Piscataway Township Schools 2013-2016 Local District Technology Plan

Three-Year Local School District/Nonpublic School/Charter School Technology Plan

July 1, 2013 through June 30, 2016

County: Middlesex		
District/Charter School of Affiliation: Piscataway Township Schools		
District Code: 4130	Grade Levels: PK- 12	
Website: www.piscatawayschools.org		
Is the district compliant with the Children's Internet Protection Act (CIPA)? ☑ YES ☐ NO		
Please indicate below the person to contact for questions regarding this technology plan:		
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NJ Department of Education
District/Nonpublic School/ Charter School
Three-Year Educational Technology Plan Checklist

<IMPORTANT>-BEFORE COMPLETING CHECKLIST READ:

To comply with the E-Rate program, complete the components associated with the unshaded boxes in the REQ'D BY E-RATE column. Completion of other components are recommended but not required. Submission procedures found here:
Three-Year Educational Technology Plan Checklist Submission Procedure: 2013-2016

This Document in: PDF | Microsoft Word

DIRECTIONS: Place a check ☑ in the unshaded **COMPLETED** column when the **TASK** has been completed.

TASK	Completed	
	Req'd by E-Rate	**Not req'd E-Rate**
DATE: Provide your educational technology plan's creation date (the date when the technology plan first contained all of the required elements in sufficient detail to support the products and services requested on the Form 470). (http://www.usac.org/sl/applicants/step01/default.aspx) **Tech Plan creation date**: **___March 15, 2013_____**	✓	

DIRECTIONS:

- Answers to questions regarding e-rate compliance: http://www.usac.org/_res/documents/sl/pdf/handouts/TechPlan_QuestionstoConsider.pdf
- Address the numbered items below in a separate District/Nonpublic School/Charter School educational technology plan document.
- Indicate in the *PAGE #* column, the page number where the corresponding information is found.
- For purposes of this document, "educators" are defined as school staff who teach children, including librarians and media specialists.
- Sample table templates are provided (see links embedded in this document) to assist in the development of the educational technology plan. Please use these table templates unless information is already in a digital form.

	Indicate in the unshaded spaces the page number where the corresponding information is found	
Inventory Sample Table	**Req'd by E-Rate**	**Not req'd by E-Rate**
TECHNOLOGY INVENTORY: 1. Describe the technology inventory <u>needed to improve</u> student academic achievement in the 2013-2014 school year that informs the basis for the Form 470. Include in the description the internal connections and basic maintenance *<u>for 12 months of the e-rate funded year</u>*, such as the following areas: a) Technology equipment including assistive technologies b) Networking capacity c) Filtering method d) Software used for curricular support and filtering e) Technology maintenance and support f) Telecommunications equipment and services g) Other services **NOTE:** If this plan is intended to be used for three years of E-Rate funding, provide anticipated inventory information for all three years. See Inventory Sample Table. Definitions of items eligible for e-rate discounts: http://www.usac.org/sl/applicants/beforeyoubegin/eligible-services/default.aspx	5 - 27	
NEEDS ASSESSMENT: 2. Describe the needs assessment process that was used to identify the necessary telecommunication services, hardware, software, and other services to improve education.	28 - 32	

	Indicate in the unshaded spaces the page number where the corresponding information is found	
	Req'd by E-Rate	**Not req'd by E-Rate**
THREE-YEAR GOALS: **3.** List clear goals for 2013-2016 that address district needs. There must be strong connections between the proposed physical infrastructure (bandwidth, cabling, electrical systems, networks) and goals. Include goals for using telecommunications and technology that support 21st century learning communities. E-Rate requirements: www.ecfr.gov	33 - 35	
THREE-YEAR IMPLEMENTATION AND STRATEGIES TABLE: Implementation Activity Sample Table 4. Describe the realistic implementation strategies to improve education. Include in the description the timeline, person responsible and documentation (or evidence) that will prove the activity occurred. Address only 'a' and 'b' below to meet e-rate requirements. Address all areas below to continue planning for a technology-rich learning environment.	36- 46	
a. telecommunications,		
b. information technology,	38-46	
c. educational technology (including assistive technologies), and		39-46
d. student technology readiness in preparation for online testing in 2014-2015.		39-46
PROFESSIONAL DEVELOPMENT STRATEGIES: Professional Development Sample Table 5. Professional development strategies should ensure that staff (teachers, school library media personnel and administrators) knows how to effectively use the technologies described in this plan to improve education, and will continue to support identified needs through 2016. *Address only 'a' below to meet e-rate requirements. Address all areas below to continue planning for a technology-rich learning environment.* Describe the planned professional development strategies by addressing each of the following questions: a) How will ongoing, sustained professional development be provided to all educators, (including administrators) that increases effective use of technology in all learning environments, models 21st century skills, and demonstrate learning experiences through global outreach and collaboration in the classroom or library media center?	47 - 50	
b) What professional development opportunities, resources and support (online or in person) exist for technical staff?		50
c) How will professional development be provided to educators on the application of assistive technologies to support educating all students?		50
EVALUATION PLAN: Evaluation Plan Sample Table 6. Describe the evaluation process that enables the progress and effectiveness of goals to be monitored.	51-54	
7. Describe the process to make mid-course corrections in response to new developments and opportunities as they arise.	54	
FUNDING PLAN (July 2013 – June 2014): Funding Plan Sample Table 8. Provide the anticipated costs for **2013-2014** by source of funds (federal, state, local and other) and include expenses such as hardware/software, digital curricula including NIMAS compliance, upgrades and other services including print media that will be needed to achieve the goals of this plan. Allow specific provisions for interoperability among components of such technologies to successfully achieve the goals of this plan.		55-57

Stakeholders

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TECHNOLOGY INVENTORY

1. Technology Equipment Needed to Improve Student Achievement

The Piscataway Township School District has a large existing base of equipment and software that is used in fulfillment of both its educational and administrative computing needs. There are over 3,000 individual components connected in a distributed wide area Ethernet system, which is used to carry educational and administrative communications between the district's fifteen physical facilities. The following chart is an overview of planned equipment improvements to the district's current inventory needed to improve student achievement over the next three years.

Planned Technology Equipment Improvements (2013-2016)

Grade Level	2013-2014	2014-2015	2015-2016
K-3	Purchase 1 cart of 12 laptops per building in preparation for PARCC (2nd & 3rd grade)	Purchase 4 carts of 12 laptops per building in preparation for PARCC (2nd & 3rd grade)	Purchase 2 carts of 12 laptops per building
	Upgrade phone system G650 gateways replacing digital phones in the main office.	Upgrade Media Center student station computers(E/R/G) and 3rd gr. classrooms (K)	
		Upgrade teacher desktops to Windows 7	
4-5	Purchase 2 carts of 12 laptops per building in preparation for PARCC	Replace tech lab desktops with Windows 7 desktops	Purchase 2 carts of 12 laptops per building
	Upgrade phone system G650 gateways replacing digital phones in the main office.	Upgrade teacher stations and media center computers to Windows 7	
		Purchase 8 carts of 12 laptops per building in preparation for PARCC	
6-8	Lease 7th grade teacher iPads	Replace 8th grade teacher Laptops	Lease 6th grade student ipads for 1-1 initiative
	Lease 6th grade student ipads for 1-1 initiative and in preparation for PARCC testing	Lease 8th grade teacher iPads	
	Purchase and install interactive projectors with Apple TV's in all 7th and 8th grade math classrooms	Lease 6th grade student ipads for 1-1 initiative	
	Upgrade phone system G650 gateways replacing digital phones in the main office.	Upgrade 6th and 7th grade teacher laptops	

Grade Level	2013-2014	2014-2015	2015-2016
9-12	Upgrade/Replace 200 Windows XP teacher Stations	Purchase 180 student laptops in preparation for online assessment (PARCC)	Lease iPads for students in grade 9 as part of district's 1-1 computing initiative
	Replace/Upgrade 210 student desktops	Upgrade WiFi AP's to support PARCC and to prepare for iPad environment following year	Replace new media suite video editing lab
	Replace/Upgrade 192 student Laptops in preparation for online assessment (PARCC)	Lease iPads for 9th grade teachers as part of district's 1-1 computing initiative	
District	Upgrade Microsoft Exchange eMail Server from 2007 to 2010		

1.a.) Technology Equipment Inventory Including Assistive Technologies

Educational Component Computer Architecture

Over 2,000 computers in the school district come under the category of Educational Component Computer Hardware. This is the majority share of equipment deployed by the district. Due to the large disparity in equipment age, it is difficult to make broad generalizations that apply to all equipment type. In order to provide an overview of the district, the equipment is divided into several broad categories.

File Servers

District file servers have been added, upgraded or replaced in order to better match the demands of the curriculum and usage patterns of the schools. The K-3 schools are using a combination of Windows 2008 server and building based Macintosh OS X servers for instructional support. The middle and high school faculty and staff are served by Windows 2003 and 2008 servers centrally located in the George S. Patton building.

Central servers supporting district wide functions for student and financial management, library cataloging are Widows 2003/2008.

Because all of these systems are currently in use, a description of each system follows for reference purposes.

Microsoft Windows Servers (2003/2008)

Several different configurations of 2003/2008 servers have been put into service throughout the district, each tailored to the needs of its designated user community. All servers are configured within a Microsoft Windows Active Directory architecture. The root domain in the forest is Ptschools.org, used for district wide services and contains two child domains: The PSD.ptschools.org child domain for administrative purposes, and HS.ptschools.org child domain for students and faculty. All students are assigned logins and passwords in the HS child

domain that correspond to their student ID and their data is stored using network drives and variations of roaming profiles.

All faculty and administrators have been assigned logins and passwords that follow the first initial/last name formats. They also store their data using network drives and variations of roaming profiles. Each administrator and faculty member is also assigned an email address on the district's Microsoft Exchange Email server. All of the Windows 2003/2008 servers are based on Intel architectural hardware in order to leverage cost effectiveness. Some of the Windows 2008 servers are implemented as virtual servers with the use of Microsoft HyperV and VMWare.

Macintosh OS X Servers

Macintosh OS X Servers running Macintosh Manager and Workgroup Manager are installed in the K-3 environment. Macintosh Manager is used to manage legacy OS 9 clients running older software packages, such as ClassWorks on older iMac, eMac and G3 AIO student stations. Macintosh OS X server and clients require Workgroup Manager and Apple Remote Desktop, which enhances the management of Macintosh users.

The installation of Macintosh OS X servers was designed to meet the management challenges K-3 users present by providing an easy to use, stable, and consistent environment. Each server has the capacity for file management, print and web service.

Workgroup Manager and Macintosh Manager are configured to deliver applications appropriate to individual users, wherever they generally access computers in their building. In addition, when a user logs in over the network their documents are available even when they were created at a different workstation.

In the high school's New Media Suite, three Intel Xeon dual core 2Ghz Xserve servers are installed. Workgroup Manager is installed on these servers to deliver applications appropriate to individual users working in the New Media Suite. Xsan software is installed to bridge user files with Xsan storage units. Apple's open directory is integrated with the district's active directory, allowing New Media Suite students to log into the Macintosh computers using the same username and password district wide, as they would on any Windows desktop in the high school. Two Xsan storage units consisting of 10 Terabytes of storage are available over the district's LAN and its own internal fiber-optic network to allow students in the New Media Suite to edit and play streaming video.

Educator Access in Instructional Areas (Teachers and library media specialists):

Educational technology is accessible to every educator in every classroom throughout the district. Every classroom in the High School and elementary schools grades K-5 is equipped with a "Teacher Workstation" loaded with Microsoft's Office Suite as well as certain district owned content specific software. In the Middle Schools every teacher is given a mobile laptop capable of wireless connectivity in every building in the district. Teachers' laptops are also equipped with Microsoft's Office Suite as well as certain district owned content specific software whenever applicable. In addition, every 6th and 7th grade teacher has also been issued an iPad tablet for instructional use in their classrooms and beyond. These mobile devices allow for instructional areas to be extended beyond the classroom walls. All educators have access to online educational resources available on every computer within the district. In addition to individual access, we have mobile laptop carts and various computer labs including the media centers throughout the district. These instructional areas are made available to every educator and their classes throughout the school year.

Administrative Access in Their Workplace:

In a district where communication is key, administrative computers have Microsoft Outlook installed to send and receive emails, communicate efficiently and offer instant collaboration between various departments allowing smoother operations. Every computer also has the Microsoft Office Suite installed as well as our Financial and Personnel software, otherwise known as Systems 3000. Each administrative computer has access to the World Wide Web over the district's WAN and includes access to our in-house and online Student Management software, Genesis. In addition to individual laptops and workstations for administrators, we also provide three mobile notebook carts. These mobile carts can be transported to various locations across the district to give all employees access to hands-on training in addition to access to online trainings and webinars.

To enhance communication even further, administrators and key staff members in the district are given a BlackBerry device, Android Smart-Phone, or iPhone to enable a constant flow of communication and to ensure that district operations continue without interference or lack of communication. In addition, as part of the EE4NJ grant, all school and central office administrators have been issued iPads in order to use an online teacher effectiveness evaluation tool (Teachscape) to record evidence and collect data during classroom observations.

Computer Environment

High School

The faculty and student computers in the high school all login to the HS domain onto Windows servers that are rack mounted in the building and are designed to allow each student and faculty member to have a secure place to save files.

Multi-subject area labs are provided in order to maximize efficient use of space and for flexible scheduling. There is an open lab located in the Patton wing and two others in the Anthony wing: one in the Distance Learning Center and the other is located in the Media Center. Also, there are content area specific labs set up for the business department (3 labs), computer applications/programming (1 lab), VPPA (10 labs), English department (1 lab), and career center (1 lab). The computers in all of these labs are at least Pentium IV computer systems and consist of Dell Optiplex 745, 755/760, 780, 790 models or Gateway Profile 6 or E4620 computer.

Each of these PCs is commonly used to run commercial applications in a stand-alone model, with output in the form of documents and reports. Each of the labs has one or two HP LaserJet black and white networked printer and an HP LaserJet Color printer.

Because of the use of the electronic grade book and attendance program, Genesis, every instructional classroom in the HS is equipped with either a Dell Optiplex or higher Pentium IV computer with an individual HP DeskJet or LaserJet printer.

To take advantage of the building wide Wi-Fi network and to increase student access to computers, 6 mobile locking carts for notebook computers have been deployed in the George S. Patton wing. Four of the carts contain 12 notebooks each and the other two contain 6 each. Two mobile locking carts contain Dell Latitude D600 series notebooks.

The Social Studies and Math departments have two mobile locking carts for use. These carts each contain 12 Gateway M255-E notebooks. The World Language department has one mobile locking cart containing 12 Gateway M295E Tablet computers. The Science department has 5

mobile locking carts. These carts each contain 6 Gateway M155 series Tablet computers. Each computer has software to support curricular needs.

Piscataway's New Media Suite is home to the School's TV & Radio Studio. 22 Dual Core Intel Xeon 3Ghz Apple Mac Pro computers running 10.4.11 and 10.5.6 operating system are installed around the studio. Final Cut Studio 2.0, Adobe Creative Suite 3, Frames 2.0 and Microsoft Office 2004 is installed on each of these computers. In the NMS are also 6 Gateway (Profile 6 and E 9232T) Windows XP computers that have Adobe Creative Suite 3, Frames 2.0 and Microsoft Office 2000 installed for student use and addition 2 Gateway Profile 6 for teacher use.

Middle Schools

To take advantage of the gigabit network all middle school students log on to a centrally located VMWare Virtual Windows 2008 server in the George S. Patton building data room. This server is designed to allow each student and faculty member to have a secure place to save files. The servers are equipped with an Uninterruptible Power Source (UPS) to provide a continuous source of power in the event of power brownout or short duration of power failures. This is used to prevent unscheduled, and potentially damaging, system shutdowns due to power disturbances.

Each middle school has one Media Center equipped with a lab of 28 computers. These stations are Dell 755's with 19in. monitors. Each school also has one tech lab equipped with 30 student desktops and 1 teacher station. All these stations are Gateway Profile 6 computers.

All middle schools are equipped with several mobile computer carts of 12 computers each to be shared among all students in all classes.

In November 2013 a 1-1 computing (iPad) initiative was implemented at all three middle schools. In the first phase of this initiative, all 6th grade students and teachers were issued an iPad. Phase two of the initiative will continue during the 2013-2014 school year when all 6th and 7th grade students and teachers will be issued iPads. Phase three of the 1-1 initiative will continue in the 2014-2015 school year when all middle school students and teachers will be issued iPads (grades 6-8). The iPads are managed through a cloud based mobile management system supplied by Lightspeed. Additionally, global (in and out of district) content filtering is implemented by a Lightspeed Rocket appliance housed in the district data center.

Each classroom in the middle school is equipped with a large screen monitor which allows teachers to display their computer desktop for whole class or small group instruction. Additionally, mobile projector carts are available classroom use.

Intermediate Schools

The intermediate schools utilize HP Proliant Windows 2003 servers that are housed at the George S. Patton data room. These servers allow each student and faculty member to have a unique login and a secure place to save files.

The intermediate schools also utilize HP Proliant Windows 2003 servers that are housed at the George S. Patton data room running Read180 Enterprise addition that allow the application to be run on Gateway Profile 5.5 computers (Arbor 24, King 12) in each building.

All classrooms in the intermediate schools have one station configured as a teacher station for instruction and access to Genesis. These stations are either a Dell Optiplex 780 computers. A majority of the classrooms have a Gateway Profile 5.5 all-in-one or a Gateway Profile 6 all-in-on computer station configured as a student station.

Each of the two intermediate schools has a technology hub designed with 30 Gateway Profile 5.5 all-in-one computers. Each building also has two wireless mobile laptop carts with printers. One cart contains 6 Gateway M275 Tablets and 8 Gateway M265 laptops. The second cart contains 9 Dell D630 laptops. Each of the two intermediate schools also has 16 Dell Optiplex 780 computers in the Media Center.

Elementary Schools

An elementary school classroom can have from one to four MACS installed for student use. The student station MACs can be an I-Mac, E-Mac, G3 all in one computer or an G4 tower running OS 9.2 and connected to a Macintosh OSX server running Macintosh Manager and ClassWorks.

Every classroom has a Windows XP teacher station with Microsoft Outlook 2007 for accessing the district's Microsoft Exchange server e-mail account.

Randolphville, Grandview and Eisenhower school's media centers have a mini-lab with 12 Windows XP computers configured for student use and one Windows XP teacher station.

Each school contains at least 1 Netbook Cart containing 12 Dell Latitude 2100 Netbooks running an Intel Atom 1.6 GHz with 2 Gigs of RAM, 10" Touch Screen Display, These netbooks are configured to connect to a wireless router and print from a printer installed on their mobile cart. These netbooks are stored nightly is a dedicated/secure area for recharging.

Each netbook is running Windows XP Professional and has the following software installed: Classworks ver. 5.8, Office 2007, Google Earth and Internet Explorer. Riverdeep Math Software, Kid Pix 4 Network, Kid Works Deluxe are also available on each netbook from a Window's 2008 server house in the High School Data room via the district's network.

Apple Macintosh G3

Apple's PowerPC model, the G3, comes in an all-in-one configuration, the all-in-one model are configured for use in the K3 schools' classroom for student use.

Apple Macintosh G4

Apple's PowerPC model, the G4, comes in a mini tower configuration. The G4 were installed in the K-3 schools as part of Basic Skills initiative. These machines run Mac OS 9.x and are supported by Macintosh Manager.

I-MAC / E-MAC

The district's I-Macs are running 500 MHz processors and the E-Macs are running 700 MHz processors or 1.42MHz and installed in K3 classrooms as student stations.

Children's Corner

The Children's Corner Pre-Kindergarten School is connected by a T1 link to the district's Windows 2003/2008 domain controller and file server in the George S. Patton building data room. This serveris designed to allow the building manager and faculty members to have a secure place to save files. The servers are equipped with an Uninterruptible Power Source (UPS) to provide a continuous source of power in the event of power brownout or short duration of power failures. This is used to prevent unscheduled, and potentially damaging, system shutdowns due to power disturbances. The technology in the building consists of a mobile cart with 30 iPad 2's and 7 Gateway E4620 desktop computers for administrator and teacher use

Overview of Deployment

School administration uses IBM compatible PCs as for business applications such as MS Word, Excel, PowerPoint Internet access, etc. and for all school clerical operations. These stations are typically Dell Pentium class desktops ranging from 333 MHz to 3 GHz.

Dell Corporation Desktop Computers

In a move to standardize and stabilize district computing, new desktop computers purchased are from Dell Corporation. They offer certain guarantees of availability and support. Dell computers have been purchased for use throughout the district's administrative offices and academic classrooms and labs.

All Dell computers are members of the OptiPlex family equipped with Pentium II or III class CPUs. Varying from 333MHz – 2.8 GHz, 32 – 384MB RAM, 3 – 40 GB hard drives, 15" or 17" color SVGA monitors with speakers built in, sound card, 3.5 floppy drives and are all Ethernet capable. Some of the computers are supplied CD and DVD burners.

These computers have Windows 2000, or Windows XP operating system installed on them. All computers have been purchased with Dell's three (3) year next day onsite warranty.

Notebooks

The middle schools each have 6th, 7th, and 8th grade Dell Latitude and Gateway notebook carts.

The Dell Latitude models (C600, C610 and D600) include 256Mb-512Mb of RAM, 2 three-hour Lithium Ion batteries, DVD/CD player, 3 ½ Floppy drives, 14" LCD display and 120VAC power supply. The Dell Latitude D630 includes an Intel Core 2 Duo Processor, 2 Gigs of RAM, 80 Gig Hard drive, 8 cell battery, DVD/CD player, 14" WXGA display and a 120VAC power supply. The Gateway model E-295C tablet includes an Intel Core 2 Duo processor, 2 Gigs of RAM, 80 Gig Hard drive, 8 cell battery, DVD/CD player, 14" WXGA TFT display with Stylus and a 120VAC power supply and Windows XP Tablet Edition Operating System.

Gateway and Dell notebooks have been distributed in the HS. The 4 notebook carts containing Dell D600 notebooks in the HS are equipped with 512Mb of RAM, 2 three-hour Lithium Ion batteries, DVD/CD player, 3 ½ Floppy drives, 14" LCD display and 120VAC power supply. 2 carts containing the Gateway model M255-E in the HS feature an Intel Core 2 Duo processor, 8 cell battery, DVD/CD player, 14.1" widescreen display, 512Mb RAM, and 80 Gig Hard drive and a 120VAC power supply. The 1 cart containing the Gateway model E-295C tablet featuring an Intel Core 2 Duo Processor, 2 Gigs of RAM, 80 Gig Hard drive, 8 cell battery, DVD/CD player, 14" WXGA TFT display with Stylus and Windows XP Tablet Edition Operating System and a 120VAC power supply. 1 Netbook Cart containing 6 Dell Latitude 2100 Netbooks running an Intel Atom 1.6 GHz with 2 Gigs of RAM, 10" Touch Screen Display.

In the 4-5 buildings and select administrators, the Gateway Tablet PC features Intel Pentium M 1.0GHz Ultra Low Voltage Processor, 256MB of RAM, 40GB Hard Drive, 12.1" XGA Touch Screen LCD, Windows XP Tablet Edition Operating System. Gateway M265 notebook includes an Intel Core Duo processor, 2 Gigs of RAM, an 8 cell battery, DVD/CD player, 14" WXGA TFT display and a 120VAC power supply. The Dell Latitude D630 includes an Intel Core 2 Duo Processor, 2 Gigs of RAM, 80 Gig Hard drive, 8 cell battery, DVD/CD player, 14" WXGA display and a 120VAC power supply.

These notebooks have been configured with a core of applications that include Internet Explorer, Microsoft Office Suite, Inspiration and student/teacher subject specific software. Student notebooks are stored in lockable mobile carts. These carts are designed to be stored nightly in a dedicated/secure area for recharging.

Printing Services

Overview

Printing services throughout the district are generally provided using network printers. The types of printers, communications protocols, and deployment of equipment vary. These are grouped into three broad categories of usage.

Elementary Educational Printing

The Elementary Schools utilize printers capable of communicating with the Macintosh client stations used in the building. These printers communicate using EtherTalk and are hard wired directly to an Ethernet port.

HP LaserJet 4000N printers: These printers support TCP/IP in addition to EtherTalk. The HP 4000N is designed for sharing and has a significantly longer duty cycle.

Printers are located in classrooms, labs and libraries for use by students and faculty.

HP4500/4550/4600/4700 color laser printers are installed for high quality color printing. They are located in every school's main office, the K-5 libraries, the middle school labs and art rooms. HP 2100 and P3005 laser printers are installed in each of the middle schools. They are installed on mobile carts containing laptops that have been configured to use them. An additional HP 2100 printer is located in each middle school faculty room for teacher use.

High School Educational Printing

Six HP 2300 and two P3005 LaserJet printers have been installed on the mobile carts. Each teacher station in the HS is equipped with a personal HP DeskJet or LaserJet printer. All lab areas have one or two-networked HP LaserJet black and white printer and one networked HP LaserJet Color printer.

Administrative Printing

Administrative printing is handled by networked Xerox Work Centre and/or HP LaserJet 4000 printers or higher. Printing of administrative color documents is handled by a local networked Xerox Work Centre.

Scan to eMail

Administrative scanning and emailing of documents is handled by networked Xerox Work Centre. This capability is available at the Administration Building and the High School.

Direct AppleTalk Printing Services

In the K-3 environment AppleTalk printing protocol has been used to print from student client stations. Printed data has traditionally been queued in the client Macintosh workstation, and printed directly to the printer via the Ethernet connection. These printers also support TCP/IP and PC's in addition to EtherTalk.

1.a.i) Assistive Technology Devices

The district integrates assistive technology devices to accommodate student needs by working in cooperation with special services, curriculum and instruction, commission of the blind, and special education teachers who work with the students' parents or legal guardians. The IT department places a high priority on any special services requests for installation of hardware or software that is needed to accommodate a student based on his or her Individualized Education Plan (IEP) as determined by the above mentioned departments. The IT department response time is usually within 24 hours of such requests.

Devices and Software

- Earobics (K-12 speech)
- Braillewriters and computer software JAWS provided by the Commission for the Blind 12 students (including out-of-district placements)
- CD players - Books on CD
- Reading Pen (1 high school student)
- Compression Vest
- DynaMyte 3100 communication device
- Dynavox Series 4 DV4
- Dynavox Series 4 MT4
- FM system
- BigShot – Screen Magnification for the vision impaired
- iPad tablets for the visually impaired, autistic verbal and non-verbal students
- iPad tablets for students who need Proloquo2Go to communicate
- Interactive white boards
- Touchscreen desktops
- Read out Loud
- Write out Loud
- CoWriter2

1.b.) Networking Capacity

The District's (WAN) is based around a managed Gigabit fiber WAN infrastructure. A Cisco 4510R chassis located in the Patton MDF is the core switch/router for the fiber WAN. That Cisco 4510R switch is equipped with redundant switch-fabrics and power supplies. The Cisco 4510R switch provides Gigabit connectivity to the (4) Patton IDF's, the Anthony HS [2-Gig link], the Admin/BOE building, three Middle Schools; Conackamack, Schor, and Quibbletown, 2 Intermediate Schools: King and Arbor and 4 Elementary Schools: Knollwood, Randolphville, Grandview and Eisenhower. Additionally, Children's Corner Preschool is connected via a T1 point to point circuit. Each building is defined as a separate network for the TCP/IP and AppleTalk protocols.

Today the Piscataway High School Patton Building is the central hub for the district's Wide Area Network (WAN). In addition to the WAN hub and distribution facility, the Patton Building is also the location where Internet connectivity is handed off to the district by two Internet service providers. Every building in the district has a WAN connection to the Patton MDF Cisco 4510 core switch via Gigabit fiber. This fiber is connected through managed repeaters in each building provided by the company that implemented the fiber [Sunesys]. If a fiber link should go down, Sunesys would be notified through their monitoring equipment.

The Anthony building is connected to the Patton Cisco 4510 switch via a 2 Gigabit aggregated-link over the new single-mode fiber between the two buildings. Cisco switches in each of the

IDF's and the upstairs Business Lab provide Gigabit connectivity throughout the Anthony building. The Anthony IDF-1 switch also provides a copper Gigabit link to the IT center.

All other buildings are connected by a Gigabit fiber connection to the Patton core switch. Within each of these buildings, the MDF switch provides Gigabit connectivity to any other IDF closets inside the building. The end result is Gigabit connectivity from any data closet in the District to any other Data closet in the District.

Each building typically contains two or more distribution points, which are interconnected via fiber optic connections. Each building contains at minimum two Ethernet distribution facilities.

Each distribution rack contains one or more 3Com SuperStack 10BaseT switches, Cisco 3750G-24TS-S 24-port 10/100/1000 switch, Cisco 3560-24PS-S 24-port 10/100 switch PoE (Power over Ethernet), or HP Pro-Curve 3550-48-SMI in a quantity adequate to provide all the connection requirements for the portion of the school being serviced. Each switch provides either 12, 24 or 48 10BaseT, 100BaseTX, or 1000BaseTX connections via RJ-45 connectors.

Each classroom in the district typically contains five Ethernet connections. Classrooms designated as computer laboratories contain fifteen (15) to thirty (30) Ethernet connections and very small classrooms may have only one or two Ethernet ports available. Administrative offices typically have one or two Ethernet connections available

All computers and printers that are available for use on the district-wide network are connected via this central Ethernet communication system.

Network Switch Details

Manufacture	Part #	QTY	Description
			Piscataway High School – Susan B. Anthony Building (East Wing)
			MDF
3COM	3C16950	7	Superstack II 1100 Ethernet Switch – 26 Ports
3COM	3CR17561-91	1	24-port 10/100 switch
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	3750-24PS-S	1	24-port 10/100 switch PoE
CISCO	2960G-24TC-L	3	24-port 10/100/1000 switch
HP	2910G-24	1	24-port 10/100 switch
			IDF1 – B wing (by Child Study offices)
3COM	3C16950	3	Superstack II 1100 Ethernet Switch – 26 Ports
3COM	3300-24P	1	24-port 10/100 switch
3COM	4400-24P	1	24-port 10/100 switch
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	3560-48PS-S	1	48-port 10/100 switch PoE
CISCO	2960S	2	48-port 10/100 switch
HP	2910G-24P	1	ProCurve 24-port 10/100/1000 switch
			IDF2 – F100
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	2	24-port 10/100 switch PoE
CISCO	2960G-48TC-L	2	48-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch

CISCO	2960-8TC-L	1	8-port 10/100 switch
			IDF3 – C wing (Physics)
3COM	3C16950	6	Superstack II 1100 Ethernet Switch – 26 Ports
3COM	3C16450	1	Superstack II Ethernet Switch – 24 Ports 10/100
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
HP	2510G-24	1	24 port 10/100 switch
			IDF4 – A wing (Main office)
3COM	3C16950	1	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
			IDF5 (D215)
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
CISCO	2960G-48TC-L	1	48-port 10/100/1000 switch
			IDF6
CISCO	2960S		24-port 10/100 switch
CISCO	2560CG	1	8-port PoE
			IDF7 (D242)
HP	J4903A	1	Procurve Switch 2824 – 20 10/100/1000 Ports
HP	J9279A	1	ProcurveSwitch 2510G - 24 10/100/1000 Ports
			Piscataway High School – GS Patton building (West Wing)
			MDF
3COM	3C16950	1	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	4510R	1	Catalyst 4500 Chassis
CISCO	3750G-24TS-S	2	24-port 10/100/1000
CISCO	1841	2	Integrated Services Router
CISCO	2960G-24TC-S	1	24-port 10/100/1000
CISCO	ASA 5520	1	Adaptive Security
DELL	6224	2	PowerConnect 24 port 10/100/1000
			IDF1 (Main office)
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	2960G-24TC-L	1	24-port 10/100/1000
CISCO	2960-24TT-L	1	24-port 10/100
			IDF2 (Addition)
3COM	3C16950	7	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	2960-24TS-L	1	24-port 10/100/1000
CISCO	3560CG-PoE	1	8-port 10/100/100
			IDF3 (2nd floor)
3COM	3C16950	5	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
HP	2510G-24	1	24 port 10/100 switch

			IDF4 (closet by Nurse)
3COM	3C16950	3	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	2960G-48TC-L	1	48-port 10/100/1000 switch
CISCO	2960-24TT-L	1	24-port 10/100 switch
			Piscataway High School – (South Wing) – **MDF**
CISCO	3560-48PS-S	1	48-port 10/100/1000 switch PoE
CISCO	3560G-48TS-S	5	48-port 10/100/1000
			IDF1
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	3560G-24TS-S	1	24-port 10/100/1000 switch
			Administration Building
			MDF
3COM	3C16950	1	Superstack II 1100 Ethernet Switch – 26 Ports
3COM	3C16985B	1	Superstack II 3300 Ethernet Switch – 24 10/100 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24 port 10/100/1000 switch
CISCO	2960S	1	24 port 10/100/1000 switch
CISCO	3560CG	1	8-port switch PoE
			IDF1
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	3560G-24PS-S	1	24-port 10/100/1000 switch PoE
CISCO	2950	2	24-port 10/100 switch
			Quibbletown School
			MDF
3COM	3C16950	5	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port switch PoE
			IDF1 - Cafeteria
3COM	3C16950	4	Superstack II 1100 Ethernet Switch – 26 Ports
3COM	3C16985B	1	Superstack II 3300 Ethernet Switch – 24 10/100 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	2960S	1	24-port 10/100 switch PoE
CISCO	2960C	1	8-port 10/100/1000 PoE
			IDF-Tech
CISCO	2960G-24TC-L	2	24 port 10/100/100 switch
			IDF2-Science
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	2560CG	1	8-port PoE
			IDF3-Room 35

3COM	3CR17332-91	1	18-port 10/100 switch
			IDF4-Media Center
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
			T. Schor School
			MDF
3COM	3C16950	6	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	3750-24PS-S	1	24-port 10/100 switch PoE
CISCO	3560-CG-PoE	1	8-port 10/100 switch PoE
CISCO	2960-PoE	1	8 port 10/100/1000 switch PoE
			IDF1
3COM	3C16950	5	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	2960-C	1	8 port 10/100/1000 switch PoE
CISCO	2960-S	1	24-port 10/100 switch PoE
			IDF2-Media Center
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	3560-CG	1	8-port 10/100 switch PoE
			IDF3-Tech Lab
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
HP	J4903A	1	Procurve Switch 2824 – 20 10/100/1000 Ports
			IDF4-New Wing
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	3560-CG	1	8-port 10/100 switch PoE
			Conackamack School
			MDF
3COM	3C16950	5	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
			IDF1-Cafeteria
3COM	3C16950	4	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	3560-CG	1	8-port 10/100 switch PoE
CISCO	2960-C	1	8 port 10/100/1000 switch PoE
			IDF2-Library
Cisco	2960-24	2	24-port 10/100
			IDF3-Tech Lab
CISCO	3560-24PS-S	1	24-port 10/100 switch PoE
CISCO	3560-CG	1	8-port 10/100 PoE
HP	J4903A	1	Procurve Switch 2824 – 20 10/100/1000 Ports
			IDF4- Science

CISCO	3560-24PS-S	1	24-port 10/100 PoE
CISCO	3560-CG	1	8-port 10/100 PoE
CISCO	2960-C	1	8-port 10/100/1000 PoE
			Arbor School
			MDF
3COM	3C16950	3	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
			IDF1
3COM	3C16950	3	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port 10/100 switch PoE
			IDF2
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port 10/100 switch PoE
CISCO	2960G	1	24-port 10/100/1000 switch
			IDF3- New wing
CISCO	2970G-24TS-E	2	24-port 10/100/1000 switch
CISCO	2960G	1	24-port 10/100/1000 switch PoE
			King School
			MDF
3COM	3C16950	4	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	2960-24PS-L	1	24-port 10/100/1000 switch PoE
			IDF1
3COM	3C16950	6	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	2	24-port 10/100/1000 switch
CISCO	3560-CG	1	8-port 10/100 PoE
			IDF2 – New wing
CISCO	3560G-24TS-S	2	24-port 10/100
CISCO	3560-CG	1	8-port 10/100 PoE
			IDF3-Storage Room
3COM	3C16950	1	Superstack II 1100 Ethernet Switch – 26 Ports
			Eisenhower School
			MDF
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000
CISCO	2950-24	1	24-port 10/100/1000
CISCO	3560-CG	1	8-port 10/100 PoE
			IDF1
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch

CISCO	2960G-24TC-L	2	24-port 10/100/1000
CISCO	2950-24	1	24-port 10/100/1000
CISCO	3560-CG	1	8-port 10/100 PoE
			Grandview School
			MDF
3COM	3C16950	3	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port 10/100 PoE
			IDF1
3COM	3C16950	5	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	2	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port 10/100 PoE
			IDF2-New Wing
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	3560-CG	1	8-port 10/100 switch PoE
			Knollwood School
			MDF
3COM	3C16950	5	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
CISCO	2960S-24PS-L	1	24-port 10/100/1000 switch PoE
			IDF1
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
			Randolphville School
			MDF
3COM	3C16950	7	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	3750G-24TS-S	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port 10/100 switch PoE
HP	2810-24	1	24-port 10/100/1000 switch
			IDF1
3COM	3C16950	2	Superstack II 1100 Ethernet Switch – 26 Ports
CISCO	2970G-24TS-E	1	24-port 10/100/1000 switch
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
CISCO	3560CG	1	8-port 10/100 switch PoE
			Transportation Building (33 Ethel Road)
CISCO	3560G-24PS-S	1	24-port 10/100/1000 switch PoE
			Maintenance Building (13 Ethel Road)
3COM	3C16985B	1	Superstack II 3300 Ethernet Switch – 24 10/100

			Ports
CISCO	3560-24PS-S	1	24-port 10/100/1000 switch
			Children's Corner (Cabrini School)
CISCO	2960G-24TC-L	1	24-port 10/100/1000 switch
CISCO	1841	1	Integrated Services Router

Wireless Controller Appliance:

The central wireless LAN controller (WLC) is located in the Patton datacenter. It currently controls and manages wireless and wireless security in the Board Office and the K-8 schools. It includes a central wireless management application giving us visibility into wireless activity and performance in those buildings. We can control the access-points in those sites centrally from the WLC, making changes that affect those wireless users from the WLC. It also provides central monitoring capabilities for wireless utilization or issues at those schools.

Wireless Network (Administration Building)

The building-wide wireless network consists of 12 Cisco model 1142 a/g/n wireless access units. They are installed throughout the building for optimum wireless network coverage.

The Cisco model 1142 a/g/n wireless Access Point is a wireless access point that extends the range of our existing cabled Ethernet network, providing easy network connectivity for the building's laptop users. Each Access Point can provide high-speed wireless networking at up to 300 Mbit/sec and secure Internet access for the building's wireless laptop computer users.

Wireless Network (High School)

The wireless network deployment in the High School consists of (87 total - (34) East Wing, (38) Patton (West) Wing, (15) South Wing) Cisco model 1100 B/G wireless access points. The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless network utilizing 802.1x through the PEAP protocol with WEP security, and a new wireless network supporting 802.11x through the PEAP protocol with WPA. The 802.11a/g/n (Wi-Fi) wireless completely covers the High School allowing the freedom to move the buildings 18 notebook carts, 1 netbook cart around the high school buildings. It also allows connectivity to wireless teacher desktops in some of the Science classrooms installed throughout the building.

Wireless Network (Middle Schools)

The wireless deployment in the Conackamack Middle School building consists of 20 Cisco model 1142 a/g/n wireless access points. The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless network utilizing 802.1x through the PEAP protocol with WEP security, and a new wireless network supporting 802.11x through the PEAP protocol with WPA.

The wireless deployment in the Quibbletown Middle School building consists of 19 Cisco model 1142 a/g/n wireless access points. The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless network utilizing 802.1x through the PEAP protocol with WEP security, and a new wireless network supporting 802.11x through the PEAP protocol with WPA.

The wireless deployment in the Schor Middle School building consists of 22 Cisco model 1142 a/g/n wireless access points. The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless network utilizing 802.1x through the PEAP protocol with WEP

security, and a new wireless network supporting 802.11x through the PEAP protocol with WPA.

Wireless Network (4-5)

The wireless deployment in the 4/5 intermediate schools covers the complete building by using Cisco model 1142 a/g/n wireless access points (Arbor 17, King 18). The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless network utilizing 802.1x through the PEAP protocol with WEP security, and a new wireless network supporting 802.11x through the PEAP protocol with WPA.

Wireless Network (K-3)

The wireless deployment in K3 elementary schools covers the complete building by using Cisco model 1142 a/g/n wireless access points (Knollwood 14, Randolphville 12, Grandview 18, Eisenhower 16). The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless network utilizing 802.1x through the PEAP protocol with WEP security, and a new wireless network supporting 802.11x through the PEAP protocol with WPA.

Wireless Network (Children's Corner)

The wireless network deployment in Children's Corner consists of 2 Cisco model 1131 B/G wireless access points. The AP's are configured to support multiple VLANs for supporting both the existing legacy wireless networks utilizing WEP security, and an 802.1x through the PEAP protocol with WEP security. The 802.11a/g/n (Wi-Fi) wireless covers Children's Corner and allows for use of a cart of 30 iPads as well as laptops for traveling administrators.

The typical configuration includes setting up the Access Point Ethernet interface and corresponding switch port as 'trunk' ports that support multiple VLANs, and configuring the Access Point radio to support the same VLANs through wireless. Each radio VLAN is tied to a wireless SSID and configured with certain wireless parameters.

System Protocols

The Ethernet/WAN network for the district carries Ethernet protocol packets, and these in turn are used to encapsulate other data transport protocols. The various protocols are used for varied purposes, which are documented here.

AppleTalk/EtherTalk

The AppleTalk/EtherTalk protocol is a routable and zoned protocol that is used by the Educational Component in the K-3 grades. This is used as the primary transport for the K3 Student classroom Apple Macintosh computers and for printers connected in that environment.

TCP/IP

TCP/IP is used primarily for Internet access and communication with file servers and printers. TCP/IP is also used to perform network management and carries the SNMP management information for switches, routers and other network devices that can be managed from a central location.

TCP/IP addressing used throughout the district is a private Class A networking scheme. Network Address Translation (NAT) is used to interface the Class A addressing scheme with the public Internet.

Network Administration

Most of the equipment being used for network support, including the switches, servers, and routers, can be remotely monitored and administered using SNMP, vendor-proprietary SNMP extensions or a web browser. A combination of Symantec PCAnyWhere, VNC, Putty, Dameware, Hyperterminal and Microsoft's Remote Desktop is used to remotely control and administer Microsoft servers.

Internet Capability

Elementary, Intermediate, and Middle schools, and District Administration connect to the Internet via a dedicated Cablevision Lightpath fiber circuit. The bandwidth of the circuit is currently 100 Mbps.

The High School Internet connectivity is supplied by Cablevision Power to Learn via a cable modem. The bandwidth of the circuit is currently 101 Mbps download and 15 Mbps upload. In the interest of access control and content filtering, SecureSchool's content filter has been installed at the Patton high School building to intercept all inbound and outbound Internet traffic on this ISP.

Voice over the Data network:

The Data network also supports Voice-over-IP [VoIP] communications for the Avaya phone systems in the K-12 buildings. A Virtual Local Area Network [VLAN] was created on the Cisco switches to carry all voice traffic. It is logically separated from the Data networks, and prioritized over any Data traffic. This design takes advantage of the available bandwidth provided by the Gigabit fiber WAN.

Outbound calls originating at the K-8 buildings utilize IP Trunking over the WAN to connect to the PSN through the High School phone switch.

1.c) Filtering Method

The content filtering methods used are as follows. McAfee Webwasher appliance is connected to a Lightpath 100Mbps fiber circuit for Internet connectivity to the K-8 school buildings and the district's administrative computers. Additionally a LightSpeed Rocket appliance is also connected to the Lightpath Internet circuit to provide content filtering to the Middle School iPads while connected to the Internet either via the district Internet connection or any wireless Internet connectivity available to the iPad. A SecureSchool appliance is connected to a Cablevision cable modem that supplies Internet connectivity and content filtering to the high school.

1.d) Software Used for Curricular Support and Content Filtering

Curricular Software

The district uses a variety of commercial software products in all K-12 schools that support both the Common Core State Standards, and the New Jersey Core Curriculum Content Standards. These products range from instructional software applications to productivity tools such as Microsoft Office Suite programs (Word, Excel, PowerPoint), and/or iTools such as Pages, Numbers, and Keynote. Online textbooks and other web-based resources such as World Book Online, Gale resources, Discovery Education, RazKids, Fitness Gram, and various other content specific software support and enhance student academic achievement. The media centers use Destiny, which tracks circulation, inventory, and provides an electronic card catalog. The library software, provided by Follet, runs on a dedicated Windows 2003 server.

Destiny is the library management service for all schools in the district and accessed via any web browser.

The district will continue to evaluate commercial software using district criteria. District Supervisors of curriculum will form committees for input and evaluation of applications, instructional software, online resources and integration of the Internet and distance learning to determine whether those resources support standards and promote student achievement while fostering collaboration, problem solving and creativity to provide the skills needed to meet the challenges of a 21st century global society.

Content Filtering

In addition to housing the WAN hub and distribution facility components, the Patton Building is also the location of the district's three content filters. A McAfee WebGateway content filter appliance is connected to the Lightpath 100Mbps fiber circuit for Internet connectivity to the K-8 school buildings and the district's administration computers. A LightSpeed Rocket appliance is also connected to the Lightpath Internet circuit to provide content filtering to the Middle School iPads. A SecureSchool content filter appliance is connected to a Cablevision cable modem that supplies Internet connectivity to the high school.

Other Software Services

Student Management Database

The student management database runs on two HP ProLiant Windows 2008 servers, one which implements the Genesis web application and the other runs the Oracle database. Connections to distributed district sites are via TCP/IP and available to the World Wide Web via username and password and SSL connections.

Genesis is the commercial software product used for our student database. The database provides a student profile that includes attendance, scheduling, grades/report cards, and registration. This database is also used for state reports for all students, K-12.

District Website

The district website, powered by SchoolWires, Inc. (soon to be migrated to SharpSchool) is accessible to all stakeholders to support the Accessibility Design, U.S. Section 508, Americans with Disabilities Act, Website Accessibility, ADA Compliance, Federal Accessibility Standards, US Section 508, Section 508, and Web Site Accessibility. The district and school websites provide a platform for student, teacher, parent communication through the use of social media tools such as blogs, forums, surveys, etc.

1.e) Technology Maintenance and Support

Maintenance

Technology hardware/software is maintained and repaired by the district's Information Technology (IT) department and tracked via via Magic help Desk (ticket system). The IT department schedules maintenance and upgrades. Technology is maintained and repaired unless it has been judged obsolete or a scheduled initiative will be replacing it within 3-6 months. Software upgrades are made on a necessity basis. Both hardware/software maintenance and repairs will become timelier as the IT staff increases.

Maintenance Contracts (all contracts are renewed yearly unless noted)

- Library/Media Software Maintenance – Destiny Library Services
- Transportation Software Maintenance – Versatran
- Wide Area Network Software/Hardware - Cisco Systems
- Administrative (Personnel, Financial) Software – Systems 3000, Inc.
- Administrative Server Hardware, software, and High speed Printers – Compaq/HP
- Phone system – Avaya, OSI
- Student Management System Software – Genesis
- Performance Plus (data analysis and curriculum mapping)
- Student Management System Hardware – Dell
- Virus software for PCs and servers, Email Spam filter – McAfee
- Mobile Management System - LightSpeed
- Blackberry Enterprise server – RIM (Research In Motion)
- AppleCare for district iPads - Apple

Technical Support

Technical support is provided by the contracted services listed above, the IT Director, IT Service Manager, IT technicians (4), Network Communications Specialist and building technology coordinators. Hourly, part-time technicians are employed for specific projects. Technical work is subcontracted to vendors for large projects or initiatives and managed by the district's IT Director and IT Service Manager.

1.f) Telecommunications Equipment and Services

District Telecommunication Systems

Building	Phone system	Number of ports	Number of lines
High School	Definity	325	2 PRI , 9 CO
Admin	Definity	92	1 PRI, 17 CO
Maintenance	Merlin +Avaya G350	7	6
Transportation	Connected to Maintenance via fiber	6	0
Conackamack	Merlin Legend	59	7
Schor	Merlin Legend	71	7
Quibbletown	Merlin Legend	72	7
Arbor	Merlin Legend	61	7
King	Merlin Legend	60	7
Grandview	Merlin Legend	62	7
Eisenhower	Merlin Legend	53	7
Randolphville	Merlin Legend	51	7
Knollwood	Merlin Legend	52	7
Children's Corner	Avaya G350	6	3

District Telephones

Building	Phone Models	Phone Quantity	Voice Mail Ports	Total Number of Phones
High School	4610 6408D 7403D 7405D 7406D	43 2 9 1 20	INTUITY 11	325

	7406+ 7410+ 8110 8410B 8410D 8434D 4610SW-IP	9 1 174 3 7 1 55		
Admin	7101A 7403D 7406D 7406+ 7407D 7410+ 7410D 7434D 8410B 8410D	33 15 18 4 4 1 1 1 5 9	INTUITY 11	92
Maintenance	4610sw-IP	7	INTUITY 11	7
Conackamack	BIS-10 BIS-22 8110	9 1 49	Merlin Messaging 4	59
Schor	BIS-34 BIS-10 8110	1 15 55	Merlin Messaging 4	71
Quibbletown	BIS-22 BIS-10 8110	1 12 59	Merlin Messaging 4	72
Arbor	MLX-20 BIS-10 8110	1 7 53	Merlin Messaging 4	61
King	MLX-20 BIS-10 8110	1 5 54	Merlin Messaging 4	60
Grandview	MLX-20 BIS-10 8110	1 7 54	Merlin Messaging 4	62
Eisenhower	MLX-20 BIS-10 8110	1 7 45	Merlin Messaging 4	53
Randolphville	MLX-20 BIS-10 8110	1 5 45	Merlin Messaging 4	51
Knollwood	MLX-20 BIS-10 8110	1 8 43	Merlin Messaging 4	52

Transportation	4621SW-IP	6	INTUITY 11	6
Children's Corner	4610SW-IP	6	INTUITY 11	6

Both the High School and Board of Education Administration buildings have Avaya Communication Managers release 3.1 with S87XX processors. G650 gateways at all K-8 schools connect via fiber except Children's Corner, which is connected to a T-1 data circuit.

All K-8 Schools are presently Merlin Legends w/Merlin Messaging auto attendants and fronted by CM gateways. The E-CAS Call Accounting System, used for call tracing, logs phone call information district wide is located at the high school.

Telephone calls from all K-8 schools destined to PSTN (Public Switched Telephone Network) are aggregated by an Avaya gateway connected to the building's Merlin System and LAN, switched across the district's WAN and connected to the PSN through the centralized district phone switch located in the Patton building. Connection from the Patton phone switch to the PSN is via 2 ISDN PRI trunks supplied to the district by LightPath.

The POTS (Plain Old Telephone Service) lines supplied by Xtel are also connected to the phone switch at all middle schools and intermediate schools. These lines provide 911 services to the school building and act as a communication backup to the PSN in the event the WAN is not available to provide PSN connectivity to the building.

Elementary schools are connected to the PSN via Xtel POTS lines connected to the local Avaya switch.

The administration building processes all its local phone calls through its locally dedicated Avaya phone switch that is connected to the PSN via a local Windstream ISDN PRI (starting 2013-2014) and Xtel POTS lines.

Obsolescence plan

The district obsolescence plan covers a span of 6-8 years. Whenever possible this plan includes the re-allocation of equipment and use of some equipment as replacement parts.

Obsolescence Plan (2013-2016)

2013-2014
Obsolesce 2 administrative servers
Obsolesce 48 laptops at PHS
Obsolesce 200 desktops (Windows 2000/XP) at PHS
Obsolesce 3 middle school servers
Obsolesce 90 middle school notebooks
Obsolesce K-3 classroom student stations (Macs)
Merlin Legends w/Merlin Messaging auto attendants (all buildings K-8)

2014-2015
Obsolesce 66 middle school notebooks
Obsolesce 60 Gateway desktops in Intermediate Schools tech labs
Obsolesce 40 laptops in Intermediate Schools

2015-2016
Obsolesce 90 Gateway desktops in Middle Schools (Tech Labs)
Obsolesce 90 Media Center desktops in Middle Schools

1.g.) Other Services

Acceptable Use Policy

To support its commitment to providing avenues of access to the universe of information available, the district's system of electronic communication shall include access to the Internet for students and staff.

District Technology and Internet Safety Policy

The district technology policy states that while the board cannot guarantee the accuracy of information or the appropriateness of materials that a user may encounter, the board shall ensure the acquisition and installation of blocking/filtering software to deny access to certain areas of the Internet as a protective measure against accessing inappropriate content including but not limited to that which is obscene in nature or in any way harmful to minors. The district retains the right to monitor all access to and use of the Internet. The superintendent or designee shall coordinate the district system by ensuring that teachers receive proper training in the use of the system; ensuring that students are adequately supervised when using the system; maintaining executed user agreements; and interpreting this acceptable use policy. Student use of the Internet shall be supervised by qualified staff, unless parental permission for independent access is provided in writing.

Beginning in the fourth grade, students are formally educated about online safety in their media center classes, and in sixth through eighth grade in their media-tech class. The K-3 elementary schools have assembly programs with reinforcement from classroom teachers. The technology acceptable use policy agreement is reviewed with students and renewed each year through parent/guardian signature. Students also sign an agreement which clearly addresses acceptable and unacceptable online behavior.

Needs Assessment

2. Needs Assessement: Staff's Current Practice, Summary Teacher & Library Media Proficiency

Technology integration is accessible to all staff and students at all grade levels on a daily basis to support the use of 21st century skills in their learning environment. At the elementary level (K-3), all classrooms are equipped with a teacher station and large screen monitor. All classes at this level have access to shared mobile netbook carts for student use. The media centers have either a mini-lab of twelve computers or a mobile lab equipped with 12 – 24 netbooks. These environments enable small group instruction, space for research, and staff access.

At the intermediate level (grades 4-5) all classrooms have a teacher station computer and one or two student station computers. The technology lab is available during resource periods at which time teachers can bring students for whole group instruction, small group instruction, projects, individual projects, or co-teaching opportunities. The media center has a bank of sixteen computers, which can be used for small group instruction, space for research, and staff access. Each of these buildings also has a bank of twenty-two laptops on mobile carts, allowing for flexibility of use throughout the classrooms.

All middle school teachers have laptops. Sixth grade teachers and students have been issued iPads as part of the district 1-1 computing initiative. Grade 7 and 8 teachers and students will also be issued iPads over the next two years so that by the 2014-2015 school year all middle school students will have access to an iPad in the district 1-1 technology initiative. The middle schools (grades 6-8) each have a technology resource lab equipped with 28 student stations and a teacher station available for general classroom use. Teachers utilize the technology lab for whole class instruction, co-teaching, small group instruction/projects on a regular basis. The media center has a bank of approximately thirty computers, which are used for instruction, research, and staff access. The middle schools also have 8 mobile carts of 12 computers per cart which enables teachers to bring laptops into their classrooms.

At the high school, every classroom is equipped with a teacher station computer. Multiple labs are available during the day for use, along with the media center with a bank of approximately twenty-four computers, and an additional resource lab with thirty computers, which can be used for instruction, research, and staff access. The high school also has five mobile carts each containing twelve laptops, and seven carts that each contain six laptops, and a cart of six netbooks, all of which enable teachers to bring rolling labs into their classrooms.

The current practice of effective technology integration across the curriculum by teachers and media specialists has been evaluated in several ways including but not limited to the regular monitoring of lesson plans by building administrators, observations and walk-throughs by building and district administrators, and through teacher participation in the LoTi (Level of Technology Implementation) Digital Age Survey. The LoTi survey helps school districts and individual educators align their professional development to support effective technology integration. A random sampling of faculty members participated in the LoTi Digital-Age Survey to determine each one's current level of teaching innovation and technology integration. Based on the participants' responses, the survey identifies the digital age priorities for professional development which focus on the delicate balance between instruction, assessment, and the effective use of digital tools and resources to promote 21st Century teaching and learning. The results of the survey showed that student Learning and Creativity was determined to have the highest-level need for professional development among the participants. The plan is to offer professional development onsite and online via courses, workshops, seminars, and/or mentoring opportunities that address student learning and creativity.

The LoTi survey also measures three critical components essential to digital age literacy and innovative teaching practices: LoTi (level of technology implementation), PCU (personal computer use), and CIP (current instructional practices). The LoTi levels are measured on a scale from 0 to 6, the PCU and CIP are both measured on an intensity scale from 0 to 7. The highest levels of each of the components are indicative of a student-based learning environment where collaborations extending beyond the classroom are the norm, and the types of learning activities and teaching strategies are diversified and driven by student questions. At these levels the technology integration promotes authentic student problem-solving and critical thinking and is supported by unlimited access to the most current digital applications and infrastructure available.

The results of this survey showed that the median LoTi Level was a 3 . At a Level 3 (Infusion), the instructional focus emphasizes student higher order thinking (i.e., application, analysis, synthesis, evaluation) and engaged learning. Though specific learning activities may or may not be perceived as authentic by the student, instructional emphasis is, nonetheless, placed on higher levels of cognitive processing and in-depth treatment of the content using a variety of thinking skill strategies (e.g., problem-solving, decision-making, reflective thinking, experimentation, scientific inquiry). Teacher-centered strategies including inductive thinking, and scientific inquiry models of teaching are the norm and guide the types of products generated by students. At this level students use digital tools and resources to carry out teacher-directed tasks that emphasize higher levels of student cognitive thinking.

The survey results also showed the median LoTi CIP level for all the participants is 4. At a CIP Intensity Level 4, the teacher may feel comfortable supporting or implementing either a subject-matter or learning-based approach to instruction based on the content being addressed. In a subject-matter based approach, learning activities tend to be sequential, student projects tend to be uniform for all students, the use of lectures and/or teacher-directed presentations are the norm as well as traditional evaluation strategies. Our goal is to move more teachers up to a CIP level of 5, a more learner-based approach where learning activities are diversified and based mostly on student questions, and where the teacher serves more as a co-learner or facilitator in the classroom, and student projects are primarily student-directed, and the use of alternative assessment strategies including performance-based assessments, peer reviews, and student reflections are commonplace.

The median Personal Computer Use (PCU) level as determined by faculty who participated in the LoTi survey is a 3. Level 3 indicates that the participant demonstrates a moderate fluency with using digital tools and resources for student learning. Educators at Intensity Level 3 show indications of becoming regular users of selected digital-age media and formats (e.g., Internet, email, multi-media) for various purposes including communication with peers, students, and parents, and modeling in the classroom in support of research and learning. These participants are aware of copyright issues and maintain a moderate understanding of the impact of existing and emerging digital tools and resources on student learning. The district's goal for the 2013-2014 school year is to provide differentiated professional development to meet the staff needs identified in the needs assessment LoTi Survey. According to their responses, the participants identified a need for additional time to learn technology proficiencies, especially those skills related to web 2.0 technologies (ie. Wikis, blogging, social networking, web-based applications, podcasting), practice using those tools, and time to plan for effective integration of those 21st century skills into their classroom curriculum to advance academic achievement.

The library/media specialists have a level of technology proficiency that supports the learning and research that occurs in that environment. The intermediate (grades 4-5) and middle school media specialists support classroom curriculum as well as teach courses to all students that support NJCCCS 8.1 regarding search engines/directories, Boolean search, validating sources, copyright, fair use, citing sources, netiquette and cyber safety. The high school media specialist is a resource for technology in the media center.

The needs of staff are evaluated by building and central administration and growth opportunities are provided on the Professional Development Plan (PDP). Staff needs are also evaluated at the department level, grade level, and district level. The use of surveys and feedback forms also help assess need.

The needs of students are evaluated by classroom teachers, and building and central administrators. Students expressed in a survey that they would like to be encouraged to use technology more in the classroom environment. Students are looking for authentic experiences in designing computer programs, software, and have remote access to their school logins. Students would like to be able to design websites, create movies, and create graphics, photo and 3-D effects. Students in middle school grade 6 have access to these digital tools twenty-four hours a day, seven days a week as part of the district 1-1 iPad initiative which supports a constructivist learning environment where learning is more student directed and instruction is a collaboration between teacher and student. In the 2013-2014 school year the 1-1 computing initiative will expand to include both 6th and 7th grade students, and by the school year 2015-2016 all middle school students will be a part of the 1-1 computing initiative.

Past professional development for teachers has supported the need for technology integration. To support staff development, the district continues to provide in-house technology training through a partnership with the Piscataway Township Education Association, and offers out of district opportunities through but not limited to PBS Teacherline courses, Rutgers Center for Math, Science, Computer Education (CMSCE), and the Middlesex County Educational Technology Training Center (ETTC). As a result, professional development that supports the learning of how to effectively integrate technology into the NJCCCS and CCS thereby enhances the opportunities for student achievement.

Past professional development for administrators included the opportunities to investigate and participate in the professional development opportunities. Opportunities continue to be provided for administrators to see the products of sustained professional development programs, which assist them with the knowledge of what teachers are creating to support the curriculum, and will in turn take back to the classroom. As resources become available within the district, administrators are made aware of the opportunities and have hands on exposure to ensure their knowledge of the tools available.

Ongoing and sustained professional development for educators include, but is not limited to, the use of Performance Plus (data analysis and curriculum mapping), eBoards, Discovery Education, Genesis, use of iPads in the classroom, online learning communities such as Moodle, My Big Campus and Edmodo along with the continued use of classroom websites utilizing tools such as blogs, online forums, surveys, and online assessments.

Ongoing and sustained professional development for administrators include, but is not limited to, the use of Performance Plus (data analysis and curriculum mapping) Genesis, eBoards, and Teachscape (online framework for measuring teacher effectiveness based on the Danielson Framework for Teachers.)

Support for all staff, outside of professional development, is provided by the Supervisor of Instructional Technology, district Content Specialists, Support Specialists, building Technology Coordinators, and numerous teacher leaders throughout the district who use technology effectively and efficiently.

The professional development need presently identified relates to the ability to infuse technology more effectively into all curriculum areas supported by the NJCCCS and the Common Core Standards for Language Arts Literacy and Mathematics. An emphasis on the development of 21st century skills has also been identified as a need district wide.

Needs to Support Academic Achievement Through the Integration of Technology

The needs of the district to support academic achievement for all students through the integration of technology include the opportunities for all district staff to be immersed in a learning environment that supports technology integration. Administrators and staff need to clearly understand how technology can support and enhance academic achievement. All faculty members will be given the opportunity to participate in the LoTi survey or similar assessment annually to assess levels of curriculum integration and to identify areas of need for professional development in effective technology integration. Sustained professional development at all levels will be expanded to continue the support of integrating technology into the curriculum. The immediate goal of the district is to move the faculty up to consistent LoTi level 4b Integration (Routine), and a CIP (Current Instructional Practices) level of 5. The ultimate goal is to have all teachers infuse technology at LoTi levels of 5: Expansion, or 6: Refinement, and CIP levels of 6 or 7. District and school administrators will need to provide leadership and support to staff in order to ensure the effective infusion of technology in the classrooms as stipulated in the NJCCCS and Common Core Standards.

As the district sets higher goals for increasing teacher implementation of effective educational technology the need also arises for an increased number of computers available to students in grades K-5 and 9-12 in order to support student creativity and problem solving in a learner-based environment with access to the most current digital applications and infrastructure available.

Based on the technology guidelines for the Partnership for the Assessment of Readiness for College and Careers Assessments (PARCC) and the results of the online PARCC Readiness tool, the district has established the need to increase bandwidth as well as increase the number of computers in the elementary, intermediate and high school levels. According to our findings from the online readiness survey, the number of available devices which meet the minimum requirements for PARCC falls short of the recommended number of devices needed to successfully assess all students in grades 3-11 based on the current and anticipated ratio of students per/computers. The K-5 environments are in the greatest need of additional computers as the vast majority of the devices in those buildings do not meet the minimum requirements established by PARCC.

Needs Assessment: Technology Maintenance and Support (Other Network, Telecommunications and eMail Service Needs)

Internet Capability

Elementary, Intermediate, and Middle schools, and District Administration connect to the Internet via a dedicated Cablevision Lightpath fiber circuit. The bandwidth of the circuit is currently 100 Mbps. We plan to increase the Internet bandwidth at those locations to 300 Mbps for the 2013/2014 school year. In the interest of access control and content filtering, McAfee's WebGateway has been installed at the Patton high School building to intercept all inbound and outbound Internet traffic on this ISP.

The High School Internet connectivity is supplied by Cablevision Power to Learn via a cable modem. The bandwidth of the circuit is currently 101 Mbps download and 15 Mbps upload. In the interest of access control and content filtering, SecureSchool's content filter has been installed at the Patton high School building to intercept all inbound and outbound Internet traffic on this ISP.

Telephone Systems

The current Merlin telephone systems at each of the K-8 buildings is end of life. Because the system is over twenty years old and outdated safety features are lacking, and it is not reliable and difficult to maintain since parts and skilled technicians are limited.

During the 2013-2014 school year, the Merlin Legends w/Merlin Messaging systems in the K-8 buildings will be obsolesced. The Avaya Gateways in each of the K-8 buildings will be upgraded to replace the building phone functions previously supplied by the Merlin systems. The digital phones located in the school offices will be replaced, K-8 voicemail boxes will be centralized at the high school. A central auto-attendant system will be developed for the district allowing parents to contact any school or district office by calling one phone number. Safety features such as 911 alert, phone off hook alert, and a malicious phone trace will be activated.

Currently the district is running Exchange 2007. The system consists of 2 back end and one front end Windows 2003 server. In 2013-2014 the system will be upgraded to Exchange 2010 in increase the reliability of the system and to take advantage of several high availability options. The Exchange 2010 upgrade will allow the deployment of a personal archive feature that allows emails to be retained longer and on a different database than the primary mail box.

Prioritize the identified needs

Several of these identified needs are at an equally high priority as they are interdependent and equally essential to continually support 21st century learners in a learner-based environment. Due to severe budget cuts in the past, there has been little technology growth over the past three years, and many district computers will be obsolesced over the next two years. The vast majority of computers in the district are operating Windows XP, which will no longer be supported by Microsoft as of April 8, 2014. Whenever possible, those computers will be upgraded to Windows 7 operating system, however a large number of the current Windows XP computers will need to be replaced. Therefore in order to provide our students with technology that supports current 21st century digital learning tools including but not limited to streaming video, virtual learning communities, online assessments, and the increasing availability of digital textbooks and other digital resources, the increase in the number of devices capable of supporting current digital environments is a high priority in the district.

Equally as important is the need for ongoing Professional Development in order to increase the LoTi levels of those teachers who scored a 3 or a 4 to a level of 5 where collaborations extending beyond the classroom are employed for authentic student problem-solving, and emphasis is placed on student-centered strategies that promote personal goal setting and self-monitoring. Professional development is also needed to increase teacher CIP intensity levels to a 6 or 7 where the teacher supports instructional practices consistent with a learner-based approach as students attempt to research and solve issues of importance to them using 21st century skills such as critical and analytical thinking and problem-solving skills.

In order to meet these needs, the district must provide the resources necessary to continue to develop the school district into an educational institution that moves all members to the cutting edge of technology usage and integration to support student achievement and to prepare all students for success in a global society.

District Goals

3. Three Year Goals for 2013-2016

The results of the needs assessment show that educators across the district need sustained and ongoing professional development on how to integrate educational technology more effectively on a regular basis

Goal 1: To raise the level of effective technology integration provided in the learning experience of all students in grades K-12, and improve educators' current instructional practices as measured in the LoTi Digital Survey. All teachers will advance on the LoTi scale toward a level of technology integration of 5 (Expansion) and 6 (Refinement). http://loticonnection.cachefly.net/global_documents/LoTi_Framework_Sniff_Test.pdf.

Goal 2: Technology resources and systems will be effectively integrated into teacher training and curriculum development to establish research-based instructional methods moving toward a more constructivist approach for district implementation.

Goal 3: Provide teachers with professional development opportunities on how to use virtual learning communities as part of regular classroom activities for effective use of technology to improve student achievement through communication, collaboration, problem solving and sharing knowledge.

The results of the needs assessment indicate the necessity for all students to have more access to digital resources, the Internet, and other educational technology in their daily learning to support student creativity and problem solving in a learner-based environment. Students also need more frequent access to and experience with taking online assessments.

Goal 4 : Upgrade WiFi Access Points at Piscataway High School Patton Wing to bring the infrastructure to a level which will support the demands of a digital age learning environment where online resources are accessed by numerous simultaneous users across the district. This upgrade will also prepare the district for the PARCC assessment and the upcoming expansion of the district 1-1 computing initiative which will expand to include the high school students in the 2015-2016 school year.

Goal 5: Upgrade or replace all Windows XP computers in the district so they can meet recommended system requirements of online digital resources and assessments including but not limited to PARCC and at the same time to ensure full support and security from Microsoft as Microsoft will cease to support Windows XP as of April 8, 2014.

Goal 6: Purchase network devices (desktops, laptops, tablets, iPads) to be used at the elementary, intermediate and high school levels in order to provide all students access to digital resources on a regular basis and to provide numerous simultaneous users access to online assessments.

Goal 7: Increase Internet Bandwidth to support additional network devices (desktops, laptops, iPads) providing students and teachers access to the Internet and web-based resources.

Information Technology (IT) plans, maintains, and develops the network, which provides access within the Piscataway Township School district, the community, county, and state, as well as national and global access including voice, video, and data. The network will increase the effectiveness and efficiency of learning, administration, and management. Resources will be maintained and updated for effective and efficient use.

Results of the needs assessment indicate that students must have the necessary technology proficiency skills and experience to actively learn content, analyze, and evaluate information online; students need experience using digital tools to collaborate, create and share knowledge and to take online assessments.

Goal 8: All students will be technologically literate and proficient by the end of eighth grade as defined by NJCCCS 8.1. All students (grades K-12) will have a grade level appropriate understanding of how technology devices and programs operate and all students through frequent accessibility will use technology comfortably and effectively as part of their learning.

Goal 9: Beginning in grades 2 and 3, students will be introduced to keyboarding skills and will be given the opportunity to practice said skills so as to become more comfortable and more proficient at using digital tools and taking online assessments. Students in grades 4 – 12 will be given opportunities to improve overall keyboarding skills of speed and accuracy. Keyboarding proficiencies will aid in student performance on online assessments.

Goal 10: Teachers will utilize the collaboration tools available through the district's new webhosting company that will enable students to participate in online learning communities where they can communicate original ideas, and collaborate to create and communicate knowledge. These blended learning environments will merge computers and face-to-face learning through the use of blogs, forums, wikis, surveys, polls, and online assessments.

Results of the IT network, maintenance and support needs assessment shows that the phone system in the K-8 buildings must be obsolesced and replaced with up to date technology which includes safety features.

Goal 11: Obsolesce the current Merlin telephone systems at each of the K-8 buildings. The Avaya Gateways in each of the K-8 buildings will be upgraded to replace the building phone functions previously supplied by the Merlin systems.

These eleven goals will be assessed through various measures over the span of the 2013-2016 time period. These measures will include how effectively integrated technology has been infused into lessons as seen in lesson plans and observations, online collaboration with students, communications between teacher and student, utilization of class websites and online learning communities, staff and student surveys, and ultimately student achievement as measured by local and state assessments.

The following chart shows the alignment of the Piscataway Technology Goals to the New Jersey Education Technology Goals.

NEW JERSEY EDUCATION TECHNOLOGY GOALS	Piscataway Township Schools TECHNOLOGY GOALS
Goal 1: All students will be prepared to excel in the community, work place and in our global society using 21st century skills.	Goals: 1, 2, 3, 4, 5, 6, 7, 8, 9 &10
Goal 2: All educators, including administrators, will attain the 21st century skills and knowledge necessary to effectively integrate educational technology in order to enable students to achieve the goals of the Core Curriculum Content Standards and experience success in a global society.	Goals: 1, 2, & 3
Goal 3: Educational technology will be accessible by students, teachers, and administrators and utilized for instructional and administrative purposes in all learning environments, including classrooms, library media centers, and other educational settings such as community centers and libraries.	Goals: 4,5,6, 7, 8, 9, & 10
Goal 4: New Jersey School districts will establish and maintain the technology infrastructure necessary for students, administrators and staff to safely access digital information on demand and to communicate virtually.	Goals: 4, 5, & 6 , 7 & 11

IMPLEMENTATION PLAN
July 1, 2013- June 30, 2016

Piscataway Township Schools' Technology Implementation Plan is organized into five categories:

1. District
2. K-3 elementary schools,
3. 4-5 intermediate schools
4. 6-8 middle schools
5. 9-12 high school.

District and school strategies/activities are organized by year and correlated with district technology objectives.

All strategies/activities indicated person(s) responsible for research, planning, budgeting, implementation, support, and evaluation. Strategies/activities, with goal correlation, are also provided for district and administrative technology.

Cross-Content Applications of Standards

Technology tools provide opportunities for enhanced teaching and learning in all subjects at all grade levels for all students. Research tools and resources, available through the use of technology support content areas for student achievement. Technology provides the ability to access mentors and resources, provide graphical and visual representations, real data and problem solving situations, provide support for acquisition of enduring understandings, content and skills as demonstrated by student performance assessments. Technology allows for peer collaboration and publishing of student and teacher products for peer and professional collaboration, communication and mentorship. Technology supports a research standards based approach to curriculum and provides teachers, students, and parents with opportunities to improve learning and enhance student achievement.

Technology Literacy Skills

All students will acquire information technology literacy skills through a planned approach as students move through the grade levels. The K-5 elementary teachers will be aware of the technology proficiencies to be introduced, practiced and applied/reinforced in the classroom as listed in the NJCCCS 8.1. Students in grades 6-8 will meet the standards set forth in the NJCCCS 8.1 through introduction, practice, and application of technology literacy skills in the media center during their Media/Tech class, and they will apply and reinforce those skills in the classroom and during the resource periods/days in the technology lab. Sixth grade students (and 7th grade students beginning in September 2013, and 8th grade students in September 2014) will apply those skills in all classes everyday with their iPads as part of the district's 1-1 computing initiative. Piscataway High School students elect courses in business, applied technology, broadcast journalism/TV, and radio production that meet their needs, interests, school requirements, and the content standards. Students will apply technology literacy skills across all content areas through problem-based learning in the classrooms via wireless carts throughout the building, and in the media center, computer labs/classrooms, and resource labs to support the achievement of the NJCCCS standards.

Equitable Access

All students regardless of gender, race, national origin, special need and religious affiliation have equitable access to educational technology. Special needs are met in collaboration with the student's case manager, the district instructional supervisors, and the district IT Manager. Assistive technology and specialized hardware/software are planned to meet individual needs. Accommodations are made for individual differences at all grade levels.

Shared Resources

Projects that are funded from federal, state, and local sources and need planned access to technology environments and resources are coordinated, as needed. Special needs and requests are coordinated with the project leader, the assistant superintendent of curriculum and instruction, and the IT director. The coordinator of community outreach will also coordinate with the office of curriculum and instruction and the IT department for maximum use and customization for needs.

Innovative Strategies

Innovative strategies are supported and developed for use in the instructional classroom and open school environment by the assistant superintendent of curriculum and instruction, the supervisor of instructional technology, and district supervisors of curriculum areas with input from principals, department chairpersons, content specialists and teachers. Innovative strategies are budgeted and/or supported by federal, state, grant, and local sources. (See Implementation Tables for innovative strategies by school grouping).

Parental Involvement

The district, school and class websites, cable television broadcasting, district and school meetings and workshops, and curriculum showcases help to increase parental awareness and involvement. Communication between school and home is also strengthened through the use of email and the Global Connect phone messaging system. Content areas offer web-based resources for parents to support and reinforce instruction and the home-school connection. Conferences provide workshops for parents that include technology resources, in the areas of literacy and mathematics (K-5), and K-12 career days/evenings provide opportunities for real world exposure to careers in the field of technology or that include technology. Back-to-school night and parent conferences provide opportunities for parents to be informed about the technology being applied in their child's education. Parents of incoming 6th grade students are invited to attend an informational night on the district 1-1 computing initiative (iPad Initiative) at the middle school where the parents will learn about the academic benefits of the initiative. The exposure to technology in the educational setting for parents enables them to support and reinforce the instruction their child(ren) receive(s) in Piscataway Township Schools. The Genesis Parent Module allows for parents to login and see their child(ren) class assignments/tests by subject, assignment/test grades, student attendance, and discipline, enabling a more powerful home-school connection. Cable television broadcasting and other video presentations highlight and inform parents of the infusion of technology into curriculum. The district website contains parent sections that provide further curriculum information.

The Superintendent's vision for communication is to ensure that it allows parents to see what goes on in their child's education by providing information to the community and parents using a variety of technologies.

Community Outreach (Adult Literacy)

The district's adult education and community outreach courses include opportunities for adult literacy in technology. The coordinator of community outreach schedules, publicizes, and registers community members for the courses. The coordinator of community outreach also communicates all technology needs to the IT department who in turn assures that the necessary technology requirements are available for the planned courses. School technology facilities are used for the adult education courses.

Implementation Strategies/Activity Tables
Piscataway Township Schools: District

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2013-2014	Upgrade Microsoft Exchange eMail Server from 2007 to 2010	11	IT Director; IT Service Manager	Working environment;
2013-2014	Implement an IT department web-based dashboard for users to directly access IT department ticket system for technology repairs' status and entry, and other support information	1, 2, 3, 5, 8, 9, 10	IT Director; IT Service Manager;	Access logs and system reports
2014-2015	Increase Internet bandwidth to expand 21st Century web- based activities throughout the district and to support online assessments throughout the district.	4, 5, 6, 7	IT Director; IT Service Manager	Internet Bandwidth Monitoring tools
2013-2016	Continue training and support on use of Genesis (student management system) with an emphasis on report generation for data analysis.	1,2	Data Systems Admin; Asst. Super of C&I; Leadership Team	Usage of data reports for analysis
2013-2016 (ongoing)	Continue to develop web based learning portals for organization of resources. Assess the use of web based learning portals and revise, as needed	1, 2, 3, 7,8, 9,10, 11	Asst. Super of C&I District Tech Coordinator; IT Director	Usage of web based services;
2013-2016 (on-going)	Review user needs, evaluate repair, maintenance needs and project requests to determine role of stipend Building Technology coordinators.	1,2,3,4,5,	Principals; IT Dept	Daily reports; Ticket program

Implementation Strategies/Activity Tables
Piscataway Township Schools: Elementary Schools (K-3) Eisenhower, Knollwood, Grandview & Randolphville

Timeline	Strategies/Activities	District Technology Goals	Persons Responsible	Evaluation
2013-2014	Provide professional development opportunities to Art Teachers to support integration of PhotoShop Elements and the use of digital cameras into the curriculum.	1, 2, 3	Supervisor of Instructional Technology, Principals; tech coordinators; Staff Developers	Staff feedback and usage
2013-2014	Evaluate wireless netbook initiative to determine if an increase in wireless access is required for simultaneous users of online assessment (PARCC). (ongoing)	4, 5, 6	IT Director; IT Service Manager; Principals	Working wireless environments; Increased technology usage;
2013-2014	Implement and provide greater access to digital cameras for Art faculty. Provide professional development opportunities on how to integrate using digital images into the curriculum.	1, 2, 6	IT Dept.; C&I Administrators; building tech coordinators;	Staff feedback and usage
2013 - 2014	Purchase 1 cart of 12 laptops per building for student learning and in preparation for PARCC.	4, 5, 6, 7	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2013-2014	Upgrade phone system G650 gateways replacing digital phones in main offices.	10	IT Service Manager	Working environments
2014-2015	Purchase and deliver 4 carts of 12 laptops per building for student learning and in preparation for PARCC.	4, 5, 6, 7	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2014-2015	Upgrade Media Center student stations (E/R/G) and 3rd grade classroom student stations in Knollwood to Windows 7	1 , 5, 7	IT Director; IT Service Manager; Supervisor of Instructional Technology	Working environments
2014-2015	Upgrade teacher desktops to Windows 7	5	IT Director; IT Service Manager; Supervisor of Instructional Technology	Working environments

Implementation Strategies/Activity Tables
Piscataway Township Schools: Elementary Schools (K-3) Eisenhower, Knollwood, Grandview & Randolphville

Timeline	Strategies/Activities	District Technology Goals	Persons Responsible	Evaluation
2015 - 2016	Purchase and deliver 2 carts of 12 laptops per building for student learning and in preparation for PARCC.	4, 5, 6, 7	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2013-2016 (on-going)	Coordinate with Curriculum & Instruction department to assess where the need for technology integration will be most effective.	1, 2, 3	Supervisor of Instructional Technology, Asst. Super. of C& I; Asst. Directors; Support Specialists	Action plan based on data; Walk-throughs
2013-2016 (ongoing)	Provide opportunities for teachers to learn how to integrate the technology proficiencies (8.1) into their lessons.	1 , 2, 3, 7	Supervisor of Instructional Technology, Principals Support Specialists, Building Tech Coordinator;	Proficiency checklist or rubric; Use of integrated technology assessed by end productions, evaluations, observations
2013- 2016 (on-going)	Assess curricular needs and resources to meet student needs based on data analysis	7, 8, 9	Assistant Superintendent of C&I, Supervisor of Instructional Technology, Principals; District Supervisors,	Report
2013-2016 (on-going)	Schedule dedicated instructional time for all 2nd and 3rd grade students to learn and practice keyboarding skills	7, 8,	Principals, Supervisor of Instructional Technology	Usage and performance based assessments and observation
2013-2016 (ongoing)	Support faculty on the maintenance and enhancement of class website for creating a blended learning environment and for parent/community communication.	1,2,3,9	Supervisor of Instructional Technology, Building Tech Coordinator; Principal	Updated web sites;

Implementation Strategies/Activity Tables
Piscataway Township Schools: Intermediate Schools (4-5) Arbor & M.L. King

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2013-2014	Provide professional development opportunities to Art Teachers to support integration of PhotoShop Elements and the use of digital cameras into the curriculum.	1, 2, 3	Supervisor of Instructional Technology, Principals; tech coordinators; Staff Developers	Staff feedback and usage
2013 - 2014	Purchase and deliver 2 carts of 12 laptops each per building for student learning and in preparation for PARCC.	4, 5, 6, 7, 8, 9, 10	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2013-2014	Upgrade phone system G650 gateways replacing digital phones in main offices.	10	IT Service Manager	Working environments
2014 - 2015	Purchase and deliver 8 carts of 12 laptops each per building for student learning and in preparation for PARCC.	4, 5, 6, 7, 8, 9, 10	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2014 - 2015	Replace tech lab desktops with Windows 7 desktops	4, 5, 6, 7, 8, 9, 10	IT Service Manager;	Working environments; Usage Log
2014 - 2015	Upgrade teacher stations and media center computers to Windows 7	4 ,5,	IT Service Manager;	Working environments
2015- 2016	Purchase and deliver 2 carts of 12 laptops each per building for student learning and in preparation for PARCC.	4, 5, 6, 7, 8, 9, 10	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2013-2016 (ongoing)	Support faculty on the maintenance and enhancement of class website for creating a blended learning environment and for parent/community communication.	1,2,3,9, 10	Supervisor of Instructional Technology, Building Tech Coordinator; Principal	Updated web sites;

Implementation Strategies/Activity Tables
Piscataway Township Schools: Intermediate Schools (4-5) Arbor & M.L. King

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2013-2016 (ongoing)	Continue to provide differentiated professional development to emphasize the infusion of technology into all content areas and the implementation of 21st Century tools.(ie. Wikis, blogging, micro-blogging, skype, social bookmarking, web-based applications, podcasting),	1,2,3,7,8,9, 10	Supervisor of Instructional Technology, Building Tech Coordinators; Principals	Usage reports; Integration into the curriculum.
2013- 2016 (ongoing)	Assess curricular needs and resources to meet student needs based on data analysis	7, 8, 9, 10	Assistant Superintendent of C&I, Supervisor of Instructional Technology, Principals; District Supervisors,	Report

Implementation Strategies/Activity Tables
Piscataway Township Schools: Middle Schools (6-8) Conackamack, Quibbletown, Schor

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2013-2014	Lease and distribute iPads for 7th grade teacher	1, 4,6, 7, 8, 9, 10	IT Service Manager; Supervisor of Instructional Technology Principals;	Working environments; Teacher integration, lesson plans, observations, feedback
2013 - 2014	Provide professional development for 7th grade teachers on effective use of iPads in the classroom and Constructivist teaching strategies	1, 2, 3, 7, 8. 9, 10	IT Service Manager; Supervisor of Instructional Technology Building Technology Coordinator; Principals;	Feedback, observations
2013-2014	Upgrade phone system G650 gateways replacing digital phones in main offices.	11	IT Service Manager	Working environments
2013-2014	Lease and distribute 6th grade student iPads for district 1-1 computing initiative	4, 5, 6, 7, 8, 9, 10	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Student work, feedback
2013-2014	Purchase and install interactive projectors with Apple TV's in all 7th and 8th grade math classrooms	4, 5, 6, 7,8,9,10	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Teacher feedback
2014-2015	Replace 8th grade teacher Laptops	1, 4, 5, 6, 7,8,9,10	IT Service Manager; Building Technology Coordinator; Principals;	Working environments; Usage Log
2014-2015	Lease 8th grade teacher iPads	1,2,3,6,8,10	Supervisor of Instructional Technology, Building Tech Coordinator; Principal	Working environments; Teacher integration, lesson plans, observations, feedback
2014-2015	Lease 6th grade student ipads for 1-1 initiative	1, 4, 5, 6, 7, 8, 9, 10	IT Service Manager; Supervisor of Instructional Technology	Working environments; Student work, feedback
2014-2015	Upgrade 6th and 7th grade teacher laptops	1, 4, 5, 6, 7, 9	IT Service Manager; Supervisor of Instructional Technology	Working environments, useage,

Implementation Strategies/Activity Tables
Piscataway Township Schools: Middle Schools (6-8) Conackamack, Quibbletown, Schor

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2015-2016	Lease 6th grade student ipads for 1-1 initiative	1, 4, 5, 6, 7, 8, 9, 10	IT Service Manager; Supervisor of Instructional Technology	Working environments; Student work, feedback
2013-2016 (ongoing)	Continue to provide differentiated professional development to emphasize the infusion of technology into all content areas and the implementation of 21st Century tools.(ie. Wikis, blogging, micro-blogging, skype, social bookmarking, web-based applications, podcasting),	1,2,3 ,8,9,10	Supervisor of Instructional Technology, Building Tech Coordinators; Principals	Usage reports; Integration into the curriculum.
2013- 2016 (ongoing)	Assess curricular needs and resources to meet student needs based on data analysis	8, 9, 10	Assistant Superintendent of C&I, Supervisor of Instructional Technology, Principals; District Supervisors,	Report
2013-2016 (ongoing)	Support faculty on the maintenance and enhancement of class website for creating a blended learning environment and for parent/community communication.	1,2,3,9,10	Supervisor of Instructional Technology, Building Tech Coordinator; Principal	Updated web sites;

Implementation Strategies/Activity Tables
Piscataway Township Schools: High School (9-12)

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2013-2014	Upgrade/Replace 200 Windows XP teacher Stations	4, 5, 6	IT Service Manager; Supervisor of Instructional Technology Principals;	Working environments; Teacher integration, lesson plans, observations, feedback
2013 - 2014	Replace/Upgrade 210 student desktops for increased access to digital learning tools.	5, 6, 7, 8, 9, 10	IT Service Manager; Supervisor of Instructional Technology Building Technology Coordinator; Principals;	Feedback, observations
2013-2014	Replace/Upgrade 192 student Laptops for student learning and in preparation for online assessment (PARCC)	4, 5 ,6, 7,8, 9, 10	IT Service Manager	Working environments
2014 - 2015	Purchase 180 student laptops for student learning and in preparation for online assessment (PARCC)	4, 5, 6,7,8,9	IT Service Manager; Supervisor of Instructional Technology	Working environments; Student work, feedback
2014 - 2015	Upgrade WiFi AP's to support PARCC and to prepare for iPad environment following year	4, 5, 6, 7	IT Service Manager; Supervisor of Instructional Technology	Working environments
2014-2015	Lease iPads for 9th grade teachers as part of district's 1-1 computing initiative	1,4, 6, 7, 9,	IT Service Manager; Supervisor of Instructional Technology	Working environments; Teacher integration, feedback

Implementation Strategies/Activity Tables
Piscataway Township Schools: High School (9-12)

Timeline	Strategies/Activities	District Technology Objectives	Persons Responsible	Evaluation
2015 - 2016	Lease iPads for students in grade 9 as part of district's 1-1 computing initiative	4, 6,7,8,9	IT Service Manager; Supervisor of Instructional Technology, Business Administrator	Testing and Working environment
2015 - 2016	Replace new media suite video editing lab	6 , 7, 8, 10	IT Service Manager; Supervisor of Instructional Technology	Testing and Working environment
2013-2016 (ongoing)	Continue to provide differentiated professional development to emphasize the infusion of technology into all content areas and the implementation of 21st Century tools.(ie. Wikis, blogging, micro-blogging, skype, social bookmarking, web-based applications, podcasting),	1,2,3,4,7,8,9, 10	Supervisor of Instructional Technology, Building Tech Coordinators; Support Specialists; Principals	Integration into the curriculum, observations, walk-throughs, lesson plans
2013- 2016 (ongoing)	Assess curricular needs and resources to meet student needs based on data analysis	4, 7, 8, 9, 10	Assistant Superintendent of C&I, Supervisor of Instructional Technology, Principals; District Supervisors,	Report
2013-2016 (ongoing)	Support faculty on the maintenance and enhancement of class website for creating a blended learning environment and for parent/community communication.	1,2,3,4,7,8,9, 10	Supervisor of Instructional Technology, Building Tech Coordinator; Principal	Updated web sites;

5. Professional Development

Ongoing, Sustained, Professional Development for Administrators, Educators and Staff

5.a) Professional Development activities for administrators, teachers, media specialists and staff:

Sustained professional development opportunities will be provided to support the administrative role in the infusion of technology. Proficiency and application trainings are offered to the entire leadership team from a variety of resources in and out of district. Administrators have the opportunity to attend professional development sessions sponsored by NJPSA/FEA that provide current information on how to be a leader in the age of technology, how to use technology in their responsibilities in their schools, how to support faculty in the use of effective technology integration. Administrators are invited to attend professional development courses to understand the use of technology and how to evaluate the effective integration of technology into classroom instruction through the use of system resources, web-based resources such as Discovery Education, and other interactive technologies. The office of Curriculum and Instruction supports professional development for administrators by providing access to workshops both locally and online via webinars, and by providing training on district purchased system resources for the implementation of district initiatives. Such systems include but are not limited to Performance Plus (data analysis and curriculum mapping). The district strives to provide relevant and authentic opportunities that build on prior knowledge to support the role of administrators.

Sustained professional development for teachers and media specialists is supported in a variety of ways both in and out of the district. Professional development within the Piscataway Township School District is designed to help staff meet the academic goals within our district's strategic plan. Topics of professional development have included a concentration on differentiation and technology infusion to help meet the individual needs of students while providing them the 21st century skills they need to succeed. In the 2013-2014 school year, professional development opportunities will be varied and extensive. Examples of the offerings include full-day in-service workshops, several half-day school-based workshops, and after-school sessions offered by the Professional Development Partnership of Piscataway (PDPP). Additional opportunities for professional development training and collaborative professional learning will take place at faculty meetings, content-area department meetings, common planning meetings, flex meetings, vertical and horizontal articulation meetings, professional learning communities, university partnerships, and participation in district-wide and school-based academic committees. Individual as well as collaborative professional development will be offered within the district's professional development structure through Internet resources, the Gale Infotrac online professional database library, professional consultants, peer observation, and membership in professional organizations. The office of Curriculum and Instruction supports professional development for teachers and media specialists by supporting attendance at the Middlesex Educational Technology Training Center (ETTC) workshops through Rutgers University, and by providing training on district purchased system resources for the implementation of district initiatives. Such systems include but are not limited to Performance Plus (data analysis, and curriculum mapping), and My Big Campus an online learning community. Professional development opportunities through CMSCE (Center for Math, Science, Computer Education) at Rutgers University provides teachers and media specialists with knowledge and skills on a variety of topics that include 21st century learning, video conferencing, use of interactive whiteboards, and effective teaching strategies that infuse technology in the inclusive classroom. All staff members who receive professional development are encouraged to turnkey the training to colleagues at the aforementioned venues. Summer opportunities include mentoring training, new teacher orientation, and training on other district-identified needs. Professional development opportunities will be provided to support the infusion of technology including, but not limited, to the use of the LoTi module. LoTi is an acronym for, "Levels of Teaching Innovation," and it represents the transformation from

informative teaching practices and student compliant learning to digital age teaching and learning characterized by the use of digital tools and resources to promote higher order thinking skills and student engagement in lessons revolving around real-world problem solving situations. The district strives to provide relevant and authentic opportunities that build on prior knowledge. The district will continue to use Charlotte Danielson's *Framework for Teaching*, John Hattie's *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement,* Understanding by Design (McTighe & Wiggins) and Alan November's Empowering Students with Technology as relevant research that will help to shape the integration of technology into curriculum and instruction to improve student achievement.

Professional Development Planned for 2013-2014

The Piscataway Township School District believes that ongoing, sustained, and high-quality professional development is essential to the growth of its administration and faculty, which in turn supports student achievement. The district's goal for the 2013-2014 school year is to provide differentiated professional development to meet the staff needs identified in the needs assessment LoTi Survey and other staff identified needs through evaluation feedback. According to their responses, the participants identified a need for additional time to learn technology proficiencies, especially those skills related to web 2.0 technologies (ie. Wikis, blogging, micro-blogging, skype, face-time, social-networking, web-based applications, podcasting), practice using 21st century tools, and time to plan for effective integration of those 21st century skills into their classroom curriculum to advance academic achievement. Other topics for professional development include Performance Plus (data analysis and curriculum mapping), Genesis (SMS), distance learning, video conferencing, using the district website to create surveys and quizzes, Moodle (an online classroom environment), My Big Campus (online learning community), and using other online resources such as Discovery Education, Thinkfinity, and eBoard as ways to infuse technology into all content areas at all grade levels.. We will continue to offer professional development opportunities to support the infusion of technology into the curricular process through district initiatives from the Curriculum and Instruction department.

The goal of the Piscataway School district is to provide staff development that models specific strategies and techniques for integrating higher-order thinking skills and engaged learning with the available digital tools and resources. This goal is targeted at moving the faculty up the LoTi scale from their current score up to the next level. For the average participant in this year's survey that means moving up from a level 2(Exploration) to a level 3 (Infusion). Through a differentiated approach to staff development those faculty members already at level 3 on the LoTi scale would have the support and training they need to move toward level 4 (Integration) and then 5 (Expansion), and ultimately 6 (Refinement). The district strives to continue to provide ongoing, sustained professional development for all administration and faculty so that educators can make better connections between technology use and student authentic problem-solving in the classroom and further advance student achievement.

The professional development will focus on taking a more learner-based approach to teaching where learning activities are diversified and based mostly on student questions, and where the teacher serves more as a co-learner or facilitator in the classroom, and student projects are primarily student-directed, and the use of alternative assessment strategies including performance-based assessments, peer reviews, and student reflections are commonplace.

Professional Development opportunities will be made available throughout the year during scheduled meeting times such as district in-service days, learning conferences, faculty and department meetings, PLC's, and team planning meetings.

The building technology coordinators (K-12), media/tech teachers (6-8), media specialists (4-12), technology teacher (4-5), content specialists, and other teacher leaders, with support from the Office of Curriculum & Instruction, provide in-class support, model lessons infusing technology, and provide co-teaching opportunities that support the effective use and infusion of

technology. During the 2013-2014 school year professional development opportunities will be offered through the following:

- District Learning Conference (all staff) – Three days
- School-based ½-day In-service workshops – Three half days
- Professional Learning Communities
- Faculty, grade-level, department meetings
- Professional Development Partnership at Piscataway (PDPP) workshop sessions
- Center for Mathematics, Science, & Computer Education (CMSCE) at Rutgers University
- Middlesex County Educational Technology Training Center (ETTC) (at Rutgers University)
- Online learning opportunities
- Grant-funded opportunities

Inherent in the professional development opportunities are provisions for turnkey training sessions with colleagues. Sustained support for the successful implementation of skills gained at the November Learning Conference will be provided at subsequent professional development opportunities. Based upon the needs of individual schools, the school-based day workshops may be used to revisit and reflect upon the professional development acquired at the District Learning Conference in November.

Projection of professional development activities through 2016

The projected professional development for school years, 2014-2015 and 2015-2016, will support the initiatives of the 2013-2014 school year. In the spring 2014 and the spring of 2015, the district Curriculum and Instruction Department along with district administrators, will reassess needs and plan for differentiated professional development from the most effective providers to support the faculty, administration, in all district initiatives and to support the infusion of technology into the curricular process. The department of Curriculum and Instruction will use the LoTi model to determine staff needs and to support infusion. The ongoing revision of the technology curriculum will provide a great opportunity to continue the dialogue about curriculum infusion and how to support it in all curriculum areas in the upcoming years. The district will continue to deliver professional development to administration and faculty in a variety of methods, allowing for differentiated learning. Differentiated professional development includes offering different levels of workshops that build on previous knowledge and skills, a variety of workshops on different proficiencies, and/or documentation on proficiencies to support individuals that prefer learning on their own. Documentation is available through the Curricular Technology Department, on the district public drives, and on the district website (Staff) when applicable.

Professional development will continue to be provided by a variety of providers that include but are not limited to the following:

In district personnel

- District Supervisor of Instructional Technology
- teacher-leaders
- building technology coordinators
- building technology teachers
- building media specialists
- 4-8 content specialists,
- Professional Development Partnership in Piscataway

Out of District Providers

- ETTC, Middlesex County at Rutgers University
- CMSCE (Center for Math, Science, Computer Education), Rutgers University
- Center for Effective School Practices, Rutgers University
- Center for Innovative Education, Kean University

- Performance Plus
- Discovery Education (streaming video, web based video & professional development)
- PBS Teacherline (web-based professional development courses)
- Publishing vendors

A proficiency checklist and/or the LoTi tool will continue to help determine the needs of district users. The effective integration of technology into curriculum is determined by administrative observations, walk-throughs, teacher lesson plans, and feedback from grade-level support and content specialists. Professional development opportunities will continue to be offered during district learning conferences, grade level and faculty meetings, quarterly in-service workshops, and other opportunities based upon availability of funding.

The financial resources to support professional development will be the responsibility of the Assistant Superintendent of Curriculum and Instruction. Financial resources are acquired from the local, state, and federal funding. Grants, as available, are also used to support technology professional development. Financial resources also provide the opportunity to use outside providers/consultants to further support professional development. Time is also built into the district calendar to provide professional development days for faculty. Faculty and administration are also allowed time and financial support to attend approved professional development opportunities and conferences out of district. All the financial and time resources allow our faculty and administration to remain current in the ever-changing world of technology.

5.b) Professional Development for Technical Staff

Professional development for technical staff is supported in a variety of ways both in and out of the district and through online resources. The IT department uses the resources of the network administrator/director, service manager, and technicians to support increased learning. Technical professional development is budgeted for the technical staff to advance their learning outside of the district.

5.c) Professional Development on the Application of Assistive Technologies

Professional development for assistive technologies is supported in the school buildings when a child with special devices is assigned to a school. All teachers that will need to support the learning of such students are trained, including the administration and support staff. Training of such technologies is done by a variety of resources that include the district special services department members, specific case managers, special education teachers, or person(s) familiar with the equipment and/or software. Outside resources are used when needed, including the assistance from parents/guardians and organizations such as the commission for the blind. Professional development for district purchased software, such as Boardmaker and Earobics, are often supported by the Middlesex County ETTC who offers a variety of professional development in the area of assistive technology. The student IEP supports all assistive technologies and professional development is supported as needed. In addition, assistive technology will be used as interventions to enhance learning, when applicable.

Evaluation Plan

6. Evaluation Process: Evaluation is an essential element for planning effective and efficient use of technology. An underlying goal of this three year tech plan is to integrate technology into curricula and instruction to promote 21st century skills and global collaboration enabling students to meet challenging academic standards while developing life-long learning skills. Data will be collected, using a variety of methods, for analysis and data driven decision-making.

Evaluation methods and tools employed by the district include but are not limited to the following.

- **Documentation and record keeping** *(staff development records; hardware/software inventories)*
- **Obsolescence plan** *(IT; Board Resolution)*
- **Check listing** *(Technology Proficiency Self Assessment; LoTi Survey)*
- **Staff/student/community surveys** *(Staff computer usage; Student computer usage; Web based; Distance Learning Questionnaire)*
- **Staff/student evaluation forms (software/services/proficiency training/professional development)** *(Staff Development Evaluation Forms; distance Learning Evaluation Forms)*
- **Analysis of ticket program** *(IT/Ticket System Daily Reports/Phone Logs)*
- **Reports and presentations** *(District/School/Class websites; Board Curriculum & Facilities Committee: Budget Plan, District Electronic Bulletin Board)*
- **System reliability, functionality and compatibility**
- **State assessment of NJCCCS and Common Core State Standards** *(NJASK, HSPA, NJTAP-IN)*
- **Observations using Achieve NJ- Danielson Framework for Teacher Evaluation***(formal classroom observation; summative evaluation; Professional Growth Plans; Walk-throughs)*
- **Student electronic portfolio** (artifacts as evidence to assess technology integration and proficiency in 21st century skills – grades 4-8)
- **Monitored and surveyed usage and needs** *(IT Department meetings with Curriculum & Instruction Supervisor of Instructional Technology, Tech Coordinators/Principals/Leadership Team to plan K-12 initiatives; Building Tech Coordinator reports; IT consultants)*
- **LoTi Framework** *(http://www.loticonnection.com/lotilevels.html)*
- **Milken's Seven Dimensions of Gauging Progress** *(a "road map" to assist districts with infusion of technology into the curriculum)*

Specific evaluation methods are outlined in the Implementation Strategies/Activity Tables (Section V). Other methods of evaluation will be added to the present Implementation Strategies/Steps as needed.

Hardware

- Hardware Inventories: Maintained by the district IT department, accurate inventories lead to efficient management of hardware for budgeting, relocation, repurposing parts, and obsolescence. This measure leads to more reliable access for users and efficient spending.

- District tool: Electronic repair ticket database. At all building levels, users report repairs directly to IT Center through phone or email communications. The ticket is logged into the ticket database and the person receives a ticket confirmation via email. Building technology coordinators tend to minor troubleshooting and repairs as directed by the IT manager. The Magic ticket system provides ease of communication, thereby generating a quicker response time to support reliability. Daily data reports are analyzed and actions modified by district IT team for greater efficiency.

Hardware Conclusions:

  - Need to obsolesce equipment that has a high total cost of ownership (TCO).
  - Need to purchase additional hardware as necessary to implement district initiatives and to provide all students better access to current digital resources and online collaboration tools.
  - Repurpose equipment that will provide needed services to support curriculum integration and infusion in classrooms.
  - Need to continue to obsolesce and replace administrative machines with desktops, laptops, or tablet notebooks.
  - Need to plan and budget network and user hardware for upgrades in operating systems and district office software.

Software

- LoTi Digital Age Survey: This web-based survey provides each participant with an empirically-validated tool that generates their current LoTi level and that creates a personalized professional development profile based on their survey responses. http://www.loticonnection.com/lotitake.html

- Staff/Student Forms for Evaluation of Resources, and Services: Evaluation of resources is completed to ensure the correlation to NJCCCS, Common Core State Standards, equity and non-bias, ease of use, compatibility (system requirements) and reporting features. A range of educationally appropriate software is offered to a range of grade levels. Software available to a range of grade levels allows teacher and students to continue the use of familiar software applications and provides opportunities for differentiated instruction and efficient spending on multi-level software programs. The district plans to integrate and further implement web-based resources for students, teacher productivity, web-based collaborations, courses, and mentoring.

- Genesis (Student Management Software): Web based service to improve home-school connection includes a parent module for grades 4 -12. Cognos software will continue to be used in conjunction with Genesis to extract data and create reports for the district data warehouse for analysis, state reports, and action plans. Genesis software will allow central and building administrators and teachers the ability to generate data reports and disaggregate data.

- Systems 3000 (Financial Management Software): The district financial management system will provide the business office and administrative team the ability to generate detailed and required budgeting/spending reports for greater fiscal accountability and responsibility.

- Curricula frameworks and strategies will be supported by web based services (i.e. *Performance Plus (data analysis and curriculum mapping);* web based textbooks; online courses for faculty and students.

Software Conclusions

  - Need to provide more web based courses (staff/student) (ongoing)
  - Need to provide more access to online learning communities at all grade levels
  - Need to continue training of enhanced data reports and tools (ongoing)
  - Need to continue research, evaluation, and implementation of web based global collaborative opportunities and distance learning opportunities (ongoing)

Telecommunication Conclusions

- Telecommunication services are monitored by the IT department on an ongoing basis to ensure sufficient bandwidth to allow for simultaneous users across the district.

Telecommunication Conclusions

  - Need to increase Elementary and Intermediate schools, and District Administration Internet bandwidth to 100Mbps

Professional Development

- LoTi Framework: The LoTi Framework has been used as a statewide technology use survey, a district school improvement model, and a classroom walkthrough tool used to assess professional development needs. The LoTi Digital-Age Survey provides each participant with an empirically-validated tool that creates a personalized digital-age professional development profile aligned to the NETS for Teachers (NETS-T). This profile offers recommendations aligned to five popular instructional initiatives including (1) Level of Teaching Innovation (LoTi), (2) Partnership for 21st Century Skills, (3) Marzano's Research-based Instructional Practices, (4) Daggett's Rigor & Relevance, and (5) Webb's Depth of Knowledge.

Following the guidelines framed in Milken's Seven Dimensions of Gauging Progress, the district keeps its pulse on the uses of technology throughout the district. This assessment framework comes to education supported by the Milken Family foundation and the Milken Exchange on Education. This organization brings together national educators to collaborate on technological issues and learning, conducts research, and provides leadership in cutting edge issues on the impact of technology on learning and student achievement.

The structure of *The Seven Dimensions* serves as a guide for planning, implementation and assessment of technology's impact on learning. It serves as a tool to find strengths and weaknesses in renewing the school district 3-year technology plan. It provides the school district with guidelines to assess what it needs to do more of, less of, and do next, in meeting its goals and objectives for technology. School boards, administration, and community will be looking for results from their investment in technology. Policymakers want tangible evidence.

The framework is comprised of (7) seven interdependent dimensions and poses questions that help to evaluate technology to support integration, student achievement, and the development of life-long learning skills.

1. LEARNERS: Are students using technology in ways that deepen their understanding of academic content and advance their knowledge of the world around them?
2. LEARNING ENVIRONMENTS: Is the learning environment designed to achieve high academic performance by students?
3. PROFESSIONAL COMPETENCY: Are educators fluent with technology and do they effectively use technology to the learning advantage of students?
4. SYSTEM CAPACITY: Is the entire education system reengineering itself to meet the need of students in this knowledge-based, global society?
5. COMMUNITY CONNECTIONS: Is the school-community relationship one of trust and respect, and is this translating into beneficial, sustainable partnerships in learning technology?
6. TECHNOLOGY CAPACITY: Are there adequate technologies, networks, electronic resources and support to reach the education system's learning goals?
7. ACCOUNTABILITY: Is there agreement on what success with technology looks like? Are there measures in place to track progress and report results?

These interdependent elements help assess if our schools are bringing technology-enriched learning opportunities to students for achievement. Budgets, administrative, and staff cooperation and commitment are necessary elements to accomplish technology infusion. The district has a faculty/administration professional development advisory board that assists with the professional development program to support the needs of faculty. The district provides more content specific training than generalized training to support the specialized use of technology in curricular areas.

7. Mid-Course Corrections: The district continuously monitors and surveys the effective use of technology and its impact on student achievement as it plans for new initiatives and other opportunities as they may arise.

The IT Department and the Department of Curriculum and Instruction work closely together to identify any changing needs in hardware, software, or bandwidth throughout the district. The IT Manager and Supervisor of Instructional Technology meet regularly with building tech coordinators to review monthly reports, assess building needs, and plan for implementation. During monthly articulation meetings, district administrators, principals, and leadership teams plan and review K-12 initiatives.

The administrative staff looks for opportunities to use technology and is agreeable to support teacher ideas and enthusiasm to try innovative uses of technology to support learning and student achievement. They strongly support our professional development program and reciprocal communication enhances planning with the curricular technology department.

District administration has a research-based vision and supports a standards–based approach to professional development that provides a solid framework for technology infusion. The district continues its work toward establishing a solid knowledge base related to state standards and common core standards. The district continues to move forward with curriculum integration, data analysis and assessment, it will continue to move forward in using technology to improve student achievement and enabling students to meet challenging standards and develop life-long learning skills necessary for success in a 21st century global society.

8. Funding Plan: Anticipated and projected costs

Piscataway Township School District provides leadership in the area of technology by the assistant superintendent of curriculum and instruction, the district supervisor of special projects: instructional technology, the school business administrator, the IT director and IT service manager. The district team provides a balanced leadership and management team with curricular, administrative, and technological strengths.

Technology planning and budgeting is balanced because of this team approach. Equipment is effectively and efficiently relocated or used for parts throughout the district before being obsolesced. Budgeting is planned using a Total Cost of Ownership (TCO) approach. Many initiatives are planned in phases to support funding and phased implementation. The TCO approach has been in place, and the administrative leadership team, the Board of Education Facilities, Finance, and Curriculum committees support the approach to support fiscal responsibility.

Specialized technical services are used, short term, for projects that require specific skills. The use of such services began during the 2003-2004 school year as hourly part time technicians were employed when repair and maintenance needs are high and for large equipment initiatives. (i.e. summer initiatives).

IT resources and services available to ensure successful and effective uses of technology include:

- Four (4) full-time technicians (maintenance & repair)
- Network Specialist (maintenance, repair, troubleshooting, and wiring)
- Data Systems Administrator (maintenance, updates, systems administration, training)
- Instructional Technology Secretary/Media Circulation System Support
- IT Secretary
- Building Technology Coordinators [a stipend position] (some first-level troubleshooting and repairs; professional development support and turnkey training, maintain school web site maintenance)

The IT department uses an electronic ticketing system for repairs, has a specific telephone line for emergencies, and project request forms for special technology needs or requests. Timelines are created for district funded and building initiatives and are planned with building principals, administration, and the maintenance department. The maintenance department also has an on-line work order system.

IT procedures, IT forms, technology proficiency tipsheets, checklists, technical permission forms, district plans, and evaluations are available on the district and building public drives.

Genesis, the web based student management system, provides administration and faculty with access to student data, period by period attendance, a grade book and a parent module to support the home-school connection. This web-based student management system is SIF compliant and the vendor is on the state list for approved vendors for NJSMARTS.

B. Funding Sources

The following table provides projected costs of technologies to be acquired and related expenses (hardware/software, digital, curricular, upgrades, services) to achieve the goals of this plan, and reflect the anticipation of an increase in state funding:

T**echnology Plan Checklist for NJ School Districts/Charter Schools (2013-2016) Three Year Technology Plan Funding Table**				
ITEM	**FEDERAL FUNDING**	**STATE FUNDING**	**LOCAL FUNDING**	**MISC. (e.g. donations)**
Technology Equipment Purchased				
2013-2014			$556,000	
2014-2015			$570,000	
2015-2016			$590,000	
Technology Equipment Leased				
2013-2014			$338,817	
2014-2015			$508,225	
2015-2016			$677,634	
Network Capacity	USC (e-rate)			
2013-2014	$8,568		$8,232	
2014-2015	$8,568		$8,232	
2015-2016	$8,568		$8,232	
Internet Connectivity and	USC (e-rate)			
2013-2014	$20,934		$36,675	
2014-2015	$34,884		$33,516	
2015-2016	$34,884		$33,516	
Filtering Software				
2013-2014			$35,000	
2014-2015			$35,000	
2015-2016			$35,000	
Maintenance Policy and Plans				
2013-2014			$180,000	
2014-2015			$187,000	
2015-2016			$194,000	
Software, digital curricular services, online resources				
2013-2014			$197,081	
2014-2015			$204,000	
2015-2016			$217,000	
Technical Services				
2013-2014			$70,000	
2014-2015			$75,000	
2015-2016			$52,000	

Salaries (IT) 2013-2014 2014-2015 2015-2016			 $613,165 $621,648 $641,401	
Staff Development 2013-2014 2014-2015 2015-2016			Services & Salaries $104,000 $110,000 $115,000	

The following school district actions will continue the management and efficient use of funds for the total cost of technology ownership (2013-2016):

- Continue to plan and fund technology to support administrative systems that increase efficiency and accuracy
- Continue to plan and fund technology to support student achievement
- Continue to incorporate the cost of technology distribution and hardware into plans for any renovation and construction.
- Continue to seek grants and other forms of support to provide technology and related services to the district.
- Continue to seek and work with corporate partners to establish model installation of technology and staff training.
- Continue to apply for federal, state, and other funding opportunities available to education.
- Continue to follow a relocation and obsolescence plan for hardware.
- Continue to evaluate use of technology and its effect based on data analysis.
- Continue to communicate to the stakeholders the total cost of ownership and involve the stakeholders in planning.

E. Technology Plan Creation Date

This 2013-2016 three year technology plan was created on March 15, 2013, and includes the following elements:

- Goals and strategies for using telecommunications and information technology;
- A professional development strategy;
- An assessment of telecommunications services, hardware, software, and other services needed;
- Budget resources; and
- An ongoing evaluation process.