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Technology Plan 2016 - 2019

I. Technology Plan

The purpose of this plan is to guide our district over the next three years in the area of planning, budgeting and professional development. It identifies where we are now and where we want to be at the end of three years in reference to instructional pedagogy, technology integration and infrastructure. This plan will be reviewed and revised by the district technology committee on an annual basis.

II. Technology Vision Statement

The vision of HVRSD is to develop and implement a blended learning model using technology as a tool to enhance inquiry with a strong emphasis on project-based learning. People in the 21st century live in a technology and media-rich environment, marked by various characteristics, including access to an abundance of information, rapid changes in technology tools, and the ability to collaborate and make individual contributions on an unprecedented scale. To be effective in the 21st century, students, citizens and workers must be able to exhibit a range of functional and critical thinking skills related to information, media and technology.

Hopewell Valley Regional School District envisions that technology is immediately available and supported for all staff and students:

- to meet the curricular needs of all learners in a blended learning environment
- to enhance student engagement and collaboration as part of the learning process
- to develop ethical values with regard to the use of technology
- to improve staff and student efficiency allowing time for more active learning
- to address diverse learning styles
- to be used for formative assessment to improve academic achievement
- to master the necessary technology skills as demanded by the workplace and society
- to provide universal access to information and be able to assess and share that information
- to use technology to enhance creative and innovative problem solving
- to improve critical thinking and foster creativity
III. Instructional Technology Recommendations

A. Professional Development

Professional development will be provided through a comprehensive district-wide focus as well as through school-based efforts. Each school strives to supplement the district offerings with its own professional development opportunities facilitated through a variety of venues. Our model for professional development will be the following:

- Differentiate our professional development to meet individual needs of the teaching staff.
- Staff working at their own pace based on their individual skill set.
- Provide training using a blended approach that includes face to face instruction as well as self-pacing electronic modules.
- Professional development will be created and led by the administrative team, technology specialists and teaching staff.
- Professional development will take place during in-service days, faculty and departmental meeting time as well as during PLC time.
- Professional development will be evaluated based on feedback from staff using surveys.

Goals of our technology-related staff development will be:

- Teachers will have access to a comprehensive program of professional development led by their colleagues that will train them to use technology as an integral tool to enhance teaching and learning.
- Teachers will be able to develop inquiry-based lessons using technology.
- Teachers will be able to recognize and use instructional technologies for teaching critical-thinking, problem-solving and inquiry-based skills to enhance student achievement.

1. Blended Learning

Blended learning is an instructional practice that empowers educators to use the appropriate tools to support personalized pathways for learning. For example, blended learning environments can support flexible pacing, differentiated instruction, immediate interventions and “anytime, everywhere” learning.

Blended learning can be defined as “…any time a student learns, at least in part, at a supervised brick-and-mortar location away from home and, at least in part, through online delivery with some element of student control over time, place, path, and/or pace.
The modalities along each student’s learning path within a course or subject are connected to provide an integrated learning experience.” (International Association for K-12 Online Learning)

The most important component of the definition is the “element of student control” emphasizing shifting instructional models to enable increased student-centered learning, while giving students increased control over the time, place, path, and/or pace of their learning pathways.

Blended learning offers a rational approach, focused on redesigning instructional models, for high quality learning experiences that allow a teacher to personalize and maximize learning. Technology is not the driver of the instructional model, but is the enabler.

As a district we are in the beginning stages of implementing a blended learning environment. We will adopt the Rotation Model of blended learning, incorporating a mix of the following programs:

- Station Rotation
- Lab Rotation
- Flipped Classroom
- Individual Rotation

Our goal is to move to an instructional model with a balance between teacher-led instruction, collaborative activities and online instruction.

We will also investigate the A La Carte Model and Enriched Virtual models in the future. See Appendix E for more information on blended learning models.

Recommendations

Blended learning will be a major focus in the district over the next three years. Training will consist of the following:
2016-2017

- Spring 2016: Administrative team will complete *Blended Learning: Personalizing Education for Students*, a 6-week online course that provides a foundational understanding of blended learning.

- May 9, 2016: The concept of blended learning was introduced to grade 6-12 teachers during professional development; teachers were given time to collaborate with departmental colleagues on a blended learning lesson.

- Summer 2016: A summer course on implementing problem-based learning in a blended learning environment will be offered to staff. The key components of this course will be replicated for staff at different times during the 2016-2017 year.

- Summer 2016: Courses in Google Apps for Education and its impact on instructional practices in a blended learning environment will be offered.

- October 2016: In-service training for 6-12 staff will focus on using a blended learning environment with a focus on inquiry. Workshops, facilitated by colleagues, will be provided in the areas of project-based learning, discussion boards, developing playlists, etc. while also maximizing the use of a Learning Management System. Modules from the summer course will also be completed by secondary staff.

- Timberlane and Central High will create building-based blended learning teams facilitated by building administrators. The focus of these teams will be to design professional development with the assistance of supervisors and central office for staff in-service days and faculty meetings.

- A site visit will be scheduled to St. Ann School in NYC to observe a blended learning school. HVRSD administrators and teachers will attend.

- A site visit will be scheduled to Morristown High School to observe their blended learning program that was established in the fall of 2015. HVRSD administrators and teachers will attend.

- An investigation of the creation of a flexible learning space in Central High School’s media center that could be used for recitation, credit recovery or an alternative program for students not succeeding in a traditional classroom.

- Elementary schools will pilot blended learning in grades K-5 using a station rotation model with readers, writers, and math workshop.

- Walk-thru tool to evaluate the implementation of blended learning.

- June 2017: A needs assessment will be administered at the end of the school year to guide professional development for the 2017-2018 year.
2017-2018

- Elementary blended learning teams (one in each building) will be established and facilitated by the building principal. The focus of these teams, with the assistance of supervisors and central office, will be to design professional development for staff in-service days and faculty meetings.

- Middle and high school blended learning teams, with the assistance of supervisors and central office, will continue to assess and design individual professional development needs for their buildings.

- The October in-service day will be built using the Teach-Meet concept in which staff will teach and demonstrate the implementation of a blended learning environment to other staff.

- Pilot of flex spaces at Central High School and Timberlane Middle School.

- Pilot of the A La Carte model for certain courses not taught at CHS for credit.

- Walk-thru tool to evaluate the implementation of blended learning.

- Administer a needs assessment at the end of the year to guide professional development for the 2018-2019 year.

- Evaluate based on two years of implementation at the secondary level areas of focus and further development for 2018-2019.

2018-2019

- Elementary, middle and high school blended learning teams will continue to assess and design individual professional development needs for their buildings with the assistance of supervisors and central office.

- Walk-thru tool to evaluate the implementation of blended learning.

- Administer a needs assessment at the end of the year to guide professional development for the 2019-2020 year.

2. K-12 Educational Technology Standards (ISTE)

Hopewell Valley Regional School District embraces the International Society for Technology in Education for Teachers (ISTE.T) and Administrators (ISTE.A) standards. These standards and performance indicators define the fundamental concepts, knowledge, skills, and attitudes for applying technology in educational settings.

Recommendations

- ISTE standards will be reviewed with staff on an annual basis.

- ISTE standards will be reviewed with students on an annual basis.
• All teachers K-12 will link ISTE standards in their lesson plans (monitored in OnCourse by the administrative team).

3. Foundational Technology Competencies for HVRSD Teachers

The district has developed *Foundational Competencies for HVRSD Teachers* (see Appendix A), a list of foundational technology competencies for staff. This document, reviewed by the district technology committee, was developed by K-12 technology teachers in conjunction with the K-12 Supervisor of Instructional Technology.

**Recommendations**

Teacher technology competencies were introduced to staff in Spring 2015. The following actions are planned:

• As part of the 2015-2016 annual review process, teaching staff has been asked to reflect on the teacher technology competencies.

• During their 2015-2016 annual review conference, teachers will identify areas of focus and include these areas in their 2016-2017 professional development plan.

• During the 2016-2017 school year, workshops and supports will be provided to staff for all areas identified in the teacher competencies.

• The teacher technology competencies will be distributed to all new staff during district induction activities, beginning in August 2016.

• The district technology committee will annually review and modify, when necessary, the teacher technology competencies.

• The technology competencies document will continue to be used as part of HVRSD’s annual evaluation process and in the development of individual professional development plans over the next three years.

4. Google Apps for Education

Google Apps for Education is a suite of cloud computing productivity and collaboration software tools and software offered on a subscription basis by Google. It includes Google’s popular web applications including Gmail, Google Drive, Google Hangouts, Google Calendar, and Google Docs, Google Sheets and Google Slides. While these products are available to schools free of charge, Google Apps for Education adds education-specific features such as custom email addresses at our domain, unlimited storage via Google Drive. As a cloud computing solution, it takes a different approach from off-the-shelf office productivity software by hosting customer information in Google’s network of data centers rather than on traditional in-house servers that we have historically housed in the district.
In August 2014, the district transitioned to Google Apps for Education. Staff training was provided on Gmail, Calendar, Drive, and Groups. Training continued in 2014-15 and 2015-16 and expanded to include Slides, Sheets, and Hangouts. Chris Aviles facilitated two professional development sessions during the 2015-2016 school year for the middle and high schools, focusing on all of the functionality of Google, specifically documents and forms.

**Recommendations**

Continue to provide training opportunities for staff so that they are able to meet all of the *Foundational Competencies for HVRSD Teachers*. This includes summer offerings as well as during professional development days, faculty meetings and lunch sessions. Provide staff the opportunity to visit other classrooms in which teachers are maximizing the use of Google Apps for Education.

**B. Technology Integration into Instruction**

1. **1:1**

A 1:1 environment provides an avenue for staff and students to function successfully in a blended learning model. Utilizing the inquiry process in a 1:1 environment provides educators and students more opportunities to showcase authentic student work. It provides the opportunity to significantly enhance the 21st century skills that include critical thinking, creativity, and collaboration and communication skills. Having one platform enables teachers to focus on instructional practices rather than addressing device-related compatibility or implementation issues related to devices. Together, this will enable our teachers to guide students in their the transition from being consumers to creators of information to creators.

Currently, students in grades 8 and 9 are participating in the Chromebook pilot. Each student is provided with a Chromebook for use at school and home. In grades 4, 5, and 7 Chromebooks are available via carts for classroom use, providing a near-1:1 experience.

**Recommendations**

All students in grades 6-12 will receive a Chromebook for school and home use for the 2016-2017 school year. The student Chromebook distribution schedule ensures that all students will receive their Chromebook in the beginning of September. Students in grades 7-8 will receive their Chromebooks during the first week of school, with 6th grade students receiving Chromebooks in September after completion of Chromebook orientation instruction. 9th - 12th grade students will receive Chromebooks on the first day of school. Chromebooks will be collected from students at the end of each school year.

Collaboration, whether face-to-face or virtually, is an essential skill. Instructional modules on collaboration will be developed and implemented for all grade 6th grade
students as part of the technology curriculum for the 2016-2017 school year. This will become part of the 6th grade curriculum for students to experience on an annual basis.

We will be adopting the SAMR model for technology integration as a district. Based upon our assessment from classroom observations, reviewing of lesson plans and teacher feedback the majority of teachers are using technology in either the Augmentation or Modification level in the SAMR Model. We will be working with teaching staff over the next three years to attain the Redefinition level of the SAMR model.

SAMR Model of Technology Integration

<table>
<thead>
<tr>
<th>Redefinition</th>
<th>Transformation</th>
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</thead>
<tbody>
<tr>
<td>Technology facilitates the creation of new tasks that were not previously possible</td>
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<table>
<thead>
<tr>
<th>Modification</th>
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</thead>
<tbody>
<tr>
<td>Technology facilitates the significant redesign of tasks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Augmentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology used as a direct substitute, with functional improvement</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Substitution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology used as a direct substitute, with no functional change</td>
</tr>
</tbody>
</table>

2. Software/Apps/Online Resources

With the advent of cloud-based applications and online resources, HVRSD is shifting from software package purchases to online subscriptions. Much of the lab-based software supporting the K-12 curriculum has been replaced by apps. Some software will continue to be purchased and installed on HVRSD devices; examples include software for the engineering and video production curricula at TMS and HVCHS, as well as the software programming curriculum at HVCHS. In general, district expenditures on software packages is decreasing and expenditures for online subscriptions and cloud-based is increasing. The district protocol for a software request is that a staff
member provide their supervisor with the request, who in turn will bring that request to the technology committee for review.

**Recommendations**

To ensure that instructional software needs are met in an effective, cost-conscious way, HVRSD will:

- Continue to run software usage reports on an annual basis for the purchased software to determine if it is being fully utilized.

- Evaluate and pilot, where appropriate, applications (primarily from the Google Chrome Web Store) to replace purchased software. Continue to examine and pilot software using the Google Chrome Web Store that will meet the curricular needs of software currently being used that is purchased.

Hapara is a software program that supports our staff and students in three specific ways in a 1:1 environment:

- It makes learner activity visible as teachers can view an individual student computer or the entire class at any time.

- Supports differentiated instruction.

- Maintains a safe learning environment.

Hapara adoption and use in grades 6-12 will be expanded during the 2016-2017 year:

- Teacher training will be provided for grade 6 as well as any teacher interested in using the software in grades 9-12.

- Teacher refresher training will be provided for grades 7-8 as needed.

- Pilot program in grades 4-5 for to evaluate its usefulness at the elementary level.

**3. Learning Management System**

A learning management system (LMS), an educational tool used to administer content, monitor student work, and track and assess student progress, is an integral part of any blended learning environment. HVRSD expects all 6-12 staff to use **OnCourse Classroom**, OnCourse’s learning management system, to deliver instruction and communicate with students using a blended learning approach.

OnCourse introduced a beta Learning Management System in January 2016. Twenty-four HVRSD teachers volunteered to participate in a pilot to use the LMS in at least one of their classes. During the pilot, they were able to provide feedback to the OnCourse developers about features that would best meet the needs of the district. In April 2016, part of the pilot group (including teachers, students, and administrators), spent the day with OnCourse developers to provide feedback about OnCourse
Classroom. The pilot group will continue to collaborate with OnCourse on the development of OnCourse Classroom.

Recommendations

2016-2017

● In the fall of 2016, the district will be implementing a new Learning Management System (LMS) from OnCourse for all 6-12 teachers and students. Interested K-5 teachers will be able to pilot the LMS. Implementation will take place throughout the first six months of the school year.

● At the May 9, 2016 in-service, 6-12 staff were introduced to OnCourse Classroom, the learning management system that will be implementing in the 2016-2017 school year.

● Voluntary Classroom training will be offered to all 6-12 staff, as well as interested K-5 teachers, during August 2016. Additional training sessions (on September 1 and September 6, 2016) will be provided to all staff who did not attend the August training. Training will be facilitated by the teachers who participated in the pilot.

● Summer 2016: A blended learning course will be developed by the Supervisor of Instructional Technology, Director of Human Resources and Special Projects along with two CHS teachers. The focus will be on how to teach in a blended learning environment using the OnCourse LMS.

● OnCourse Classroom will be the only LMS permitted for use by district staff starting in the 2016-2017 school year.

● At the start of the school year teachers will be required to post homework to OnCourse Connect for parents/students either by using the LMS or Lesson Planner. Eventually all staff with post using the LMS.

● Additional training will be provided to staff throughout the 2016-2017 school year on how to maximize the functionality of the LMS as well as its alignment with blended learning.

● The pilot team will continue to collaborate with OnCourse about further developing their Classroom product to best meet the needs of our students, staff and parents.

2017-2018

● Implementation of OnCourse Classroom’s assessment module to administer tests, quizzes, etc. for grades 6-12

● Introduction of OnCourse Classroom in grades 4-5

● Pilot teacher-created playlists for individual students using OnCourse Classroom to support the district’s blended learning vision.
2018-2019

- Full implementation of OnCourse Classroom in grades 6-12.
- Implementation of OnCourse Classroom in grades 4-5.

4. Cyber Safety

Hopewell Valley Regional School District filters web content and SPAM emails. The school district also has a comprehensive acceptable use policy (Guidelines for Responsible Computing) that is shared with all parents and students at the start of each school year.

Web content filtering is performed at the firewall level so that all school district technology wired and wireless resources moving through and out to the Internet must first pass through this content filtering resource. Web filtering includes a large list of categorized websites and can easily enforce just about any acceptable use policy we wish to put in place. A whitelist facility is also included to make sure specific URLs are never blocked. Web filtering categories are applied at different levels in the school district. Based upon the web filtering rules that are set, there is a comprehensive reporting mechanism in place to report possible abuses. Suggestions for adjustments are received from all users of technology into the help desk for consideration to block or unblock. This is a collaborative process that includes the technology support staff and the K-12 Supervisor of Educational Technology.

Spam email continues to attempt to force messages on people who would not otherwise choose to receive it. Most spam is commercial advertising, often for dubious products, get-rich-quick schemes, or quasi-legal services. Like most other schools and businesses, it has become a huge problem. With our move two years ago to Gmail as part of our Google Apps for Education, the Hopewell Valley Regional School District no longer needs to have its own hardware or software configuration in place to filter email as Google Apps for Education provides this filtering for the district and it has proven for two years now to be effective.

Cyber safety instruction is embedded in our K-12 technology program and is constantly referenced during all instructional lessons. A major cyber safety unit is included in the 6th grade for all students as well as a part of the media and technology program in the elementary schools. All students, as part of the middle and high school 1:1 program will be provided a cyber safety review as part of the new school year.

As a component of the Foundational Competencies for HVRSD Teachers, all teachers are expected to “understand, reinforce and engage in safe and ethical technology practices (including the Acceptable Use/Internet Safety Policy).” Furthermore, teachers are expected to monitor and share this information with their students.

The Office of Educational Technology offers a parent presentation each year that engages parents on a specific topic or topics on cyber safety. This has taken the form of a parents night presentation in the Hopewell Valley Central High School Performing
Arts Center that brings in experts to speak on cell phone safety, apps, social media, and other related topics.

**Recommendations**

- Continue to offer parent presentations on current trends and issues on cyber safety.
- Develop a cyber safety resource appropriate for high school students.
- Cyber safety lessons/activities implemented on an annual basis.
- Continue to monitor web filtering policies to ensure the optimal effectiveness for instruction and for safety and share this with the district technology committee and the Assistant Superintendent for Curriculum and Instruction.

**5. Special Program Facility Support**

- **PLTW/STEM**

Project Lead The Way (PLTW) is a nationally-recognized STEM program for K-12 students, with affiliations with leading colleges and universities. Over the last several years, numerous reports and external organizations have validated Project Lead The Way’s success in engaging the hearts and minds of students through science, technology, engineering, and math (STEM) education. Part of the Hopewell Valley curriculum at the high school since 2003, PLTW has taken on staffing and programmatic changes in sync with state and national standards and growth of the program. Gateway PLTW, the middle school component, transformed our wood shop into a hands-on, well-subscribed, STEM elective program for grades 7 and 8. In 2014, a STEM magnet program was started in grade 4 at Bear Tavern Elementary and expanded to grade 5 and will grow into the 6th grade as part of the Gateway PLTW program. The 2016-2017 school year will find a STEM program stretching from grades 4 through 12.

To support the PLTW and STEM instruction, appropriate hardware (computing devices), software support, and especially facility support is necessary. Recent upgrades to a former wood shop/metal shop in the high school now supports the thrust of the CHS PLTW program with computing technologies, CNC machines, robotics curricular and extra-curricular activities, 3D printing and other primary and secondary equipment to support the PLTW curricular needs at CHS.

- **TV Studio/Video Distribution**

With the passage of the 2005 referendum, the school district supported the construction of a state-of-the-art TV studio at CHS that has computer and instructional space, a fully-outfitted control room and a recording studio with green wall and supporting lighting. The TV studio is networked into every middle and high school classroom, as well as to the PEG channels (“HV-TV”) serving Hopewell Valley and Mercer County and furnished to the school district by Comcast and Verizon. This facility supports a
three-level elective program for high school students that reaches out to the community in many ways.

With the wired and wireless networking now in place in all district schools, a video-on-demand system has been created for our teachers that supports on-demand videos for instructional use. In addition, programming is scheduled and broadcast out to our community via HV-TV technologies.

- **K-12 Media Centers**

The K-12 media centers have been designed for the delivery of media and technology instruction since the mid-1990’s that consisted of books on shelves that could be checked-out, small and large group instructional space, a technology lab of 20 or more computers that is either as part of the media center or an off-shoot computer lab right next to the media center.

Students in grades K-5 meet with our elementary school media specialists once a week for instruction. Our elementary school media specialists provide both formal and informal opportunities for children to enjoy books and reading, borrow materials for their personal use, practice research skills and become independent lifelong users of libraries. Additionally, they provide our students with a strong foundation in technology. Infusing education technology through their program, they teach children to evaluate web resources for relevancy, accuracy and bias when researching. Our media specialists provide access to high quality, high-yield search engines, subject directories and databases and provide direct instruction in the ethical use of information. In Media, technology resources are also accessed in the presentation of information learned in the media center.

- **Performing Arts Center at CHS**

A long-standing and important element of our district’s curriculum is our visual and performing arts program. Our student musicians and vocalists continue to collect trophies through a wide variety of national competitions, as well as win distinction as selected members of highly competitive regional chorus, band and orchestra ensembles.

Student talents are regularly showcased for the community in the attractive, 876-seat Hopewell Valley Performing Arts Center, adjoining the high school. Opened in December 2003, the facility is used by a growing number of community organizations and has become the area’s premier venue for cultural and entertainment events.

- **Assistive Technology**

Special education students have been seen as benefiting from assistive technology applications in a wide variety of uses. Assistive technology hardware and software is redefining what is possible for people with a wide range of cognitive and physical disabilities. In the home, classroom, workplace, and community, assistive technology is enabling individuals with disabilities to be more independent, self-confident, productive, and better integrated into the mainstream. The Pupil Services Office, the educational technology specialists and the technology support team work together to deliver the
needs identified by the HVRSD child study teams to meet the educational program goals outlined for students.

**Recommendations**

- Update existing connectivity between the TV studio and the PAC to aid in the delivery of better quality broadcasting.

- Install technologies for the delivery of broadcast video from the HVCHS turf athletic fields to the TV studio.

- Replace existing TV studio control room and studio technologies which are “aging out” to HD-capable broadcast quality equipment. This may be accomplished over a multi-year plan.

- Replace the existing sound board and related peripheral audio equipment in the PAC to better meet the administrative and educational needs of the entire school district.

- Merge the robotics extra-curricular activities with the PLTW program, looking to make robotics a co-curricular activity or a course within the CHS Program of Studies.

- Continue to support the computer lab concept for the PLTW and TV studio programs, ensuring that computers will always meet the specifications of the required software of the two programs.

- Review the equipment and supplies needs of the PLTW program on a yearly basis and include 1-3 year projections for purchase planning.

- Re-establish the Assistive Technology Committee, consisting of the Supervisor of Educational Technology, the Administrator of Technology, the Supervisor of Special Education and K-12 special education teacher representatives. This committee will meet 5-6 times a year to discuss the needs of the unique technology needs of the special education department.

- We will be in a state of transition with our K-12 media centers over the next two years as the computer labs are converted and we restructure the purpose and delivery of our media services area. This will include “makerspace” areas for our students and teachers. Revisit initial media center facility plans with the district architect making sure that the media centers redefine their mission and support of the K-12 educational program. The Assistant Superintendent for Curriculum and Instruction and the Supervisor of Educational Technology will lead the K-12 media specialists and K-12 technology specialists in this endeavor.
C. Technology Equipment and Peripherals

1. Chromebooks

The district has chosen Chromebooks as the preferred student device in grades 3-12 due to their seamless integration into the Google Apps for Education. These devices have a low administrative cost and can be centrally managed. Dell is our chosen manufacturer due to their complete care warranty that covers accidental damage and prevents the need to purchase a third party warranty. This allows HVRSD to expedite repairs as our technicians are Dell certified and can perform repairs onsite. The Google recommended replacement cycle for these devices is currently 4 years. One-to-one computing offers the benefits of equal access, standardization, easy upgrades, simple networking and the ability to monitor student progress and online behavior. Our goal is to alter the approach to education, incorporating 21st century skills into the curriculum so that students learn to integrate technology into their educational endeavors.

Recommendations

• Currently our Dell Warranty includes an accidental replacement for one incident per year. The district should consider charging a repair deductible for multiple incidents of accidental damage to the student issued device. This deductible would not apply to standard equipment failure. In addition, the district should pass along any charges incurred from multiple accidental damage claims. This is similar to all other manufactures such as Apple’s complete care warranty and consistent with district practices for damaging books.

2. iPads

The district has chosen iPads as the preferred student device in grades K-2. Mobile devices, such as the iPad, and apps can be used in educational settings as an annotation tool, to enable creation and composition, facilitate social networking, and provide rich tools to capture and edit video, audio and images. The portability, flexibility, and natural intuitive interfaces make tablets ideal devices for students to develop their 21st Century skills, such as creativity, innovation, communication and collaboration which is a part of the NJ Core Content Standards and the pillar of our K-12 technology program. In grades K-2, iPads are available in each classroom and there is also a full-classroom set of iPads in a charging cart located in the elementary school media centers/computer labs for all students in the class to use.

Recommendations

• Evaluate the use of the iPad hardware as compared to other tablet and/or Chromebook implementation over the next 3 years.
• Through K-2 teacher participation, make decisions on each app that is installed, free or purchased, to ensure teacher and student needs for the iPads are met.

• Include sufficient monies in the budget to support the purchase of educational apps.

3. Teacher Laptops

Every HVRSD teacher, including counselors and child study team members, is provided a laptop computer. By supplying teachers with laptops, the district is facilitating the transformation to a blended learning environment that takes advantage of online global resources and “anytime, anywhere” learning.

Hopewell Valley Regional School District’s primary goal is to support schools and faculty in our efforts to improve student learning. We want to ensure that each student achieves success and is prepared to be an informed and involved citizen of the 21st Century. The district has a replacement plan for student and teacher laptops. The district defines obsolete computers as those no longer being supported by the manufacturers or no longer meeting the needs of the educational program; typically these are devices whose age exceeds five years (see http://www.irs.gov/pub/irs-pdf/p946.pdf).

Recommendations

• Support the existing teacher laptop replacement plan, ensuring installation of a docking station in each classroom.

• Continue with our transition from MAC to Windows at the K-5 level. Eventually all teacher laptops will be on the Windows operating system.

4. Classroom Projection/Interactive Boards

The SMART Board interactive whiteboard turns the computer and data projector into a powerful tool for teaching and presenting. With the computer image projected on the board, the simple use of a finger on the large touch sensitive surface controls the computer. The related software makes it possible for teachers to create content rich, dynamic lessons which address specific student skills. This allows teachers and students to engage in interactive teaching and learning. SMART Boards were initially installed in grades in the middle and high schools, beginning as a PTO-supported initiative that was picked up by the school district.

Subsequently, as the implementation of the SMART Boards moved further to finish up the K-8 classrooms and to also move into the high school, the Epson Interactive Projectors for Education were put into place to complete the interactive whiteboard
installations in all classrooms. This move to Epson was precipitated by cost savings and same technology features and benefits as the SMART technology. Completion of the K-12 classrooms occurred during the 2015-16 school year.

The district ran into a challenge in 2013-2014 as SMART Technologies changed their software licensing agreements on their SMART Notebook software. This precipitated a replacement with ActivInspire by Promethean starting in the 2014-15 school year which was piloted by K-12 teachers prior to its implementation. This was found to be very compatible with a minimal learning curve. As part of this pilot, it was decided that at the high school level, the needs for interactivity of the projection devices was not a priority due to not being used as it is at the K-8 levels.

**Recommendations**

- Continue the replacement of the existing Hitachi, 12-year-old projectors found in our K-12 classrooms with the Epson projectors with wireless capability.

- Ensure that the projectors are capable of using the ActivInspire software at the K-8 level. Interactivity installations at the high school level are not needed.

- Continue to purchase licensing for teachers K-8 for the ActivInspire software needed to produce interactive lessons with teachers and students.

5. **K-12 Computer Labs**

Two computer operating systems currently are in use in district computer labs: Macintosh (grades K-5) and Windows (grades 6-12). In 2015-2016, one computer lab is housed in each elementary school for classes and groups to utilize computer and other technologies. Six computer labs at Timberlane Middle School and seven computer labs at Central High are used for direct instruction of business and practical arts classes, as well as for “drop-in” and media center use by the entire school. Related to this is the “cart concept” in all of our schools where there are iPad, Chromebook and/or laptop carts available for small group up to a full class use.

**Recommendations**

- Starting in the 2016-2017 school year, begin phase-out of computer labs in grades K-12. The 1:1 student Chromebook program and Chromebook carts enable this to occur. A plan is to be developed by the district technology committee in concert with administrators to do this over a 2-3 year period.

- Maintain the computer labs for “specialty area” curricular needs in the middle school and high school, specifically PLTW, TV Studio, and graphic arts and computer programing.

- Remove all existing K-12 classroom desktop computers except where specified by special education and individualized student needs.
On a yearly basis, review the needs of the technology device carts. Consideration should be given to the phasing out of school-wide available carts as the district continues to move in a 1:1 technology model.

6. Peripherals

HVRSD is moving to Chrome OS (operating system) for students and Windows operating system for staff. This will reduce costs associated with individual devices, device management, and training. Desktop computers will be preserved in key areas for specific functions, including educational programs that require specific / specialized hardware (for example, the engineering curriculum).

HVRSD employs a standard classroom equipment setup for all classrooms. Currently, all schools have interactive technology, projector and computer for the instructor. We are phasing out the instructor desktop computer in favor of a less expensive docking station. In addition, elementary school classrooms are receiving document cameras and sound field systems are beginning to be implemented in the middle school. The high school is moving away from interactive technology in favor of wireless projecting and is starting to test streaming devices (such as Roku) to deliver TV channels, live events and other video content to the classrooms.

All district systems will be assessed annually to determine the most effective and economical approach to supporting all educational applications. Free unlimited file storage is available to Google Apps for Education customers, enabling HVRSD to reduce file server costs. Other cloud services will be evaluated for savings.

HVRSD, while recognizing that printing is required in certain situations, will continue to support electronic communication and a paperless environment, and will actively work to reduce printing costs. Students in grade 6 -12 will receive ID badges at the start of the 2016-2017 school year that will integrate electronically with the cafeteria point-of-sale system, school library lending system and Central High School’s door entry system. ID badges will also allow them to print from their chromebook if needed to a copier.

D. Technology Infrastructure

Technology infrastructure is crucial in moving information rapidly between educational devices and the Internet in a secure manner. HVRSD infrastructure devices, including switches, routers, firewalls, and wireless access points, are monitored to obtain operational statistics such as CPU, memory latencies, disk latencies, interface throughputs issues and other performance-related problems.

Wireless has become the preferred method of communication so ensuring performance is paramount. To ensure the best performance, we follow best practices for dense networks and ensure the wireless network is redundant or self-healing. Load balanced between wireless access points and different radio frequencies. Access points are monitored routinely and client counts will not exceed manufacturer’s recommendations.
to provide a reliable experience. Multiple wireless signals will be used in order to provide a level of quality assurance to the end users. “HVRSD-Staff” will be for employees and information will be prioritized to ensure the best possible performance. “HVRSD-Student” will be used for district issued student devices and will be prioritized over non district owned devices. A “public” signal will be provided for non district owned devices.

Upgrades are targeted to address specific issues and are not performed because of the age of the device. Redundancy among these devices is used whenever possible to prevent or eliminate outages. Any outage is evaluated thoroughly to determine the cause and prevent any recurrences.

**Recommendations**

- Equipment upgrades are performed as needed to address operational issues. Currently, 10 Mbps switches with an age exceeding 10 years are being targeted for replacement as they are no longer performing and their failure rate is high. More wired equipment is being phased out in favor of wireless technologies to support the mobile classroom.

- The 5 Gig radio frequency will be favored for the best possible user experience and the 2.4 Gig frequency will be preserved for devices that don’t support the faster 5 Gig radio frequency. All district laptops will support the 802.11ac standard.

- The wireless network will be the focus of any investment and access points will be added to every classroom. Existing network wiring in classroom locations will be reused to install wireless access points.

- Access points will be staggered across multiple switches for redundancy and to prevent any outages.

- Radio interference and rogue signal remediation will be used to detect and contain issues.

- System alerts are reviewed routinely and prioritized by technology personnel.

- The district will create a policy for shaping bandwidth, regulating the amount of bandwidth used for different networks and applications. Limiting the amount of traffic for any specific application category ensures the reliability of the overall system.

- The district will eliminate the P drive currently being used for storage in September of 2017. Google drive will be the main storage place for staff documents.
E. Technology Staffing

1. Instructional

There are two K-5 technology teachers in four schools supporting the elementary teachers with the development of lessons and use of technology within the teacher’s units of study. Also in the elementary schools, the media specialists teach, as part of the media program, technology skills across all curricular areas as part of the NJCCCS 8.1. These media specialists also support teachers with the integration of technology in their grade-level classroom activities.

At the middle school, there are three technology specialists who teach technology-related elective and required courses in grades 6-8. As part of their professional duties, the middle school technology specialists have time allotted within each school day to support teachers in the effective use of technology. This has been especially important with the start of the 1:1 initiative that began in the 2014-2015 school year.

In order to support the 1:1 rollout at CHS, implementation of the LMS as well as the blended learning instructional vision, a technology teacher at the high school will be supporting staff two periods a day and teaching the rest of the day. The CHS Technology Trainer will also fulfill this role at the high school in working with teachers with OnCourse tools including the OnCourse LMS as well as with instructional strategies in the use of technology in lesson planning. The media specialist position at CHS will transition to an Educational Technology Instructor focusing on transitioning the CHS media center to a innovation space supporting blended learning.

The high school TV studio has produced over the last few years a senior student with the skills and maturity to work under the Supervisor of Educational Technology as part of the CHS Cooperative Work Experience Program. This part-time position helps with the recording and broadcasting of district events (concerts, board meetings, etc.) and rendering of videos as per the needs of the video-on-demand system for our K-12 teachers.

2. Non-instructional (Operational Technology)

Resource personnel must be available for staff and students for technical and logistical problems that arise. Technology components that are not working correctly and software programs that need “debugging” can result in considerable frustration amongst teachers and students, creating a feeling that the technology is more of a hindrance than an asset. A reliable tech staff will have the responsibility to address issues as rapidly as possible with a focus on customer service. In addition to maintaining all technical aspects, their duties include designing and implementing new system to reduce the need for outside consultants. If one piece of the “technology mix” is inoperable, student and staff access to technology will be limited. This is especially important when many of the technology services embedded in our K-12 program in
Hopewell Valley Regional schools are not just school- or district-based services but very visible community services. It is without a doubt that technology is integral to the operation of our schools. It is unrealistic to believe that the school district will have all of the answers all of the time. With that stated, we will continue to review the use of consultants who support us. Related to this is the need to cross-train existing technical staff so that they are of service across the district, no matter where the need.

- **Technology Interns & Junior Technology Interns (Level 1):** These technicians assist the building-based technicians in simple operations such as repairing hardware, replacing toner cartridges, simple software upgrades and installations.

- **Desktop Support Specialist (Level 2):** Each school is assigned a building-level technician who is responsible for overseeing the technology at that location. Currently there are five building-level technicians.

- **Active Directory / Windows Specialist & Macintosh Specialist (Level 3):** Both of these engineers serve as team leads to the building-based technicians and are charged with solving more complex issues. In addition, these two technicians are primarily focused on all server-related support.

- **Database Administrator:** The database administrator supports all major applications and the data integration between these systems.

- **Helpdesk Analyst II:** This analyst focuses on customer service / helpdesk and acts a direct liaison between the technicians and the end user. The helpdesk analyst’s responsibilities includes IP telephony, technology procurement and record management.

**Recommendations**

- The Supervisor of Educational Technology and the Administrator of Technology are to review and project staffing needs on a yearly basis and make budget proposals as necessary.

- Seek to remedy the problem of addressing video and TV studio technology support needs with a full-time staff member. This can come from adjustment of job duties within the existing technical support staff or be a newly proposed position. With the growth and upgrading of district video resources, time allocations for technical support is essential.

- Continue the elementary technology specialist role in support of teachers

- Continue to meld the elementary media and technology program together delivered by the media specialists as part of the direction instruction of students and technology planning with teachers.

- Continue the use of the CHS Cooperative Work Experience Program to assist with routine video services for teachers and students.

- Seek additional time of the high school technology specialist for staff support and technology integration. Two periods, in addition to the time of the CHS
Technology Trainer, will need to be expanded to meet the administrative and instructional delivery needs of the entire high school staff in the coming years.

IV. Evaluation Plan

The review, revision, adjustment, and evaluation of the goals and objectives of the Hopewell Valley Regional School District Three Year Technology Plan must be a continual process. The district administration and district technology department will monitor and reflect on the success of the technology plan by reviewing each of the recommendations made as part of the technology plan. Periodic updates and revisions will be brought to the district Board of Education, the Board of Education Technology Committee and will also be published on the school district web site. All components of the Three Year Technology Plan will be evaluated. Survey and evaluative instruments will be used to gather data relating to integration of technology within the curriculum as well as for determining if state academic standards and the development of life-long learning skills are achieved.