

**PAUL CUFFEE SCHOOL
THREE YEAR TECHNOLOGY PLAN
2008-2011**

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 begins.

Technology Advisory Committee members included: Mike Calabro of RINET, Curt D'Aguanno of RINET, Megan Southard, Paul Cuffee Library/Media Specialist, Suzie Shaw, Lower School Academic Head, Jonathan Conklin, Paul Cuffee Business Manager, Babak Taleghani of Torxhead LLC, Nell Sears, Middle School Academic Head, Paul Graseck, High School Planning Consultant, Nina Giannotti, Executive Assistant to the Head of School, Julia Karahalis, Director of Institutional Advancement, Kelly Polak, Lower School Technology Instructor, Ben Harris, Technology Coordinator and John Hazard of Highland Associates. Adhoc committees met in several sessions to evaluate our progress, identify needs, and develop the following technology goals and objectives for three years.

PART ONE: EQUIPMENT AND CONNECTIVITY

1. **Annual Phone System Evaluation**

Each year the business manager, technology coordinator 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. **Increase Internet Access (2009-10)**

Request 1.5 Mbps Broadband Internet to manage increase in volume. As we plan to use more and more web resources in our instruction as well as taking steps to connect separate networks together, bandwidth is critical for instructional success for 440 K-8 students using 146 internet connected computers.

Should the high school open as anticipated in 2010-11, request increased bandwidth to accommodate student, classroom and additional library/media resource center needs.

3. **Middle and High School Wiring Assessment (2009-10)**

Ensure adequate data lines and wiring for middle school (present and anticipated new facilities) In the event of new building acquisition(s) determine security and fire safety systems, fax, data, internet and voice communications wiring needs and seek bids for installation and month-to-month services. When high school opening date is confirmed, wiring needs will be addressed.

4. **Consider Server Upgrades (2008-09)**

By June 2009, develop plan for replacing and upgrading servers in both school locations. Document upgrade options, establish budget for purchase and installation of equipment. Include anticipated server needs for high school program as well.

5. Library/Media Resource Center Needs (2009-10)

In 2009-10 the Library/media Committee will 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.

6. Identify Technology Requirements for High School Program (2008-09)

High school planning consultant will work closely with technology coordinator 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. Email Antivirus/Spam Gateway Filter

Continue to maintain a spam and virus filter to remove incoming spam before it reaches our email server. This has the dual benefits of reducing the current load on our email and antivirus servers and the amount of time that employees spend deleting spam.

Purchase: Existing hardware

Labor Hours: 10/ year

Labor Cost: in-house labor

3. Imaging Workstations

Continue using FOG Server to manage disk-level images for all computer hardware supported. FOG allows us to re-install operating systems, applications, and settings efficiently. This allows us to deploy new hardware and recycle old hardware in hours, rather than days.

Purchase: Existing hardware and free software

Labor Hours: 10-20/ 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 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

Continue replacing older machines, 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

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. See addendum for documentation of current backup scheme.

Purchase: TBD

Labor Hours: 15

Labor Cost: in-house labor

Year 2008-2009**1. Purchase a Color Laser Printer for Middle School**

To encourage use of computers in the arts and save money on ink-jet printing, purchase and install one color laser printer in each school. Implement a system for controlling access, increasing efficiency and assuring cost effective purchase of supplies.

Purchase: \$800

Labor Hours: 5

Labor Cost: in-house labor

2. Continue Transitioning Student Database Functions to PowerSchool

Student data is currently kept in two different databases. In order to consolidate our data into PowerSchool and prepare to use it school-wide, we will need to continue training all administrative users, migrate data, and test data for integrity. This is a big project, with the goal to implement PowerSchool use school-wide by summer 2009.

Purchase: Existing hardware

Labor Hours: 100

Labor Cost: in-house labor

Training Cost: \$2500

3. Implement Symantec Backup Exec 12.5 with Exchange Agent and VM Agent

Purchase and implement Symantec BackUp Exec 12.5 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: \$1300

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. Increase Faculty/Staff Knowledge Base's Value (extranet)

Over the course of the year, implement new features of our Knowledge Base extranet site to meet needs of faculty and staff. Our Knowledge Base provides information for computer users at the school. We continue to add and update information regularly to be sure it is useful.

Purchase: Existing hardware and software
Labor Hours: 30
Labor Cost: in-house labor

6. Deploy Middle School Community Web Site

Over the course of the year, deploy a web site resource for Middle School parents and students. The site is anticipated to aid in sharing homework assignments, class news, and events initially, but may expand to be a photo gallery, showcase for student work and other communication sharing ideas generated by the feedback that we receive. In order to address privacy concerns, the site will be only reachable with a password. We will start by piloting the site with sixth-grade families by spring 2008, adding grades seven and eight by fall 2009.

Purchase: Existing hardware and software
Labor Hours: 30-50
Labor Cost: in-house labor

7. Research Implementing a Wide Area Network (WAN) or other method to join our multiple networks

A WAN would join our two networks into one, saving duplication in server resources and allowing users to move between locations seamlessly, but requires considerable bandwidth to function properly. In anticipation of opening a third location for the new High School, we will research different solutions to providing a common network for all users.

Purchase: TBD
Labor Hours: 30
Labor Cost: in-house labor

Year Two: 2009-2010

8. Additional Educational Software

By May 2009, survey all teachers and identify 2-5 software packages that will best support the educational goals of the School. By August 2009, purchase and install chosen networked software to meet the needs of 500 students in K-9.

Purchase: \$2,000
Labor Hours: 40
Labor Cost: in-house labor

9. Implement a WAN or other method to join our multiple networks

Following research conducted 2008-2009, implement a solution to join our multiple networks into one, saving duplication in server resources and allowing users to move seamlessly between locations.

Estimated Purchase: TBD

Labor Hours: TBD

Labor Cost: TBD

10. 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

11. Evaluate and Improve Disaster-Readiness in School Servers

Evaluate methods for ensuring integrity of existing email and internet systems in the event of unforeseen losses or equipment failures. We will implement methods of creating "virtual machine" images of servers to allow for minimum downtime in the event that a physical server goes and data is unrecoverable.

Purchase: Existing hardware

Labor Hours: 30

Labor Cost: in-house labor

Year Three: 2010-2011

12. Purchase and Implement High School Computer Lab using Terminal Server and Thin Clients

In order to provide a low-cost, high-value computer lab for our new High School, purchase and deploy terminal server to allow us to use donated and old PC hardware as thin clients. Hardware requirements for thin clients are very low, allowing us to make use of old computers, such as Pentium1s and Pentium2s that would be otherwise useless. This saves money in the short-term and provides for growth over the long-term.

Purchase: Server, monitors and use Existing PC hardware

Labor Cost: in-house labor

13. 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

14. 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

15. Operating System Assessment

Evaluate available operating systems in the marketplace in conjunction with assessing in-house computer operating systems to ensure current efficiencies and compatibility needs. Plan implementation strategy that is spread out over multiple years.

16. Purchase: NEW or Updated Operating System TBD

Labor Hours: 15

Labor Cost: in-house labor

PART THREE: AN INVENTORY OF CURRENT PRACTICE**Equipment****Lower 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.
- ❖ Three student-use computers in the Special Education office.
- ❖ A Windows 2003 server serving MS Exchange, DNS, Active Directory, File Services, Print Services, Symantec Corporate Antivirus Virus Server, and Veritas BackupExec (See addendum for documentation of current backup scheme)
- ❖ Structured Cat5e network terminating in the server room. Every room in the school has at least 2 network drops.
- ❖ Six networked printers throughout building for student and faculty use, one color, five B/W.
- ❖ Two locking mobile carts with AlphaSmart 3000 portable writing tablets and cables to transfer student writing to a desktop PC.
- ❖ Networked Multifunction Printer (print, copy, scan to server)

Middle School

- ❖ One student-use computer in each classroom, shared with the classroom teacher (total: 12)
- ❖ One computer lab with 18 student-use computers, 1 teacher computer, projector, printer.
- ❖ One locking mobile laptop cart with 18 laptops, and projector.
- ❖ Pervasive wireless access throughout building provided by 4 wireless access points.
- ❖ A Windows 2003 server serving File Services, Print Services, and Symantec Corporate Antivirus Virus Server. Backup through Rsync running on Cygwin to disk and remote PC.
- ❖ Five networked printers throughout building for student and faculty use.
- ❖ Networked Multifunction Printer (print, copy, scan to server)

Educational Software

Lower 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)

OpenOffice (Open Source alternative to MS Office—fully interoperable)
Inspiration
Scratch
Paint.net
Google Earth

High School

To be determined by High School Head and Faculty in 2010-11.

Instruction

Lower School

1. One 60%-time Technology Instructor.
2. Grades 2-5 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 Technology Instructor.
2. The technology instructor 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 Technology Instructor
2. The technology instructor assists 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 laptop cart and One computer lab will be available to be signed out to teachers for their students' use.
5. In future years, grant funded laptops will be assigned to each high school student to assure that they have access to the technology necessary to fulfill their graduation requirements in all subjects across the curriculum.???

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.

Lower School Computer Lab (Champlin Foundations) 2006-2007

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

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

Provided for student and librarian use in new library spaces.

LS & MS Internet Connectivity (E-Rate) Ongoing

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

LS & 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 2010-2011

SLD Reimbursements for Internet Connectivity at High School location

High School Telecommunications (E-Rate)

Seeking for 2010-2011

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

High School Network & Hardware (E-Rate)

Seeking for 2010-2011

SLD Reimbursements for Network Wiring and Hardware at High School location

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

Seeking for 2010-2011

SLD Reimbursements for Wiring to Connect Middle and High School Networks

H.S Telecommunications (ERATE)

Seeking for 2010-11

SLD Reimbursements for land lines and wireless communication services for high school location.

Professional Development (Title II)

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 will help to support annual equipment upgrades, insurance, technical support and maintenance.

PART FIVE: ADDENDA

Paul Cuffee School

Server Backup Scheme

Revised: 8/1/2008

Goal: All crucial data backed up in multiple locations, with daily backups kept going back 6 weeks.

Sources:

- PCSServer – Exchange data, file services, domain controller
- Starboard– (NAS) File services

Backup Destinations:

- Starboard–(NAS), capacity 1.3TB
- 3 External HDs, capacity 500GB each, connected via eSATA to PCSServer

Schedule:

Daily:

- All crucial files on PCSServer are backed up twice.
 - Server is backed up first to **External HD** using Veritas BackupExec
 - Server is backed up second to **Starboard** via SMB/CIFS.
- File Services on **Starboard** are backed up to the **External HD** attached to PCSServer.

Weekly:

- Full metal backup of PCSServer is taken to **External HD**.

Bi-Weekly:

- The three **External HDs** are rotated through three locations:
 - Lower School: 459 Promenade St.
 - Middle School: 30 Barton St.
 - A secure off-site location

National Educational Technology Standards (NETS•S)**1. Creativity and Innovation**

Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology. Students:

- a. apply existing knowledge to generate new ideas, products, or processes.
- b. create original works as a means of personal or group expression.
- c. use models and simulations to explore complex systems and issues.
- d. identify trends and forecast possibilities.

2. Communication and Collaboration

Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others. Students:

- a. interact, collaborate, and publish with peers, experts, or others employing a variety of digital environments and media.
- b. communicate information and ideas effectively to multiple audiences using a variety of media and formats.
- c. develop cultural understanding and global awareness by engaging with learners of other cultures.
- d. contribute to project teams to produce original works or solve problems.

3. Research and Information Fluency

Students apply digital tools to gather, evaluate, and use information. Students:

- a. plan strategies to guide inquiry.
- b. locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
- c. evaluate and select information sources and digital tools based on the appropriateness to specific tasks.
- d. process data and report results.

4. Critical Thinking, Problem Solving, and Decision Making

Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources. Students:

- a. identify and define authentic problems and significant questions for investigation.
- b. plan and manage activities to develop a solution or complete a project.
- c. collect and analyze data to identify solutions and/or make informed decisions.
- d. use multiple processes and diverse perspectives to explore alternative solutions.

5. Digital Citizenship

Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior. Students:

- a. advocate and practice safe, legal, and responsible use of information and technology.
- b. exhibit a positive attitude toward using technology that supports collaboration, learning, and productivity.
- c. demonstrate personal responsibility for lifelong learning.
- d. exhibit leadership for digital citizenship.

6. Technology Operations and Concepts

Students demonstrate a sound understanding of technology concepts, systems, and operations.

Students:

- a. understand and use technology systems.
- b. select and use applications effectively and productively.
- c. troubleshoot systems and applications.
- d. transfer current knowledge to learning of new technologies.