

**Paul Cuffee School
Three Year Technology Plan
2011-2014**

This three-year technology plan document was produced to address current technology needs, professional development, student achievement goals and infrastructure changes to maintain efficient and effective integration of technology use at Paul Cuffee School and anticipate growth and expansion as the High School program continues to expand.

Technology Committee members include: Megan Madden, Paul Cuffee Elementary School Library/Media Specialist, Leah Lubman, Middle/ High School Media Specialist, Suzie Shaw, Elementary School Academic Head, Jonathan Conklin, Paul Cuffee Business Manager, Babak Taleghani of Torxhead LLC, Nell Sears, Middle School Academic Head, Becky Coustan, High School Academic Head, Michael Obel-Omia, Head of School, Julia Karahalidis, Director of Institutional Advancement, Joop Nagtegaal, President, Board President, Kelly Polak, Elementary School Technology Instructor, and Ben Harris, Technology Director. The Technology Committee met in seven sessions during the 2010-11 SY to evaluate our progress, identify needs, and develop the following technology goals and objectives for three years. Other informal advisors have included Mike Calabro of RINET, John Hazard of Highland Associates.

Part One: Equipment and Connectivity

1. Annual Phone System Evaluation

Each year the Business Manager, Technology Director and Director of Institutional Advancement will review the telecommunications systems at each Paul Cuffee School building, including data, fax, fire safety and building security lines, local and long distance phone services, and wireless phone services to identify needs, evaluate operating efficiencies, as well as cost saving measures.

2. Implement Local Filtering with introduction of locally controlled m86 filter (Fall 2011)

In order to improve granularity of filtering and to allow different network users (students, teachers, staff, guests, etc.) to have access to the materials that they need, purchase an m86 filtering appliance and integrate it with our MS AD domain for authentication of users. RINET has agreed to host the physical hardware at their site and provide the software licensing.

3. High School Wiring Improvements (2011-12)

Continue to repair inactive damaged network drops to ensure adequate connectivity as we expand over the next three years into the entire space.

4. Middle School Server Upgrades (2011-2012) - Completed August 2011

In order to support educational computer use at the Middle School, purchase and implement new virtualized server environment with appropriate on-site and rotating off-site backups.

Completed August 2011

5. Continue to Develop Technology Resources for Growing High School Program (2011-12)

High School Principal and High School Library/ Media Specialist will work closely with Technology Director to identify technology equipment and software needs to meet RIDE high school graduation requirements.

Part Two: Ongoing Initiatives

1. Lexia Early Reading, Primary Reading, and Strategies for Older Readers

Continue supporting Lexia Early Reading, Primary Reading, and Strategies for Older Readers on workstations and Lexia Server to store data and manage client connections. Continue to train teachers to integrate Lexia products in their teaching of Reading.

Purchase: N/A

Labor Hours: 10/ year

Labor Cost: in-house labor

2. K-12 Library/Media Resource Center Needs

The Library/Media Specialists, in consultation with the Technology Department, will meet regularly to review electronic resource needs including expanded web access, and connecting to online catalog for increased access to shared electronic resources such as MP3 audio books, e-books and other hardware, web resources, and subscriptions.

Purchase: TBD

Labor Hours: 2-5/ year

Labor Cost: in-house labor

3. Imaging Workstations

Continue using a combination of HP Device Manager (HPDM) and FOG Server to manage disk-level images for all computer hardware supported. HPDM allows centralized management of HP thin clients and FOG allows us to re-install operating systems, applications, and settings efficiently. FOG allows us to deploy new hardware and recycle old hardware in hours, rather than days.

Purchase: Existing hardware and free software

Labor Hours: 30-40/ year

Labor Cost: in-house labor

4. Tracking Technology Inventory and Tech Support Issues

Continue using SpiceWorks at all locations to provide web interface for technicians to manage inventory of schoolwide technology assets and track IT support issues. SpiceWorks also allows users to submit support issues by email or via an intranet web site.

Purchase: Existing hardware and free software

Labor Hours: 5-10/ year

Labor Cost: in-house labor

5. Replacing Older Machines in all three buildings.

Continue replacing older workstations, either with traditional computers or with thin clients

where appropriate, based on a minimum-spec list and replacement as needed on a five year timetable. Continue to raise external sources of funding to meet budget expenses.

Purchase: \$20,000

Labor Hours: 40-80

Labor Cost: in-house labor

6. Assess Backup Strategies

In order to be sure school data is properly protected, we will continue to study and improve the effectiveness, redundancy, and security of the data backup systems at use in the school to ensure that backup systems provide adequate protection.

Purchase: TBD

Labor Hours: 15

Labor Cost: in-house labor

Year One:2011-2012

1. Purchase and Implement Second High School Computer Lab in Library

In order to continue providing adequate ratios of students-to-computers in our growing High School, implement a second computer lab in the HS Library. Using the existing server capacity, we will add 20-25 thin client workstations.

Purchase: \$15,000

Labor Cost: in-house labor

2. Workstations in the New High School – Completed Summer 2011

Continue to deploy one computer workstation per classroom

Purchase: \$4,000

Labor Hours: 10

Labor Cost: in-house labor

3. Continue Implementing Veeam backup & Replication for all VM Backup

Maintain licenses for Veeam Backup & Replication to improve quality and efficiency of server backups and insure minimum interruption to school business and academic work in the event of a server malfunction.

Purchase: \$600

Labor Hours: 20

Labor Cost: in-house labor

4. Improving Instructional use of Electronic Resources

Continue to improve the use of electronic resources, such as online encyclopedias, research tools, and educational software. Survey teachers about how electronic resources are used in the classroom today and opportunities to increase and improve that use.

Purchase: Existing hardware

Labor Hours: 20

Labor Cost: in-house labor

5. Pilot use of Parent and Student Portals in MMS

Our student information system, MMS, provides a parent and student portal to allow those parties to access relevant attendance, homework, and grade information using a web site. This allows for improved home-to-school communication. We will pilot this technology with High School parents, in order to evaluate future schoolwide plans.

Purchase: None.

Labor Hours: 30

Labor Cost: in-house labor

6. Projectors in the Middle and High School

Secure grant funding and install LCD projectors in each remaining academic classroom in the MS and HS.

Purchase:\$12,000

Labor Hours: 20

Labor Cost: Electrician and in-house labor

7. Projectors in Elementary School – Completed Summer 2011

Install LCD projectors in remaining ES classrooms.

Purchase:

Labor Hours: 15

Labor Cost: Electrician and in-house labor

8. Document Cameras in the Middle and High School

Secure grant funding and install Document Cameras for each academic classroom in the MS and HS. Train teachers on their use.

Purchase:

Labor Hours: 10

Labor Cost: in-house labor

9. Document Cameras in Elementary School – Completed Fall 2011

Purchase and install Document Cameras for each academic classroom in the elementary school. Train teachers on their use.

Purchase: \$

Labor Hours: 10

Labor Cost: in-house labor

10. Purchase and Implement Middle School Computer Lab using Terminal Server and Thin Clients - Completed Summer 2011

In order to provide a low-cost, high-value computer lab for our new Middle School, replace legacy workstations with thin clients and purchase and deploy Windows Remote Desktop Services.

Purchase: \$

Labor Cost: in-house labor

11. Begin Piloting and Planning for Instructional Use of Tablet Computers

Tablet Computers provide exciting opportunities for educators and schools. In order to develop a plan for their use at Paul Cuffee School, the Technology Committee will meet throughout the year to pilot their use and develop a three-year plan to secure funding necessary for implementation schoolwide.

Purchase: TBD

Labor Cost: in-house labor

12. Wireless Improvements in Middle School

In order to ensure adequate security, access to resources, and the ability of users to bring their own wireless devices to school (as appropriate), upgrade the MS wireless network to allow for network- and hardware-based authentication and BYOD flexibility.

Purchase: \$5,000

Labor Hours: 30

Labor Cost: In-House

Year Two: 2012-2013

1. Continue Assessing Network Virus Scanning

Undertake a comprehensive review of the school's virus scanning systems at the server and PC level. Review new technologies and approaches to ensure that we are adequately protecting individual users and the entire network from virus threats.

Purchase: Existing hardware

Labor Hours: 15

Labor Cost: in-house labor

2. Continue to Replace Outdated and Malfunctioning Equipment

As a result of annual inventory assessment, estimate number of new computers necessary for replacement in K-8 classrooms, library/media centers, computer labs and administrative offices.

Purchase: \$20,000 (Reuse and replace as much as 20% of inventory as needed).

Labor Hours: 15

Labor Cost: in-house labor

3. Improvements in Network Security and Intrusion-Detection

Undertake a comprehensive study of our network's integrity and security. Work with independent security analysts to determine and prioritize our vulnerabilities. Develop roadmap to fix any vulnerabilities found, in order of priority.

Purchase: Existing hardware

Labor Hours: 40 (30 internal, 10 external vendor)

Labor Cost: 10 hours = \$1000

4. Implement Tablets-in-the-classroom Plan

Upon the completion of the Tech Committee's research into tablet computers in the classroom, begin Phase One implementation assuming funding. The details of this roll-out will

depend completely on the recommendation of the Committee and available philanthropic resources.

Purchase: TBD

Labor Hours: TBD

Labor Cost: TBD

5. Investigate and Plan for Desktop Virtualization Strategies

There are a number of systems for desktop virtualization that may offer our computer users greater flexibility and performance in accessing their computer resources. In order to make full use of the server virtualization improvements that we have been able to make in the last three years, we will research and test the most promising platforms in order to form a strategy for deployment in 2013-14.

Purchase: TBD

Labor Hours: TBD

Labor Cost: TBD

6. Wireless Improvements in High School

In order to ensure adequate security, access to resources, and the ability of users to bring their own wireless devices to school (as appropriate), upgrade the HS wireless network to allow for network- and hardware-based authentication and BYOD flexibility.

Purchase: \$5,000

Labor Hours: 30

Labor Cost: In-House

Year Three: 2013-2014

1. Continue to Implement Tablets-in-the-classroom

Begin Phase Two implementation, under the direction of the Technology Committee. The details of this roll-out will depend completely on the recommendation of the Committee and funding.

Purchase: TBD

Labor Hours: TBD

Labor Cost: TBD

2. Deploy New Desktop Virtualization System

Based on the research in the previous year, we will deploy a desktop virtualization system to users in one or more of our physical locations.

Purchase: TBD

Labor Hours: TBD

Labor Cost: TBD

3. Wireless Improvements in Elementary School

In order to ensure adequate security, access to resources, and the ability of users to bring their own wireless devices to school (as appropriate), upgrade the ES wireless network to allow for network- and hardware-based authentication and BYOD flexibility.

Purchase: \$5,000
Labor Hours: 30
Labor Cost: In-House

Part Three: An Inventory of Current Practice

Equipment

Elementary School

- Two student-use computers in each classroom. One is shared with the classroom teacher (total: 36)
- One computer lab with 18 student-use computers, 1 teacher computer, projector, printer, and wireless access.
- Three laptops in each of the 4th, and 5th-Grade classrooms, intended for student use.
- A library lab of 6 desktops and 12 thin clients for use by students in the library.
- Three student-use computers in the Special Education office.
- HP Proliant DL380 G6 server, running VMWare ESXi, with 12 virtual machines running a variety of Oses, including Windows Server 2008 and ubuntu linux
- Netgear ReadyNAS for extra file services
- Backup server running Veeam Backup & Replication
- Structured Cat5e network terminating in the server room. Every room in the school has at least 2 network drops.
- Ten networked printers throughout building for student and faculty use, one color, five B/W.
- Three Networked Multifunction Printers (print, copy, scan to server)
- Pervasive wireless access throughout building provided by 8 wireless access points.
- 24 wired LCD projectors in classrooms and 2 portable projectors.

Middle School

- One student-use computer in each classroom, shared with the classroom teacher (total: 12)
- One computer lab with 20 student-use thin clients, 1 teacher computer, projector, printer.
- One locking mobile laptop cart with 20 laptops, and projector.
- Pervasive wireless access throughout building provided by 4 wireless access points.
- Netgear ReadyNAS for extra file services
- Five networked printers throughout building for student and faculty use.
- Two Networked Multifunction Printers (print, copy, scan to server)
- HP Proliant DL380 G7 server, running VMWare ESXi, with 10 virtual machines running a variety of Oses, including Windows Server 2008 and ubuntu linux
- 8 wired LCD projectors in classrooms and 2 portable projectors.

High School

- HP Proliant DL380 G7 server, running VMWare ESXi, with 16 virtual machines running a variety of Oses, including Windows Server 2008 and ubuntu linux
- Two Networked Multifunction Printers (print, copy, scan to server)
- Pervasive wireless access throughout building provided by 6 wireless access points.
- One computer lab with 22 student-use computers, 1 teacher computer, projector, printer.
- 6 wired LCD projectors in classrooms

Educational Software

Elementary School (installed on all student-use computers)

1. OpenOffice (Open Source alternative to MS Office—fully interoperable)
2. Kidspiration
3. Type to Learn 3 – Networked edition
4. Lexia Learning Systems - Early Reading, Primary Reading, and Strategies for Older Readers
5. Math Investigations

Middle School (installed on all student-use computers)

1. OpenOffice (Open Source alternative to MS Office—fully interoperable)
2. Inspiration
3. Scratch
4. Paint.net
5. Google Earth
6. Google Documents

High School

1. OpenOffice/ LibreOffice
2. Google Documents
3. Others to be determined by High School Head and Faculty in 2010-11.

Instruction

Elementary School

1. One Full-time Technology Instructor.
2. Grades K-5 have one 40-50 minute period per week for the entire school year.
3. Computer curriculum integrates the National Educational Technology Standards
4. Technology Instructor and Librarian assist grade level teachers in order to integrate technology tools and media resources into their classroom practice.
5. One computer lab is available to be signed out to teachers for special projects.
6. Three laptops in each 4th, and 5th-Grade classroom, intended for student use as part of instructional projects or individual education plan accommodations.

Middle School

1. One part-time Library/ Media Specialist

2. The Library/ Media Specialist assists grade-level teachers in planning, implementing, and assessing technology projects within the scope of their curricular plans.
3. Computer curriculum integrates the Paul Cuffee School Scope and Sequence and the National Educational Technology Standards (NETS)
4. One laptop cart and One computer lab are available to be signed out to teachers for their students' use.

High School

1. One part-time Library/ Media Specialist
2. The Library/ Media Specialist 9-12 teachers in planning, implementing, and assessing technology projects within the scope of their curricular plans.
3. Computer curriculum integrates the Paul Cuffee School Scope and Sequence, the new state graduation requirements and the National Educational Technology Standards (NETS)
4. One computer lab will be available to be signed out to teachers for their students' use.

Part Four: Sources of Support

2 Wireless Laptop Carts 2003-2004 (Walton Family Foundation)

Provided for the purchase of two wireless mobile laptop carts and hiring a computer teacher.

Middle School Computer Lab (Champlin Foundations) 2005-2006

Provided for the creation of a computer lab in the Middle School.

Elementary School Computer Lab (Champlin Foundations) 2006-2007

Provided for the creation of a computer lab in the Elementary School.

Elementary and Middle School Library Computers (Champlin Foundations 2007-08)

Provided for student and librarian use in new library spaces.

High School Media Center Computers (The White Family Foundation 2010-11)

Provided for student and librarian use in new media center and high school library.

ES & MS Internet Connectivity (E-Rate) Ongoing

SLD Reimbursements for Internet Connectivity at Barton and Promenade Street locations.

ES & MS Telecommunications (ERATE) Ongoing

SLD Reimbursements for land lines and wireless communication services for both Barton and Promenade Street locations.

High School Internet Connectivity (E-Rate)

Seeking for 2012-2013

SLD Reimbursements for Internet Connectivity at High School location

High School Telecommunications (E-Rate)

Seeking for 2012-2013

SLD Reimbursements for land lines and wireless communication services at High School location

High School Network & Hardware (E-Rate)

Seeking for 2012-2013

SLD Reimbursements for Network Wiring and Hardware at High School location

High School Network Connection with Middle School (E-Rate)

Seeking for 2012-2013

SLD Reimbursements for Wiring to Connect Middle and High School Networks

Professional Development (Operating Budget)

Annual training for technology coordinators and faculty to stay current with educational software

enhancements and technology upgrades.

Equipment Upgrades and Maintenance (Operating Budget plus External Sources of Support)

The school's annual operating budget and grants will help to support annual equipment upgrades,

insurance, technical support and maintenance.

Part Five: Addenda

Technology Standards drawn from three sources:

1. AASL Standards for the 21st-Century learner www.ala.org/aasl/standards/
2. National Educational Technology Plan www.ed.gov/technology/netp-2010
3. ISTE National Educational Technology Standards www.iste.org/standards.aspx