERIC and CVES (BOCES) also provide help through state-aided support.

NETWORK AND TELECOMMUNICATIONS SERVICES

Type of Wiring

All instructional and administrative spaces which require them have been equipped with Category 5e Unshielded Twisted standard certified to 622 Megabits per second. Every classroom and administrative workspace has been provided with between six to fifteen network connections. Fiber riser and backbone connections have been provisioned to the thirteen telecommunication data closets throughout the main campus,

Cumberland Head Elementary School, district Office and Bus Garage to replace copper backbone connections and enhance bandwidth. Fiber star topology is the target architecture used to connect remote buildings to the main distribution frame (MDF) for voice, data, and video digital communications.

Network Standard

10 GigaBit Ethernet has been applied in the design of the current WAN and LAN backbone connections. The system in its current operations provides a minimum of 100 Megabit per second connections, but in most cases 1 Gigabit per second connection for all wired connections to all end. As all network switches in service within the district were installed in the Spring of 2014, the district's network infrastructure is very sound. The district has worked very hard to create a single, composite signal path for voice, data and video surveillance feeds. The network infrastructure will continually evolve to higher bandwidth standards as media and supporting equipment are cycled out and new ones become economically feasible through both Smart Schools Bond Act, Erate, and regular budget funding. All new network switches will be provisioned to the network with full power over Ethernet (POE) for all ports on the device. This will permit the sustainability for voice, data, wireless and premise security devices to run on a single network infrastructure.

LAN Protocols

The district will adopt IPV6 and/or other high-bandwidth, quality of service protocols as evolving standards certify them for use and common acceptance drives their price into affordable ranges. The availability of emerging public service facilities will be closely monitored as the area infrastructure evolves to ensure that adequate provisions are made for upgrade of the school district wide area network at minimum cost.

Wireless infrastructure

In 2014 the district adopted the 802.11ac standard for wireless connectivity to all district facilities. This system in its current iteration provides for on-site Cisco 5700 Series wireless network controllers which communicate with POE (Power Over Ethernet) wireless access points strategically located throughout the district. All middle and high school classrooms and alternating elementary classrooms, as well as all offices and large meeting spaces have coverage for district-owned devices for students as well as staff and visitor devices. This wireless infrastructure currently forms the backbone of the district's 1:1 Digital Literacy Initiative, permitting student and staff data access anywhere within range of wireless access points. There are a total of 152 wireless access points that are currently in place throughout the district. Through Federal Erate as well as Smart School Bond Act funding the district will augment its coverage where necessary and will regularly monitor where any additional access points can be provisioned for greater access.

Services

File Services

The district has experienced significant changes in its client-server model over the last several years. The demand for greater storage space and higher utilization by staff and students prompted the district to both implement a virtualized server array, replacing the stand alone units that had been put into place during the 2004 Capital Project. The primary function of our remaining on-site hosted servers is tied to specific network based services such Active Directory, DHCP, DNS, Domain Services, LDAP Connectivity, Network Management, Print Services via PaperCut, as well as some limited staff file shares and data exports. In an effort to provide high quality services to its end users, the district also implemented cloud-based off-site hosted data solutions via Google Drive. Over the last three years the end goal for the district was to migrate all user

accounts and files to an off-site hosted storage medium. Remote file access from any device, coupled with the ability to share and work in a collaborative manner with other staff members and/or students has made this initiative very impactful. By the time that this Instructional Technology Plan is approved, all but a few remaining users will be completely migrated over to this more efficient medium.

Other Services

The district will continue to increase the functionality and inherent complexity of its internet presence using emerging technologies. The district has moved from most of its on-site hosted server-based applications to a software as a service model (SAAS). As such there has been and will continue to be a high demand for a robust intranet presence with increasing DAN bandwidth in order to support these services. Many of these SAAS applications are central office related such as recruiting and hiring, Board of Education policy manual maintenance, and professional learning management to name just a few.

The district will provide continued maintenance of DNS services, including integration with the Microsoft TCP/IP protocol implementations. Similarly, there will be continuing use and upkeep of DHCP and Active Directory as new implementations and integrations will be required with other services. Two such example of this which have already been implemented are Google Active Directory Services (GADS) and Google Active Password Synch (GAPS).

Additionally, centralizing the delivery of software applications through the use of web-based cloud managed solutions such as the Google Admin Console have become the norm in the district, relieving the burden associated with installation and maintenance of software.

Internet Connection

The district currently utilizes a fiber linked DS3 data link to the NERIC/Verizon Frame cloud, and thence to the internet via NERIC and Applied Theory's T-3 connections. The current provisioned connection operates at a speed of 200 Mbps. This has eliminated many of the connectivity issues that restricted the effective use of the internet as a learning resource. The result has been a proliferation of internet browser software as a standard application for use by students and staff. Previous instructional technology plans made mention that the district would continuously review how available bandwidth is being used and what changes might need to be made to accommodate the expanding use of technology in the curriculum. To that end, after reviewing the district's continued usage and expansion of its Digital Literacy Initiative over the last several years, the district made the decision to engage a vendor, via the Federal Erate process, in order to supply the district with a higher capacity internet connection which would also provide failover redundancy in the event of a network outage. This connection will also enable high speed data and voice connections to travel over the fiber for the first time to the Bus Garage as well as the Driver Education Simulator.

Clients

The district's Department of 21st Century Learning will upgrade the client workstation inventory on an ongoing basis to meet current platform standards. These hardware upgrades and evolving minimum standards will ensure that the district keeps pace with industry standards for next generation software applications. Multimedia systems are the minimum platform for instructional use. Portable device which rely on wireless access have become a standard within the district.

At the time of the writing of this current Instructional Technology Plan the district's minimum standard for desktop computing is Windows 7 with Windows 10 and Mac OS X 10.11 also currently supported. With the district's large scale migration to G Suite for Education, the vast majority these devices are running on the Chrome OS platform either as Chromeboxes, Chromebases or Chromebooks. There certainly will always be a need to maintain a number of traditional desktops to service specific curriculum software and hardware and/or administrative tasks, but these numbers will likely diminish over time since the transition to the Chrome OS has become embedded within the district's culture and software continues to evolve to support more and more web-based delivery methods which are platform agnostic.

Software

The district will continue to maintain and update a standard set of contemporary software for educational, personal productivity and administrative uses. Although the Microsoft Office Platform, version 2013 & 2016, will still be maintained as a supported district standard for specific legacy needs, the district has migrated most staff and student use to the G Suite for Education platform. One obvious benefit of the move to a cloud-based solution for software is that client software will be will not need to be upgraded per computer workstation, but rather will be upgraded at the provider's end. Hardware upgrades will be a continuing necessity to meet the ever-increasing processor and memory requirements of more demanding client and server software implementations. All software will be maintained at a functional revision level. Additionally the district has implemented a decentralized, distributed processing, client-server model student information system (Schooltool) residing on a remote, NERIC hosted server with some components at the desktop level. This will place smaller demands on the DAN infrastructure. This model for software as a service has become the most common delivery method of software within the district. The district relies most heavily on the Google Admin Console Backups will be accomplished across the network each night.

Telephone

The district's telephone system need has also changed dramatically with the introduction of new Voice Over IP (VOIP) technologies. Through the 2009 EXCEL project the district installed new redundant VOIP servers at both the main campus as well as the Cumberland Head Elementary School. The district currently utilizes 2 PRI lines from an approved State vendor to distribute to the buildings in our district. This has given the district 46 lines to share within the district. Internal 911 notification has been made possible as well as voicemail delivered to staff members' email accounts for greater notification capabilities. Recognizing the value of off-site hosted solutions, the district is currently in the planning stages of converting its current telephone system to a hosted VOIP system. This transition will allow the district to still be able to manage its own moves/adds/changes but additionally have access to experts in the realm of telephony to provide high-quality support for its end users. The move will be much more fiscally sound as it provides a predictable line item for yearly voice-related expenses since the cost of replacing voice servers would not be the responsibility of the district.

Video

Greater emphasis will be placed on digital video for classroom video systems. Displays will originate from digital sources in greater proportion to traditional analog sources. For example, educators are now able to transmit Google Slides, PowerPoint presentations, Prezi slides, as well as internet based video into the classroom via Sharp Aquos and SMART Interactive Flat Panel Displays in the majority of classrooms. A minority number of classrooms still utilize ceiling mounted LCD projectors with these units being phased out over time in favor of the interactive flat panel displays.

In the fall of 2017 the district completed an installation of a high-definition IP based video surveillance system, replacing a 10+ year old analog and DVR based system. This server based system not only provides more effective coverage of the school facility but additionally offers both mobile and off-site access to footage. This system, based on the Genetech platform is integrated with the premise security system and allows for the addition of lock-down buttons, door cameras, and other integrations making it an integral part of the district's security offering. With the construction of the higher speed fiber connection between the main campus and Cumberland Head Elementary School campus soon to be underway, both campuses' video surveillance systems are being considered for additional camera coverage. As resources and funding becomes available additions to the existing system will continue to be made to maximize staff and student safety.

Electrical Capacity

The district will continue applying electrical standards to its sites to provide adequate levels of service and to afford adequate protection of equipment. Planning for new construction and existing building renovations includes provisions for a comprehensive review of electrical capacity requirements to ensure that technology enhancements are considered and included in project engineering and design. Procurement documents will specify the use of energy saving technology for workstations and peripherals wherever possible.

Current Inventory

Desktop Computers	327
Chromebooks	1,757
Chromebases	62
Chromeboxes	176
Laptops	74

As part of the ongoing 1:1 initiative, the district will continue to purchase Chromebooks which will be issued to specific students in grades 3-12. These purchases have added just over 1,700 devices to the district's equipment inventory since the inception of the program. In grades 3PK-2, devices will be provided to the classroom, but will not be issued to the individual student. The choice of device has not yet been determined. The district's aspirational goal is to provide devices for students who need them.

Type of Equipment	Quantity
Network Switches	43
Routers	2
Wireless Access Points	152
Servers	6 Physical

	13 Virtual
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EVALUATION PROCESS

The Beekmantown Central School district regularly collects data using tools such as BrightBytes in order to improve services, learning and teaching. Evaluation of the Technology Plan falls into three areas: technology implementation and support, use of technology to achieve learning goals and staff development.

Many evaluative processes have been discussed earlier in the document. Here is an overview:

Technology Implementation and Support

- District Technology Committee meets bi-annually to monitor the Instructional Technology Plan.
- Review of annual budget for technology.
- Inventory of all technology-related equipment.
- Evaluate district technology via a national standards tool (ISTE).

Use of Technology to Achieve Learning Goals

- Develop learning goals based on the test results.
- Student rubrics will be established for monitoring technology-related skills.
- Classroom teachers will evaluate student technology skills.

Staff Development

- Staff rubrics and Needs Assessments will be utilized to monitor technology skills.
- Workshops, Saturday Tech Summits and other local, regional and national conferences regarding technology will be advertised and attendance encouraged.
- Courses will be provided in-district for skills and curriculum integration. Feedback will be solicited to continuously improve the quality of professional development offered.
- Staff Mentoring will continue to be encouraged as well as Pineapple Charts for peer learning.
- Continue to develop incentives for administrative, faculty and staff participation in staff development opportunities.

ENROLLMENT

The Beekmantown Central School district has, as of the adoption date of this Technology Plan, the following enrollment figures:

Beekmantown Elementary School	Enrolled
PreK3	18
PreK4	36

Kindergarten	63
1 st Grade	64
2 nd Grade	74
3 rd Grade	70
4 th Grade	73
5 th Grade	71
Cumberland Head Elementary School	Enrolled
PreK3	18
Pre-K4	36
Kindergarten	57
1 st Grade	92
2 nd Grade	72
3 rd Grade	72
4 th Grade	77
5 th Grade	79
Beekmantown Middle School	Enrolled
6 th Grade	140
7 th Grade	140
8 th Grade	126
Beekmantown High School	Enrolled
9 th Grade	138
10 th Grade	151
11 th Grade	150
12 th Grade	153

STAFF PLAN

The Beekmantown Central School district has, as of the adoption date of this Technology Plan, the following full-time Equivalent (FTE) count whose primary responsibility is delivering technology integration training and support and/or technical support for teachers

Title	Full-Time Equivalent (FTE)
Director of 21 st Century Learning	1
Technology Integration Specialist	3
Senior Network & System Technician	1
Computer Specialist	2

TECHNOLOGY ELEMENTS

Devices

The district's technology committee members evaluated a wide variety technology devices to determine which device would be the best overall fit for our students to meet our instructional goals. Using an evaluation matrix based on price, performance, usability and features, the Chromebook and the Chrome OS were chosen by committee members as the primary standard for student use at most grade levels. The district will continue to evaluate the appropriateness of other devices and platforms as warranted and as the needs of the district evolve. The specific model of Chromebook may vary from one year to the next as vendors change their offerings, but the minimum requirements for the duration of this Instructional Technology Plan would be:

- 11" Color LCD screen
- Keyboard with built-in drainage
- 4 GB of RAM
- 16 GB of solid state storage
- 2 USB ports

Professional Development

In an effort to gather as much practical information as possible and to expose district members to the workings of 1:1 classrooms, the district coordinates a variety of professional development opportunities for staff members. Approved professional development activities provide valuable insight into instructional practices of a fully-integrated digital curriculum, the IT challenges associated with such a model, and the administrative and logistical hurdles that must be overcome to be successful.

Device Protection

The intent of the district's 1:1 initiative is to allow students to have access to their school provided technology devices at home as well as in school. Recognizing the need to provide protection for these devices while they are being transported, research was done to find a suitable protective device for them. After contacting numerous case vendors committee members evaluated several finalists for the standard device protection. In the end, the Rugged Chromebook Bag - 11 Hitek Cases was chosen as the primary district standard. This company has been incredibly responsive to our suggestions and has gone so far as to adapt and improve its product to match our stated specifications. As other devices are evaluated, other protective cases will be evaluated in order to protect the district's investment in these devices.

Insurance

The district will be supplying students with a Chromebook for use in and out of the classroom. In the same way that textbooks are issued to students and remain the property of the district, so too are these devices. Through the district's student run help desk club, known internally as the "BeekSquad" students and their families are given the opportunity to purchase a device protection plan which covers theft and accidental damage to the device. The student run help desk club uses the funds from the Device Protection Plan to purchase and stock the parts necessary to facilitate repairs to devices which are covered under the plan. If a student's device is not covered by the Device Protection Plan then parents must assume complete financial responsibility for the repair or replacement of the Chromebook due to damage or loss of the device. The club provides Device Protection Plans at no cost to students whose family is unable to absorb the cost of the plan. In this way students receive excellent device repair services, most of which are performed the same day an accident occurs, the student help desk members acquire valuable technology-related work skills, and the district leverages the talent within its student body to help sustain its 1:1 program.

Technology Asset Management/Inventory Control System

While the district is committing significant resources toward its 1:1 initiative, it became apparent that a robust technology inventory management solution was needed to replace the antiquated inventory database that was previously in place. Putting in place such a system would provide a check and balance and necessary audit trails to report on equipment purchased for the district. Several competing systems were demoed and in the end the TIPWeb-IT was the choice of the district. This system can be utilized with any internet connected device with a modern web browser as well as with iOS and Android devices through the use of its mobile app. Additionally the system can also connect to handheld barcode scanners for immediate access to inventory information. This system, coupled with permissioned access to key staff members has enabled the district to proactively plan and effectively manage the costs associated with the IT assets. Having such a system in place assists the district in controlling its assets in order to optimize the value from its investment in technology.

Professional Development Opportunities and Digital Citizenship

The district recognizes that one of the most critical elements of any technology plan is the training that its staff receives to effectively integrate the technology into teaching and learning. With that in mind the district has taken a multi-pronged approach to accomplish this goal, especially during its transition to a 1:1 teaching and learning environment.

To begin with, the district has committed resources in the form of staffing. Each building has a dedicated Technology Integration Specialist. These building-level employees promote the use of technologies to support student achievement in the 3PK-12 classroom. They provide leadership, staff development, and instructional support to all instructional and administrative staff. The Technology Integration Specialists provide staff with the essential support needed to complete technology-based instructional management and productivity functions. Through their efforts, the district's initiatives are reinforced at the building level.

Additionally the district recognizes that there is need to engage in relationships with outside entities that are experts in their respective areas. To that end the district has periodically contracted with Renaissance Educational Consultants to provide additional instructional staff training in content delivery and learning management systems as well as to provide support for G Suite for Education. Early on Amplified IT was contracted to provide support to the Department of 21st Century Learning to inform best practices in setting up the district's Google domain.

Coupled with the on-site professional development provided by Renaissance Educational Consultants and Amplified IT, the district also recognizes the value in providing both staff and students access to on-demand training. Since digital learning does not operate on a traditional school bell schedule, the district makes use of the G Suite Training interactive training system for G Suite for Education. This training platform allows the user to learn and take actions at the same time. Lessons are audio, text and visual guides that deliver a customized experience for everyone. It provides the end user with trainings available in all of the essential G Suite for Education items as well as providing the district the ability to upload its own training content. These trainings can be self-assigned or assigned by an administrator and the analytics can be used to ascertain the specific trainings that staff or students have completed or have yet to complete.

The district believes that strong instruction in digital citizenship is essential to form the foundations of learning in the 1:1 environment. Beginning in the elementary school and reinforced throughout the curriculum, digital citizenship instruction for students K-12 is regularly woven into the lesson materials. Specific lessons on

online privacy, cyberbullying and other current topics are also explicitly provided at a variety of grade levels using resources such as Common Sense Media and Google's Be Internet Awesome.

Content Delivery and Digital Learning Management

In an effort to move away from the lecture-centric model so typical of the 20th century classroom, the District's Technology Committee began exploring alternative instructional models which leveraged the power of technology. At the heart of this exploration was a recognition that there were many 21st century skills that were simply not easy to cultivate even using time-honored technology tools such as Microsoft Office. Members of the committee understand that what was needed were tools that made anytime, anywhere, any device access a priority in addition to sharing and collaboration capabilities. After examining currently available options, committee members unanimously agree that the G Suite for Education was the best fit for Beekmantown CSD. The idea of providing software to users as services rather than as products offers several key benefits in addition to those mentioned above. Such an approach transfers responsibility for software updates and maintenance away from the the district's IT department, freeing IT staff from a considerable amount of software support. The resources saved are able to be directed at making the IT department more innovative and agile, attributes that are increasingly important in responding to rising student expectations of technology in school.

All stakeholders can collaborate in the learning process through the use of this suite. Teachers are able to share documents and calendars with parents so they can see what projects their children are working on and when assignments are due. Students can connect with educators outside of school. Students are able to collaborate together on group projects without needing to physically meet. This collaborative model allows for a dynamic environment that moves away from lectures and more fully engages the learner.

Building upon the foundation provided by the G Suite for Education the district selected another utility as part of its digital toolkit. GoGuardian Teacher brings additional content delivery and classroom management tools to the digital equation. GoGuardian Teacher works in conjunction with the district's primary learning management system, Google Classroom, to enable teachers to easily share assignments with students as well as monitor their activities along the way. Since GoGuardian Teacher provides such a tight integration with the Google Classroom, it is able to very easily populate a teacher's classroom with enrolled students.

Filtering and Mobile Device Management

As the district increasingly relies on its network as a critical foundation for teaching and learning in the digital age, IT management has become more complex and challenging. In an attempt to provide a balance between compliance with Federal CIPA regulations and user access to content, the district recently contracted with NERIC to acquire GoGuardian Admin as a successor platform to its Lightspeed Rocket filtering appliance. This hosted service offers intelligent features for customization, granular policy control, explicit content and self-harm reporting. By utilizing GoGuardian Admin the district is able to provide the same level of filtering for students on Chromebook devices at home that it does while on campus. Using the product's comprehensive monitoring and reporting tools, the district's administrative and IT staff can review all user activity to enforce acceptable use policies, troubleshoot issues, and make adjustments as needed. The district's ability to manage student devices provided by the district is made even more complete with the ability to manage the devices through the Google Administrator Console. The Google Administrator Console allows IT staff to hierarchically manage the district's Chromebooks and users remotely wherever they are in the world providing that the devices have an internet connection.

Digital Equity

The district recognizes that there is a great disparity in access to resources among our student population due to economics. Recognizing this, the last thing that the district would want to do is widen that digital divide. In an effort to gather measurable data, the district conducts biannual student, staff and parent technology surveys through the BrightBytes platform. The first of these surveys revealed the percentage of students who did not have access to high-speed internet and wireless access. With this information in hand, the district committed to provide economically disadvantaged students a device from the Kajeet company, called the Kajeet SmartSpot, which is a MiFi mobile wireless hotspot, combined with customizable internet filtering. These devices allow students access to all web-based resources necessary to complete educational assignments on multiple readily available 4G LTE cellular networks.

Additionally, the district also purchased and installed 24 Kajeet Cradlepoint units to equip all active busses in the transportation department's fleet. These units deliver WiFi access to riders on busses using their district-issued devices. This endeavor seeks to provide students and student athletes with additional time to access required educational resources when they would otherwise be unable to do so. The intent of this additional access is to give all students increased access to resources that may benefit them in their educational pursuits.

In terms of equity provided, issuing devices to students has assisted in leveling the playing field between regular and special education - improving access to assistive technologies for students with disabilities. Students now have access to text to speech which will be beneficial in meeting the individual learning needs of all students. It has also enabled students to have "textbooks," websites, documents and tests read to them. This increases independence and also offers some students the ability to stay in the classroom for testing and other academic tasks instead of leaving for a room to have a human reader. Through the use of software as a service such as TextHelp's Read&Write product, students also have access to word prediction software which has been shown to improve students' writing skills. Students also have access to a variety of graphic organizers or the ability to create their own. Having these digital devices benefits students with disabilities who need adjustable print size, improved organizational, task management, and study skills, and assistance with note-taking. Leveling text has also become a reality providing students with reading deficits access to the same curriculum content as their peers.

Using G Suite for education as well as the associated apps in the Google software ecosystem permits students who are English language learners or multi-lingual learners to have access to machine translations of course material into their home language. This ensures that these learners have the same equitable access to instruction, materials and assessments by permitting staff members tools to create these translated items as well as the learner having access to tools to interpret materials in their home language.

Summary

This District Instructional Technology Plan would not have been possible without the collaborative efforts of all of the members of the District's Technology Committee to which is owed a debt of gratitude. Through countless hours of research and participation their efforts have given rise to a plan which aims to continue improving student engagement, enhancing instruction and empowering students with the goal of improved student achievement. However arduous the work done thus far was to arrive at this plan, it is minuscule in comparison to the value derived from its implementation. Full realization of this plan will help to more fully solidify Beekmantown CSD into its role as a progressive leader in technology integration in the North Country.