

Falls Church City Public Schools
FY2012-2016

Strategic Technology Plan



FALLS CHURCH CITY
PUBLIC SCHOOLS

http://www.fccps.org/board/reports/TechPlan_FY2012-16.pdf

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Executive Summary

This plan is based on the belief that long-range planning is absolutely essential. The following goals need to be met a world where technology is changing rapidly. The basic principles of this plan are:

- Technology now plays an integral role in system-wide and school-based strategic planning.
- In the 21st Century our students need to be technology literate to compete in a global society.
- In order to make informed decisions, communicate efficiently, manage and organize data, and provide innovative instruction, FCCPS staff members need appropriate technological support and training.
- Emerging technology will be thoroughly researched in an effort to ensure that the FCCPS program remains innovative, and efforts will be made to ensure that future purchases are cost-effective.

Within this context, the Systemwide Technology Committee received ongoing input from a variety of stakeholders. This input was used to develop the technology objectives and strategies. This plan takes into consideration current technological initiatives to support both the instructional and operational aspects of the school division and its rapidly evolving technological infrastructure.

This long-range plan attempts to identify technology goals and objectives through the year 2015 in accordance with the Virginia Department of Education (VDOE) technology requirements.

George Mason High School has one full-time technology coordinator and one technology assistant. The technology coordinator manages the school website, teaches lessons, trains teachers, and tracks the progress of technology initiatives in the school and division. The technology assistant maintains the computer labs and responds to teacher requests for technical assistance.

The school has a total of 439 computers located in classrooms and library, the 5 computer labs and 2 wireless laptop carts. Students have open access to the library computers before and after school. In addition, all computer labs are available for student use during a 30 minute period of the school day.

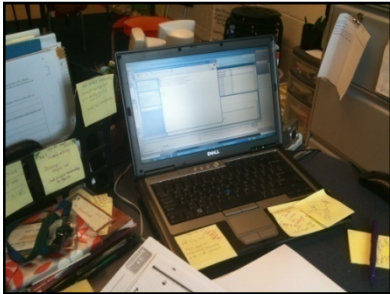
Each classroom has a teacher station with a networked computer, printer, LCD projector, a long-range wireless keyboard, wireless mouse, and a wall-mounted speaker. In addition, the science teachers and a few other teachers have document cameras. The math teachers have a tablet monitor connected to their computer. Each science lab has 6 wireless laptops that can be used for data collection.

In addition to the regular computer labs, the Career and Technical education class has a dedicated computer lab which offers students access to graphic arts, engineering and architectural design programs as well as a large scale printer.

Several technologies are available for loan to teachers. These items include seven sets of student response system devices, several laptops, LCD projectors, class sets of video cameras, and digital cameras. Teachers have access to scanners and a color laser printer.

Built in 2005, **Mary Ellen Henderson** occupies the division's newest building. It has one full-time technology coordinator and an additional full time one technician.

Teacher Access to Technology



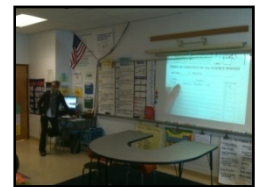
Computers: Every classroom contains at least one computer that is connected to the FCCPS Wide Area Network (which is currently connected through a Verizon FiOS connection). All classrooms contain an LCD projector that has been mounted into the ceiling of the room. Rooms with mounted projectors are also provided with a long range wireless keyboard and mouse. This allows teachers and students to control the "action" on the screen from anywhere in the room. In an effort to create a multimedia environment, the majority of the classrooms have been equipped with a powerful speaker. This extends the usefulness of the projected image by allowing video presentations. A handful of teachers have been piloting the use of a teacher laptop computer vs. a desktop computer. The primary benefit being that this machine can be used anywhere in the school and taken home by the teacher.

Additionally, each grade level team shares a "team" room that contains additional computers and printers.

Document Cameras: Approximately half of the classroom teachers have a document camera attached to their classroom projector. Primarily replacing the typical overhead transparency projector, this device has revolutionized how many teachers present materials to students.



Google Apps for Education & Pearson ACCESS: All teachers have accounts that allow them to employ web-functionality to communicate with students, parents and other teachers via the Internet. Google Apps provides calendars, document sharing and web site creation tools. Pearson ACCESS provides Learning Management System (LMS) functionality.



Assorted Technology: Teachers at MEH have access to a wide variety of technology tools and resources, including hardware tools such as digital cameras, video cameras, Interactive whiteboards (SMARTBoards), and a plethora of printing options, software tools such as Inspiration, video editing tools,

and MS Office applications, and web-based tools like VoiceThread, BrainBop and Discovery Education Streaming.

Additionally, teachers are strongly encourage to identify tools that they believe will make them better teachers and they are empowered to utilize those tools as they see fit.

Student Access to Technology

Computers: MEHMS has three large open-access computer labs and one smaller mini-lab that are shared by the teachers and students. The large labs contain a minimum of 25 PCs and each of them have an LCD projector mounted in the ceiling. The smaller mini-lab contains nine PCs and is primarily used by the sixth grade team.

Each grade level team also shares a mobile lab of 28 laptop computers. This mobile lab allows access to one computer for each student within the classroom setting.



The media center contains 13 computers used for electronic research, project production and class instruction. The media center contains a large classroom that also contains a mounted LCD projector and speaker. It can, and has, served as a comfortable room in which to conduct professional development or student instruction. The media center has a fully automated catalog and circulation system, and an extensive collection of electronic research tools and databases.

Pearson ACCESS & Google Apps for Education: Using Pearson ACCESS, students can access classroom materials and resources at home or from any connected computer. MEH is hopeful that a pilot program will begin in Winter 2011 to explore the use of Google Apps for Education with students.

Additional technology: As part of a commitment to Career and Technology Education (CTE), MEHMS contains a special technology and design lab where CTE students work through a unique curriculum in a hands on fashion. This lab is maintained through a special contract with Diversified Educational Systems (DES).

Thomas Jefferson has a full-time technology coordinator who maintains the school's Web site (www.fccps.org/tj) and oversees the school's technology program. The technology coordinator also manages the efforts of one full-time one technician and one full-time technology assistant.

Thomas Jefferson's students work extensively on the development of keyboarding skills. Students in second, third and fourth grades work at their teachers' discretion using a variety of software programs and technology resources. All teachers and

students have access to a variety of online resources including Discovery Streaming, BrainPop, NetTrekker and Study Island.

There is one static computer lab at Thomas Jefferson. The lab has 30 computers and a LCD projector. The lab includes a scanner and a networked color laser printer. In addition to the labs, Thomas Jefferson has six wireless notebook computer carts, each of which has 20-25 laptop computers.

Each second grade classroom has Front Row digital sound field systems with teacher and student microphones and speakers that provide equitable sound magnification. One system is portable and can be set up as needed in other rooms.

All Thomas Jefferson classrooms have two or more computers connected to the school division's wide area network. All networked computers have Internet access through the wide area network. Each classroom has a TV DVD/VCR. All classrooms and several learning spaces have mounted LCD projectors. All classrooms and several learning spaces have mounted Interactive whiteboards (SMARTBoards). Thomas Jefferson has 12 document cameras that are shared by teachers. All classrooms have a networked printer and access to 3 networked color printers within the building.

Hardware and software in the Thomas Jefferson library includes a fully automated catalog and circulation system and four networked patron computers. Students have access to a variety of electronic research tools through the library's patron computers.

Mount Daniel has a half-time technology coordinator who maintains the school's Website (www.fccps.org/md) and oversees the school's technology program. Mount Daniel's students use computers in their classrooms and in the computer lab.

First grade students use the lab to work through four computer programs, learning basic technology and project production skills. Students from both grades use the computer lab for their work with the Waterford Early Reading Program.

Each Mount Daniel classroom has one television set with VCR/DVD player and at least two networked computers. There is one printer per classroom. Networked classroom computers print to three building-wide laser printers. Networked computers have T1 Internet access through the district's wide area network. Each

K-1 classroom has one computer with the capability of displaying its monitor screen on a television set, wall-mounted screen or interactive whiteboard (SMART Board).



Each K-1 classroom, the library and two special subject rooms have Front Row digital sound field systems with teacher and student microphones and speakers that provide equitable sound magnification. Two systems are portable and can be set up as needed in other rooms.

Each K-1 classroom has one digital magnification device (flex cam) or document camera (Elmo) connected to a TV or LCD projector. There is one additional laptop computer with a document camera and LCD projector that is shared by specialists. A second laptop with LCD projector is used in the conference room and available for loan. There are twenty digital cameras used by teachers and specialists. Two digital camcorders and two digital audio recorders are available for loan.

Hardware in the Mount Daniel computer lab includes twenty-five networked computers and a networked color laser printer. Networked computers have T1 Internet access through the district's wide area network. There are twenty-seven additional computers and four laser printers in the lab dedicated for use with the Waterford Early Reading Program. Two dedicated Waterford computers run the Waterford Early Math and Science program in preschool and Special Education classrooms.



Hardware and software in the Mount Daniel library includes a fully automated web-based catalog and circulation system, two networked patron computers, a scanner and a large-group presentation device (LCD projector) with a dedicated laptop. Students have access to age-appropriate electronic research tools through the library's patron computers.

Planning

FCCPS Strategic Technology Plan Committee

Superintendent: Lois Berlin

Assistant Superintendent: Gloria Guba

Chair of Technology Committee: Steven Knight

Susan Jinks – Instructional Technology Coordinator

Brett Sparrgrove - Instructional Technology Coordinator

Donna Viscardi - Instructional Technology Coordinator

Rik Jowers – Technology Specialist

Dang Nguyen – Technology Specialist

Leila Levesque – Data Specialist

John Brett – Communications

FCCPS Strategic Technology Plan Committee began work on the 2011-2015 plan soon after the state plan was adopted. A subcommittee of the four school building Instructional Technology Coordinators met throughout the summer to discuss the plan's goals, objectives and determine appropriate measures.

This subcommittee presented the first draft of the plan to the FCCPS Strategic Technology Plan Committee. Feedback was incorporated made and the plan was approved.

The chair of the technology committee took the second draft and presented to the Leadership team. This team is comprised of directors, department leaders and building principals. Feedback was incorporated and the plan was approved.

The chair of the technology committee presented the plan to a school-based technology committee at George Mason High School. Recommendations were made. Technology Planning subcommittee reviewed recommendations and made changes.

FCCPS Strategic Technology Plan Committee approved the final version to be presented to the School Board.

The chair of the technology committee presented final plan to the School Board. FCCPS Strategic Technology Plan 2011-2015 was approved.

FCCPS Strategic Technology Plan Goals	Alignment with Other Plans	
	Plan	Alignment
Goal 1: Provide a safe, flexible, and effective learning environment for all students.	Virginia Educational Technology Plan FCCPS Strategic Plan National Educational Technology Plan	Goal 1 Goal 1, 3 Goal 3, 4
Goal 2: Engage students in meaningful curricular content through the purposeful and effective use of technology.	Virginia Educational Technology Plan FCCPS Strategic Plan National Educational Technology Plan	Goal 2 Goal 1, 3 Goal 1, 3
Goal 3: Afford students with opportunities to apply technology effectively to gain knowledge, develop skills, and create and distribute artifacts that reflect their understandings.	Virginia Educational Technology Plan FCCPS Strategic Plan National Educational Technology Plan	Goal 3 Goal 2 Goal 1, 4
Goal 4: Provide students with access to authentic and appropriate tools to gain knowledge, develop skills, extend capabilities, and create and disseminate artifacts that demonstrate their understandings.	Virginia Educational Technology Plan FCCPS Strategic Plan National Educational Technology Plan	Goal 4 Goal 2 Goal 3, 4
Goal 5: Use technology to support a culture of data-driven decision making that relies upon data to evaluate and improve teaching and learning.	Virginia Educational Technology Plan FCCPS Strategic Plan National Educational Technology Plan	Goal 5 Goal 3 Goal 2, 3

Needs Assessment

In preparation for FCCPS' new Strategic Technology Plan, the FCCPS Strategic Technology Plan Committee surveyed all instructional staff. The survey received a 55% return rate. This data collection framed the discussion of the new plan, re-affirmed some assumptions about the tech readiness of our instructional staff and helped focus staff development for the 2010-2011 and beyond.

The survey determined;

- if software and hardware resource were adequate,
- technical and instructional support was adequate,
- instructional staff felt prepared/confident in using technology for administrative and instructional purposes,
- determine if personal use of technologies are also applied as instructional tools,
- determined the perceived usefulness,
- perceived ease of use
- attempt to get measure the computer self-efficacy of the instructional staff.

The highest per school percentage of participation was from George Mason High School. The second highest was from Mary Ellen Henderson Middle School. The third highest was from Thomas Jefferson Elementary School and the lowest was from Mount Daniel Elementary School.

When asked about confidence in their ability to effectively use a variety of technology tools and applications for their jobs, most felt moderately to extremely confident. All expressed support for technology affecting student work, with high ratings for increased motivation and quality of work produced.

All schools reported assigning student work that involves using technology. Teachers at throughout the district reported using a variety of technology work, including productivity tools and Internet tools. The percentage of assignments including use of technology tools rose through the grade levels.

All teachers reported engaging in a variety of professional development activities, with in-person conferences supplemented by online courses, Webinars, monitoring of blogs, and modest use of social networking tools for professional learning.

The majority of teachers at all four schools indicated that they were moderately to extremely confident in their ability to use a variety of technology tools and applications in their jobs. The age level taught did not significantly affect confidence.

Comments about the quality of support from building technology staff were positive. Suggestions were made to include more technology training and skills practice during weekly teacher release time (FCCPS short Wednesdays).

Mount Daniel School:

At Mount Daniel, most participants felt that hardware and software were adequate for their needs. There were requests for additional classroom video cameras and desktop computers. The majority indicated that technical support and training were adequate for their needs. They gave the highest rating to training provided by school personnel, most of which is delivered in person. Most did not create content or share content on the Web.

Thomas Jefferson Elementary School:

At Thomas Jefferson, most participants felt that hardware and software were adequate for their needs. There were requests for additional smart boards and laptops. The majority requested more training on the use of both software and hardware, especially training delivered in person rather than by video. Most did not create content or share content on the Web. There was interest in more professional development to help teachers provide technology enhanced experiences for students.

Mary Ellen Henderson Middle School:

At Mary Ellen Henderson, most participants felt that hardware and software were adequate for their needs. There were requests for additional document scanners and interactive whiteboards, along with newer equipment in computer labs and increased reliability of laptops throughout the school. There was interest in more professional development, both for staff use of district software and for technology integration in classrooms. Teachers reported consistent use of technology in preparation of work assigned to students and use of the Web for professional communication but not for posting student work or communication with students.

George Mason High School:

At George Mason, most participants felt that hardware and software provided were adequate for their needs. There were requests for additional computer labs and additional computers per lab, as well as additional interactive whiteboards, and classroom computers. There was interest in upgrading to a newer version of Microsoft Office than the 2003 version currently used. Teachers asked that technology training take place during professional development time instead of planning time. Teachers reported consistent use of technology in preparation of work assigned to students and use of the Internet for professional learning networks. In addition teachers reported use of the Web for communication with students and posting of student work.

Falls Church City Public Schools Technology Plan

FY2012-16

Goals, Objectives, Strategies and Evaluation Strategies

Goal 1:

Provide a safe, flexible, and effective learning environment for all students

Objective 1.1: Deliver appropriate and challenging curricula through face-to-face, blended, and virtual learning environments.

Strategy 1.1.1: Determine the need for digital and/or online resources.

- *Evaluation Strategy: Evaluate currently available digital and/or online resources.*
- *Evaluation Strategy: Utilize data from needs assessment to justify acquisitions for digital and/or online resources.*

Strategy 1.1.2: Provide course and/or grade level access to online content and tools, including collaborative spaces.

- *Evaluation Strategy: Analyze data to determine frequency of use for online content and tools, and collaborative spaces.*

Strategy 1.1.3: Create a district and/or school-based policy (which may include infrastructure, guidelines, and support) for enrolling and supporting students in Virtual Virginia and other virtual and/or blended opportunities

- *Evaluation Strategy: Analyze enrollment in Virtual Virginia and other opportunities (may include the number of successful completion, the number of drop outs, and anecdotal accounts from students).*

Objective 1.2: Provide the technical and human infrastructure necessary to support real, blended, and virtual learning environments.

Strategy 1.2.1: Meet or exceed the state requirement for the number of instructional technology resource teachers (ITRT) assigned to each school in order to assist educators in integrating technology into teaching and learning.

- *Evaluation Strategy: Describe the ratio of ITRT to students.*

Strategy 1.2.2: Provide the technical support personnel and infrastructure needed at each school, and at the division level, to support instructional needs.

- *Evaluation Strategy: Evaluate the adequacy of division-wide technical support personnel compared to infrastructure and initiatives.*
- *Evaluation Strategy: Evaluate the adequacy of school-based technical support personnel compared to infrastructure and initiatives.*

Strategy 1.2.3: Provide and support computer and other hardware to student ratio that meets the instructional needs of each school and can be maintained by the technical support personnel and infrastructure within the district.

- *Evaluation Strategy: Determine the ratio of computers to students by school on a yearly basis.*
- *Evaluation Strategy: Develop and maintain an appropriate replacement cycle of computers and other hardware.*
- *Evaluation Strategy: Determine the feasibility of increasing the infrastructure to decrease the computer to student ratio.*

Strategy 1.2.4: Implementation of fiber and 1 Gbps Ethernet to every school.

- *Evaluation Strategy: Describe the extent to which fiber and 1 Gbps Ethernet have been implemented in every school.*
- *Evaluation Strategy: Develop and maintain an appropriate replacement cycle of servers, switches, and UPS batteries to ensure continuity of services.*

Strategy 1.2.5: Implementation of wireless access to the Internet in every school.

- *Evaluation Strategy: Describe the current status and the need for wireless at each school to use school resources to support teaching and learning.*
- *Evaluation Strategy: Describe the current status and the need of wireless at each school for the purpose of students and educators to use personal technologies at school to support teaching and learning.*

Objective 1.3: Provide high-quality professional development to help educators create, maintain, and work in a variety of learner-centered environments.

Strategy 1.3.1: Identify, develop, disseminate, and maintain resources to support the effective use of technology in all curricula by educators at all levels of integration expertise.

- *Evaluation Strategy: Examine the extent to which FCCPS identifies, develops, disseminates, and maintains the resources needed to support the effective use of technology across curricula and at varying levels of integration expertise.*
- *Evaluation Strategy: Determine the extent to which FCCPS employees take advantage of flexible, "just in time" professional development.*

Strategy 1.3.2: Leverage public/private/nonprofit partnerships to provide professional development focused on technology integration strategies and the development of educators' and administrators' 21st century skills.

- *Evaluation Strategy: Describe the types, quantity, and perceived quality of professional development provided by partnerships.*

Strategy 1.3.3: Provide high-quality professional development to help educators develop and manage their online presence.

- *Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.*

Strategy 1.3.4: Support pilot projects to help educators better understand the impact of new and emerging technologies on the learning environment and develop strategies to integrate them effectively into schools.

- *Evaluation Strategy: Describe the method for financially supporting pilot programs.*
- *Evaluation Strategy: Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects.*

Objective 1.4: Provide professional development to educators on Internet Safety.

- *Evaluation Strategy: Maintain a log of educators who have completed Internet Safety training.*

Goal 2:

Engage students in meaningful curricular content through the purposeful and effective use of technology.

Objective 2.1: Support innovative professional development practices that promote strategic growth for all educators and collaboration with other educators, content experts and students.

Strategy 2.1.1: Facilitate the development, use and delivery of professional development that promotes technology as a collaborative tool.

- *Evaluation Strategy: Describe how FCCPS facilitates professional development opportunities that promote using technology as a collaborative tool.*
- *Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.*

Strategy 2.1.2: Facilitate the development and delivery of professional development opportunities that focus on effective technology use in specific core curricular areas.

- *Evaluation Strategy: Describe how FCCPS facilitates professional development opportunities that promote using technology as a collaborative tool.*
- *Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.*

Objective 2.2: Actualize the ability of technology to individualize learning and provide equitable opportunities for all learners.

Strategy 2.2.1: Provide reasonable access to Internet-connected devices that offer students the flexibility to learn anytime, anywhere.

- *Evaluation Strategy: Describe FCCPS' role in providing access to Internet connected devices.*
- *Evaluation Strategy: Maintain shareable list of web-based software tools (fee-based and open source) that can be used by students to promote anytime, anywhere learning.*

Strategy 2.2.2: Identify and disseminate information and resources to assist schools in evaluating the interactive and universal design features of hardware, software, and Internet sites.

- *Evaluation Strategy: Describe ways that FCCPS identifies and disseminates hardware and software.*
- *Evaluation Strategy: Describe roles in assistive technology leadership.*

Strategy 2.2.3: Identify and disseminate information and resources to assist schools in developing and maintaining personal career plans for all students.

- *Evaluation Strategy: Describe ways that FCCPS assists schools in developing personal career plans.*
- *Evaluation Strategy: Describe methods of information dissemination.*

Objective 2.3: Facilitate the implementation of high-quality Internet safety programs in schools.

Strategy 2.3.1: Identify and disseminate best practices and resources to promote the integration of Internet safety and security throughout the curricula.

- *Evaluation Strategy: Describe methods of identifying best practices with regard to teaching Internet safety and security.*
- *Evaluation Strategy: Describe the methods of information dissemination.*

Strategy 2.3.2: Monitor the implementation of Internet safety policies and programs to ensure that schools have effective programs and policies.

- *Evaluation Strategy: Describe the Internet safety policies and programs at each school.*

Goal 3:

Afford students with opportunities to apply technology effectively to gain knowledge, develop skills, and create and distribute artifacts that reflect their understandings.

Objective 3.1: Provide professional development that increases the capacity of educators to design and facilitate meaningful learning experiences, thereby encouraging students to create, problem solve, communicate, collaborate, and use real-world skills by applying technology purposefully.

Strategy 3.1.1: Determine and disseminate opportunities for ongoing, personalized, and just-in-time professional development for educators implementing technological and pedagogical innovations.

- *Evaluation Strategy: Describe the types of professional development offered to educators which encourage the implementation of technological and pedagogical innovations.*

Strategy 3.1.2: Determine Internet resources and software that encourage creativity, collaboration, and problem solving.

- *Evaluation Strategy: Describe fee-based and free Internet resources and software that encourages creativity, collaboration, and problem solving.*
- *Evaluation Strategy: Describe student access to fee-based and free Internet resources and software that encourages creativity, collaboration, and problem solving at school and at home.*

Strategy 3.1.3: Promote the safe and responsible use of social media.

- *Evaluation Strategy: Describe the schools efforts to promote safe and responsible use of social media.*

Objective 3.2: Ensure that students, educators, and administrators are Information and Communications Technology (ICT) literate.

Strategy 3.2.1: Determine the definition of Information and Communications Technology (ICT) literate.

- *Evaluation Strategy: Disseminate the definition to educators and administrators.*

Strategy 3.2.2: Develop an assessment to determine the ICT literacy in schools.

- *Evaluation Strategy: Describe the assessment.*
- *Evaluation Strategy: Describe strategies for teaching and/or remediation for students and educators that do not meet the standard for ICT literacy.*

Strategy 3.2.3: Provide opportunities for students to learn and apply ICT skills in local and community settings using a variety of authentic tools.

- *Evaluation Strategy: Describe the extent to which FCCPS provides students with opportunities to learn and apply ICT skills.*

Strategy 3.2.4: Provide and support high-quality professional development focused on the acquisition and application of ICT skills for teaching, learning, and school management.

- *Evaluation Strategy: Describe the development of ICT-related professional development for teaching, learning, and school management.*

Objective 3.3: Implement technology-based formative assessments that produce further growth in content knowledge and skills development.

Strategy 3.3.1: Identify technology tools and systems to assist schools with the implementation of cognitively-based assessments.

- *Evaluation Strategy: Disseminate a list of technology tools and systems that facilitate cognitively-based assessments in schools.*

Strategy 3.3.2: Design and implement pilot projects to explore technology-based assessment models that tightly integrate curricula, instruction, and assessment.

- *Evaluation Strategy: Describe the processes of designing the pilot programs.*

Strategy 3.3.3: Provide and support high-quality professional development focused on technology-based formative assessments that produce further growth in content knowledge and skills development.

- *Evaluation Strategy: Describe the development of professional development for developing and managing technology-based formative assessments.*

Objective 3.4: Ensure that educators and students have a voice in the software and fee-based digital resources that they can access in school.

- *Evaluation strategy: Determine process for open communication between technology leaders and educators and between technology leaders and students.*

Goal 4:

Provide students with access to authentic and appropriate tools to gain knowledge, develop skills, extend capabilities, and create and disseminate artifacts that demonstrate their understandings.

Objective 4.1: Provide resources and support to ensure that every student has access to a personal computing device.

Strategy 4.1.1: Provide tools that extend students' capabilities, can be customized to meet individual needs and preferences, and support learning.

- *Evaluation Strategy: Develop and deploy a needs assessment at each school to determine the resources and support to ensure that every student has access to a personal computing device.*
- *Evaluation Strategy: Maintain a shareable list of web-based software tools (fee-based and open source) that can be used by students and educators to customize and support learning.*
- *Evaluation Strategy: Facilitate a 1:1 personal computing device initiative.*

Objective 4.2: Provide technical and pedagogical support to ensure that students, educators, and administrators can effectively access and use technology tools.

Strategy 4.2.1: Provide and support high-quality professional development to assist educators in evaluating and integrating technology tools in ways that foster effective student use.

- *Evaluation Strategy: Determines the professional development needs of faculty and staff to support effective use and access of technology.*
- *Evaluation Strategy: Describe FCCPS' role in providing professional development opportunities.*
- *Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.*
- *Evaluation Strategy: Describe the procedures established for leveraging and maintaining learning created through professional development activities.*

Strategy 4.2.2: Provide ongoing just-in-time support to assist educators in effectively integrating a variety of technology-based tools into teaching and learning.

- *Evaluation Strategy: Determines the professional development needs of faculty and staff to support integrating a variety of technology-based tools into teaching and learning.*
- *Evaluation Strategy: Describe FCCPS' role in providing ongoing and just-in-time support access and while utilizing technology tools.*

Strategy 4.2.3: Provide timely and effective technical support to ensure that all tools, including the network that supports them, are installed and maintained properly.

- *Evaluation Strategy: Describe FCCPS' role in providing technical support.*
- *Evaluation Strategy: Describe the extent to which technical support is timely and effective with regard to technology installation and maintenance.*

Objective 4.3: Identify and disseminate information and resources that assist educators in selecting authentic and appropriate tools for all grade levels and curricular areas.

Strategy 4.3.1: Identify information about new and emerging technologies.

- *Evaluation Strategy: Disseminate information about new and emerging technologies that support teaching and learning.*

Strategy 4.3.2: Design and implement pilot projects to evaluate a variety of personal computing devices.

- *Evaluation Strategy: Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects.*

Goal 5:

Use technology to support a culture of data-driven decision making that relies upon data to evaluate and improve teaching and learning.

Objective 5.1: Use data to inform and adjust technical, pedagogical, and financial support.

Strategy 5.1.1: Use data to inform strategic plans and purchases.

- *Evaluation Strategy: Describe how FCCPS uses data to provide information for strategic plans and purchases.*
- *Evaluation Strategy: Describe how FCCPS models data use to schools and personnel to provide information for strategic plans and purchases.*

Strategy 5.1.2: Conduct an annual needs assessment and disseminate the results.

- *Evaluation Strategy: Document when, where, and how the needs assessment is conducted.*
- *Evaluation Strategy: Document the dissemination of results.*

Objective 5.2: Provide support to help educators disaggregate, interpret, and use data to plan, improve, and differentiate instruction.

Strategy 5.2.1: Provide training and support to help school data teams (including ITRT) disaggregate, interpret, and use data to assist educators in using technology effectively to address data-supported needs and instructional improvement.

- *Evaluation Strategy: Describe the types, scope/extent, and accessibility of the professional development offered.*
- *Evaluation Strategy: Describe how professional development enables educators to utilize technology to optimize student learning.*
- *Evaluation Strategy: Document how professional development/resources help school data teams utilize student achievement data to inform educators about ways to utilize instructional technology to enhance student learning.*

Strategy 5.2.2: Identify resources to assist school data teams train educators to access, disaggregate, interpret, and use data for instructional improvement.

- *Evaluation Strategy: Describe the types of training and resources disseminated to educators.*

Objective 5.3: Promote the use of technology to inform the design and implementation of next generation standardized assessments.

Strategy 5.3.1: Design and implement pilot projects that support innovative technology-based assessments.

- *Evaluation Strategy: Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects.*

Appendix 1

Fiscal Analysis & Timetable

Falls Church City Public Schools has a technology equipment replacement and purchase plan funded by an annual base budget (state and local) that provides for a five-year replacement cycle for desktops and a three-year cycle for laptops, for all technology equipment and for the additional hardware (including network infrastructure) needed for increasing numbers of students and staff members. Purchased devices are covered by manufactures' warranties and service contracts.

FCCPS receives funding from state and local allocations. This funding supports the replacement cycle of all computers and servers. The funding also supports the growing infrastructure that most recently includes adding an e-mail archiving system and SAN servers. Several support/services contracts for the school systems hardware and software use allocated funds. System-wide software and support contracts financed through the technology funds are; Powerschool Student Information System, Google Apps, Info Snap, BoardDocs, Electronic Report Card System (at the elementary schools), Powerschool Studio Edition, Destiny Library Catalog and Microsoft Exchange.

Each school has the opportunity annually to request funding for technology improvements that would support the goals of the School Board's Strategic Plan and the division wide Technology Plan and school-based plans. These requested are reviewed by the technology committee and then recommended to the superintendent and School Board. Historically, the community has supported the fiscal resources necessary to implement the FCCPS Technology Plan.

	<u>FY11</u>	<u>FY12</u>
Salaries & Benefits	\$1,024,210.00	\$1,023,490.00
Purchased Services	\$46,000.00	\$45,650.00
Miscellaneous	\$17,350.00	\$15,450.00
Materials and Supplies	\$163,000.00	\$159,700.00
Capital Outlay Replacement	\$315,200.00	\$312,700.00
TOTAL:	\$1,565,760.00	\$1,556,990.00

Timeline & Yearly Review Schedule

September: Start Up	FY12	FY13	FY14	FY15	FY16
<p>Strategy 1.1.2: Determine the need for digital and/or online resources. *Evaluation Strategy: Analyze data to determine frequency of use for online content and tools, and collaborative spaces.</p>	ongoing				
<p>Strategy 1.2.1: Meet or exceed the state requirement for the number of instructional technology resource teachers (ITRT) assigned to each school in order to assist educators in integrating technology into teaching and learning. *Evaluation Strategy: Describe the ratio of ITRT to students.</p>	ongoing				
<p>Strategy 1.3.2: Leverage public/private/nonprofit partnerships to provide professional development focused on technology integration strategies and the development of educators' and administrators' 21st century skills. * Evaluation Strategy: Describe the types, quantity, and perceived quality of professional development provided by partnerships.</p>	ongoing				
<p>Strategy 1.2.5: Implementation of wireless access to the Internet in every school. *Evaluation Strategy: Describe the current status and the need for wireless at each school to use school resources to support teaching and learning. *Evaluation Strategy: Describe the current status and the need of wireless at each school for the purpose of students and educators to use personal technologies at school to support teaching and learning.</p>		ongoing			
<p>Strategy 3.1.2: Determine Internet resources and software that encourage creativity, collaboration, and problem solving. *Evaluation Strategy: Describe fee-based and free Internet resources and software that encourages creativity, collaboration, and problem solving. *Evaluation Strategy: Describe student access to fee-based and free Internet resources and software that encourages creativity, collaboration, and problem solving at school and at home.</p>	ongoing				

October: Data Teams	FY12	FY13	FY14	FY15	FY16
<p>Strategy 5.2.1: Provide training and support to help school data teams (including ITRT) disaggregate, interpret, and use data to assist educators in using technology effectively to address data-supported needs and instructional improvement.</p> <p>* Evaluation Strategy: Describe the types, scope/extent, and accessibility of the professional development offered.</p> <p>* Evaluation Strategy: Describe how professional development enables educators to utilize technology to optimize student learning.</p> <p>* Evaluation Strategy: Document how professional development/resources help school data teams utilize student achievement data to inform educators about ways to utilize instructional technology to enhance student learning.</p>	ongoing				
<p>Strategy 5.2.2: Identify resources to assist school data teams train educators to access, disaggregate, interpret, and use data for instructional improvement.</p> <p>* Evaluation Strategy: Describe the types of training and resources disseminated to educators.</p>	ongoing				
December: Pilot Tests	FY12	FY13	FY14	FY15	FY16
<p>Strategy 1.3.4: Support pilot projects to help educators better understand the impact of new and emerging technologies on the learning environment and develop strategies to integrate them effectively into schools.</p> <p>* Evaluation Strategy: Describe the method for financially supporting pilot programs.</p> <p>* Evaluation Strategy: Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects.</p>		ongoing			
<p>Strategy 2.1.1: Facilitate the development, use and delivery of professional development that promotes technology as a collaborative tool. * Evaluation Strategy: Describe how FCCPS facilitates professional development opportunities that promote using technology as a collaborative tool. * Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.</p>		ongoing			
<p>Strategy 2.2.1: Provide reasonable access to Internet-connected devices that offer students the flexibility to learn anytime, anywhere.</p> <p>* Evaluation Strategy: Describe FCCPS' role in providing access to Internet connected devices.</p> <p>* Evaluation Strategy: Maintain shareable list of web-based software tools (fee-based and open source) that can be used by students to promote anytime, anywhere learning.</p>		ongoing			

December: Pilot Tests	FY12	FY13	FY14	FY15	FY16
<p>Strategy 2.2.3: Identify and disseminate information and resources to assist schools in developing and maintaining personal career plans for all students. * Evaluation Strategy: Describe ways that FCCPS assists schools in developing personal career plans. * Evaluation Strategy: Describe methods of information dissemination.</p>			ongoing		
<p>Strategy 3.2.1: Determine the definition of Information and Communications Technology (ICT) literate. * Evaluation Strategy: Disseminate the definition to educators and administrators.</p>	completed				
<p>Strategy 3.2.2: Develop an assessment to determine the ICT literacy in schools.* Evaluation Strategy: Describe the assessment.* Evaluation Strategy: Describe strategies for teaching and/or remediation for students and educators that do not meet the standard for ICT literacy.</p>		ongoing			
<p>Strategy 3.3.2: Design and implement pilot projects to explore technology-based assessment models that tightly integrate curricula, instruction, and assessment. * Evaluation Strategy: Describe the processes of designing the pilot programs.</p>	ongoing				
<p>Strategy 4.2.3: Provide timely and effective technical support to ensure that all tools, including the network that supports them, are installed and maintained properly. * Evaluation Strategy: Describe FCCPS' role in providing technical support. * Evaluation Strategy: Describe the extent to which technical support is timely and effective with regard to technology installation and maintenance.</p>		ongoing			
<p>Strategy 4.3.2: Design and implement pilot projects to evaluate a variety of personal computing devices. * Evaluation Strategy: Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects.</p>		ongoing			
<p>Strategy 5.3.1: Design and implement pilot projects that support innovative technology-based assessments.* Evaluation Strategy: Describe the number, types, locations, and scope/extent (breadth and depth) of the pilot projects.</p>	ongoing				

February: Internet Safety/Professional Development	FY12	FY13	FY14	FY15	FY16
<p>Strategy 2.3.1: Identify and disseminate best practices and resources to promote the integration of Internet safety and security throughout the curricula.</p> <p>* Evaluation Strategy: Describe methods of identifying best practices with regard to teaching Internet safety and security.</p> <p>* Evaluation Strategy: Describe the methods of information dissemination.</p>	ongoing				
<p>Strategy 2.3.2: Monitor the implementation of Internet safety policies and programs to ensure that schools have effective programs and policies.</p> <p>* Evaluation Strategy: Describe the Internet safety policies and programs at each school.</p>	ongoing				
<p>Strategy 3.1.3: Promote the safe and responsible use of social media.</p> <p>* Evaluation Strategy: Describe the schools efforts to promote safe and responsible use of social media.</p>		ongoing			
<p>Strategy 3.2.3: Provide opportunities for students to learn and apply ICT skills in local and community settings using a variety of authentic tools.</p> <p>* Evaluation Strategy: Describe the extent to which FCCPS provides students with opportunities to learn and apply ICT skills.</p>	ongoing				
<p>Strategy 3.2.4: Provide and support high-quality professional development focused on the acquisition and application of ICT skills for teaching, learning, and school management.*</p> <p>Evaluation Strategy: Describe the development of ICT-related professional development for teaching, learning, and school management.</p>	ongoing				
<p>Strategy 3.3.1: Identify technology tools and systems to assist schools with the implementation of cognitively-based assessments.</p> <p>* Evaluation Strategy: Disseminate a list of technology tools and systems that facilitate cognitively-based assessments in schools.</p>		ongoing			
<p>Strategy 3.3.3: Provide and support high-quality professional development focused on technology-based formative assessments that produce further growth in content knowledge and skills development.</p> <p>* Evaluation Strategy: Describe the development of professional development for developing and managing technology-based formative assessments.</p>		ongoing			

February: Internet Safety/Professional Development	FY12	FY13	FY14	FY15	FY16
<p>Strategy 4.1.1: Provide tools that extend students' capabilities, can be customized to meet individual needs and preferences, and support learning.</p> <p>* Evaluation Strategy: Develop and deploy a needs assessment at each school to determine the resources and support to ensure that every student has access to a personal computing device.</p> <p>* Evaluation Strategy: Maintain a shareable list of web-based software tools (fee-based and open source) that can be used by students and educators to customize and support learning.</p> <p>* Evaluation Strategy: Facilitate a 1:1 personal computing device initiative.</p>		Research/Plan	Pilot	Plan	ongoing
<p>Strategy 4.2.1: Provide and support high-quality professional development to assist educators in evaluating and integrating technology tools in ways that foster effective student use.* Evaluation Strategy: Determines the professional development needs of faculty and staff to support effective use and access of technology.* Evaluation Strategy: Describe FCCPS' role in providing professional development opportunities.* Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.* Evaluation Strategy: Describe the procedures established for leveraging and maintaining learning created through professional development activities.</p>		ongoing			
<p>Strategy 4.2.2: Provide ongoing just-in-time support to assist educators in effectively integrating a variety of technology-based tools into teaching and learning.</p> <p>* Evaluation Strategy: Determines the professional development needs of faculty and staff to support integrating a variety of technology-based tools into teaching and learning.</p> <p>* Evaluation Strategy: Describe FCCPS' role in providing ongoing and just-in time support access and while utilizing technology tools.</p>	ongoing				
<p>Strategy 4.3.1: Identify information about new and emerging technologies.</p> <p>* Evaluation Strategy: Disseminate information about new and emerging technologies that support teaching and learning.</p>	ongoing				

April/May: End of Year	FY12	FY13	FY14	FY15	FY16
<p>Strategy 1.1.1: Determine the need for digital and/or online resources. * Evaluation Strategy: Evaluate currently available digital and/or online resources. * Evaluation Strategy: Utilize data from needs assessment to justify acquisitions for digital and/or online resources.</p>	ongoing				
<p>Strategy 1.1.3: Create a district and/or school-based policy (which may include infrastructure, guidelines, and support) for enrolling and supporting students in Virtual Virginia and other virtual and/or blended opportunities * Evaluation Strategy: Analyze enrollment in Virtual Virginia and other opportunities (may include the number of successful completion, the number of drop outs, and anecdotal accounts from students).</p>		ongoing			
<p>Strategy 1.2.2: Provide the technical support personnel and infrastructure needed at each school, and at the division level, to support instructional needs. * Evaluation Strategy: Evaluate the adequacy of division-wide technical support personnel compared to infrastructure and initiatives. * Evaluation Strategy: Evaluate the adequacy of school-based technical support personnel compared to infrastructure and initiatives.</p>		ongoing			
<p>Strategy 1.2.3: Provide and support computer and other hardware to student ratio that meets the instructional needs of each school and can be maintained by the technical support personnel and infrastructure within the district. * Evaluation Strategy: Determine the ratio of computers to students by school on a yearly basis. * Evaluation Strategy: Develop and maintain an appropriate replacement cycle of computers and other hardware. * Evaluation Strategy: Determine the feasibility of increasing the infrastructure to decrease the computer to student ratio.</p>		ongoing			
<p>Strategy 1.2.4: Implementation of fiber and 1 Gbps Ethernet to every school.* Evaluation Strategy: Describe the extent to which fiber and 1 Gbps Ethernet have been implemented in every school.* Evaluation Strategy: Develop and maintain an appropriate replacement cycle of servers, switches, and UPS batteries to ensure continuity of services.</p>			Completed		
<p>Strategy 1.3.1: Identify, develop, disseminate, and maintain resources to support the effective use of technology in all curricula by educators at all levels of integration expertise. * Evaluation Strategy: Examine the extent to which FCCPS identifies, develops, disseminates, and maintains the resources needed to support the effective use of technology across curricula and at varying levels of integration expertise. * Evaluation Strategy: Determine the extent to which FCCPS employees take advantage of flexible, “just in time” professional development.</p>		ongoing			

April/May: End of Year	FY12	FY13	FY14	FY15	FY16
<p>Strategy 1.3.3: Provide high-quality professional development to help educators develop and manage their online presence. * Evaluation strategy: Describe the types, quantity, and perceived quality of professional development.</p>	ongoing				
<p>Objective 1.4: Provide professional development to educators on Internet Safety. * Evaluation Strategy: Maintain a log of educators who have completed Internet Safety training.</p>	ongoing				
<p>Strategy 2.2.2: Identify and disseminate information and resources to assist schools in evaluating the interactive and universal design features of hardware, software, and Internet sites. * Evaluation Strategy: Describe ways that FCCPS identifies and disseminates hardware and software. * Evaluation Strategy: Describe roles in assistive technology leadership.</p>		ongoing			
<p>Strategy 3.1.1: Determine and disseminate opportunities for ongoing, personalized, and just-in-time professional development for educators implementing technological and pedagogical innovations. * Evaluation Strategy: Describe the types of professional development offered to educators which encourage the implementation of technological and pedagogical innovations.</p>	ongoing				
<p>Objective 3.4: Ensure that educators and students have a voice in the software and fee-based digital resources that they can access in school. * Evaluation strategy: Determine process for open communication between technology leaders and educators and between technology leaders and students.</p>		ongoing			
<p>Strategy 5.1.1: Use data to inform strategic plans and purchases. * Evaluation Strategy: Describe how FCCPS uses data to provide information for strategic plans and purchases. * Evaluation Strategy: Describe how FCCPS models data use to schools and personnel to provide information for strategic plans and purchases.</p>		ongoing			
<p>Strategy 5.1.2: Conduct an annual needs assessment and disseminate the results.* Evaluation Strategy: Document when, where, and how the needs assessment is conducted.* Evaluation Strategy: Document the dissemination of results.</p>	ongoing				

Appendix 2

STUDENT SECTION

Policy 9.40

FCCPS INTERNET SAFETY AND ACCEPTABLE USE OF ELECTRONIC MEDIA

The Falls Church City School Board recognizes that technological advancements in electronic media alter instruction, student learning, and the way in which employees work and communicate. The FCCPS supports the use and integration of technology to reach educational goals including those defined by the Virginia Standards of Learning for Computer/Technology, the Technology Standards for Instructional Personnel (TSIPs) and approved curricula. In support of these goals, the Falls Church City School Board provides students and staff a variety of technology-supported resources including the FCCPS computer network and access to the Internet. The term “electronic media” includes but is not limited to, the FCCPS network, computer equipment, peripherals, databases and applications.

All use of the FCCPS electronic media will be consistent with the educational, instructional, or administrative functions of the division. All use shall be conducted in a thoughtful, considerate, responsible and legal manner. Use of the electronic media is a privilege, not a right. The division’s electronic media are not a public forum and are subject to FCCPS control.

All users, including but not limited to FCCPS staff and students, are prohibited from using the division’s electronic media for sending, receiving, viewing or downloading illegal or inappropriate material via the Internet. While using school electronic media, all users are responsible for behavior which is consistent with the Code of Responsibility.

The School Board expects teachers to thoughtfully incorporate information technology and other electronic media throughout the curriculum and to provide guidance and instruction to students in the safe and responsible use of such resources. Teachers should also consider varied student instructional needs, learning styles, abilities and developmental levels.

Internet safety will be integrated into the instructional program for students and will be part of regular professional development for staff. The FCCPS Internet Safety program will be evaluated beginning in school year 2007-2008 and regularly thereafter. A report to the School Board will be made on the evaluation and improvements to the program.

While regular use of electronic mail is encouraged for routine employee and administrative communications, the privacy of such communications cannot be guaranteed. Network supervision and maintenance may require review and inspection of files or electronic mail messages. Any material or communication used on FCCPS electronic media, including electronic mail or other files deleted from a user’s account, may be monitored or read by school officials. FCCPS issued electronic mail accounts will only be used for FCCPS educational, instructional or administrative functions.

Employees are cautioned to protect confidential student or staff information contained in electronic mail by clearly titling email as confidential when necessary and ensuring accurate sending of such mail only to the intended recipients. Electronic communications are subject to the same record protection as are non-electronic communications (Student records Policy 9.8.)

The division Superintendent shall issue a regulation containing the appropriate uses, Code of Responsibility, and protocol for the electronic media for all users. The regulation shall include:

1. provisions for selecting and operating technology protection measures for the division's assets having Internet access to filter or block Internet access to child pornography (VA Code 18.2-374.1:1 . 18 USC §2256), obscenity (VA Code 18.2-372 , 18 USC §1460), material deemed harmful to juveniles (VA Code 18.2-390), or harmful to minors (47 USC §254(h) (7) (G) and to ensure that such blocking measures are operating whenever electronic media are being used.
2. provisions for selecting and operating technology protection measures for the division's assets having Internet access to filter or block Internet access to materials determined to be inappropriate for students, and to establish that such blocking measures are operating whenever the electronic media are being used by students;
3. provisions to ensure that online activities of all users are safe and student use is monitored by age-appropriate adult supervision and by electronic means;
4. provisions designed to educate users about appropriate online behavior, including interacting with other individuals on social networking Web sites and in chat rooms and cyberbullying awareness and response;
5. provisions designed to prevent unauthorized online access by all users, including "hacking" and other unlawful online activities;
6. provisions prohibiting the unauthorized disclosure, use and dissemination of personal information regarding staff and students, and
7. a component of Internet safety for students that is integrated in the division's instructional program.

The School Board will consider the regular program evaluation delivered by the Curriculum Instruction Resource Teacher for Technology before it takes action to review, amend if necessary, and approve the policy every two years.

Each user of FCCPS electronic media shall sign the Acceptable Use of Electronic Media Agreement before using the FCCPS electronic media. The parent/guardian of each student will acknowledge the student's signing of the Acceptable Use of Electronic Media Agreement before the student uses the FCCPS electronic media. A parent/guardian's signature on the Acceptable Use of Electronic Media Agreement form also represents that (1) the parent/guardian has discussed the policy and regulation with the student, (2) that the schools have permission to give

Adopted: 1/8/97 Revised: 6/22/2010
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FCCPS INTERNET SAFETY AND ACCEPTABLE USE OF ELECTRONIC MEDIA

The Falls Church City Public Schools electronic media are intended for educational and administrative purposes in support of the Falls Church City Public Schools mission. All use of the School division's electronic media will be consistent with the educational or instructional mission or administrative functions of the Division. All users are responsible for the safe, responsible and educational use of electronic media consistent with Policies 8.32/9.40 and this regulation and are subject to state and federal law.

The term "electronic media" includes the FCCPS network, networked and stand-alone computers, peripheral equipment (including but not limited to printers, scanners, modems, digital cameras and communication/network devices), databases and applications belonging to the school system or those used while participating in a school system sponsored activity such as a university course.

The division's electronic media are not a public forum and are subject to FCCPS control.

Code of Responsibility

The code of responsibility comprises two parts, Acceptable Use Guidelines and Internet Safety Guidelines. All users of FCCPS electronic media must comply with the code of responsibility while using FCCPS electronic media.

Acceptable Use Guidelines

Acceptable use includes, but is not limited to:

- Access to the FCCPS electronic media for school-related instructional and FCCPS administrative business only, except as otherwise expressly permitted by this regulation. This includes but is not limited to the use of the Internet, e-mail, instant messaging, chat rooms, Web pages, local school and City networks, and other electronic and online resources.
- FCCPS employee personal use: FCCPS permits occasional personal use of FCCPS electronic media provided that such use incurs only a negligible additional expense to FCCPS; does not impede the employee's or other employees' ability to do their jobs; occurs during off duty hours, whenever possible; and is not for the purpose of generating income for the employee or another person. Such personal use includes use of the FCCPS network to access personal email accounts and occasional use of FCCPS electronic media

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Adopted: 1/8/97

Revised: 6/14/2010

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to make personal purchases. FCCPS email accounts are to be used for educational, instructional and administrative business only.

- Understanding that the use of the FCCPS electronic media is a privilege, not a right, and may be revoked for violations of the Internet Safety and Acceptable Use of Electronic Media policy and regulation.
- Maintaining the integrity of the FCCPS information systems. Entering only authorized systems and not attempting to circumvent or subvert system security measures including the FCCPS firewall.
- Following computer virus protection procedures.
- Immediately notifying a teacher, instructional technology coordinator (ITC) or administrator if a user identifies a security problem, suspected computer virus or other problem, so that action can be taken and damage minimized.
- Installation of software only by authorized personnel.
- Treating equipment with care and respect, leaving it in good condition for the next user.
- Consideration when using limited resources (file storage space, bandwidth, on-line time, printing capacity).
- Treating email content and other electronic documents as potentially public documents. Staff users must apply the same protection to confidential and sensitive information in email content as applies to non-electronic communications (Student Records Policy 9.8).
- Understanding that any messages or files sent, accessed or received on FCCPS equipment are subject to inspection by authorized Falls Church City Public School personnel. All users should assume that electronic communications and storage are not private, permanent, nor necessarily secure.
- Recognizing and honoring the intellectual property of others. Adhering to all federal copyright laws, including rules on fair use, and vendor licensing agreements. All users shall provide proper attribution to sources of work obtained, in whole or in part, from the Internet and, where required, obtain the copyright owner's permission to use copyright-protected work.

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Adopted: 1/8/97

Revised: 6/14/2010

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Prohibited conduct includes, but is not limited to:

- Accessing, publishing, viewing or sharing any information that would be offensive to any students, teachers or parents because the information includes obscene, sexually explicit, or pornographic content; racial, ethnic, minority, gender, age, religious, sexual orientation or disability disparagement; advocating violence; illicit or illegal content.
- Using the Internet to send or download copyrighted materials without express permission or in violation of copyright protection.
- Using FCCPS electronic media to view, sell or purchase merchandise for personal use, except as expressly permitted.
- Using FCCPS electronic media for commercial or private financial purposes.
- Using FCCPS electronic media for any illegal activity.
- Downloading freeware or shareware without prior authorization from the building ITC.
- Using FCCPS electronic media while access privileges are suspended or revoked.
- Tampering with or altering the system in such a way that would disrupt the network.
- Connecting any non-school-division-owned device to any part of the FCCPS network without authorization from the building ITC. Storage devices such as disks or memory sticks used for instructional purposes are an exception.
- Creating or uploading a worm, virus or other harmful or destructive form of programming or software to or through FCCPS electronic media.
- Using the Internet to “hack” or gain unauthorized access to computers, networks, or information systems.
- Copying, downloading or uploading another person’s files which include personally identifiable information such as personal photos without that person’s prior authorization.
- Intimidating, harassing or coercing others

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Adopted: 1/8/97

Revised: 6/14/2010

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- Threatening illegal acts
- Accessing, publishing, viewing or sharing any information that meets the definition of sexting. Sexting means “youth writing sexually explicit messages, taking sexually explicit photos of themselves or others in their peer group, and transmitting these photos and/or messages to their peers.”

Internet Safety Guidelines

- Be polite and use appropriate language. Do not harass or attack others, or use expressions of or engage in bullying, discrimination, retaliation, bigotry, or racism.
- Respect the privacy and rights of others, by not disclosing another person’s personal contact information such as telephone numbers, school or home addresses, electronic mail addresses, or passwords to third parties.
- All users should be careful not to disclose information such as their school name or location that could lead to the inadvertent discovery of their own identity.
- Use of pseudonyms, anonymity or impersonation is prohibited except where sanctioned on a case by case basis by the administration.
- Students in particular are advised never to meet with a person whom they have met only on-line (chat room, email, IM, social networking web sites, etc) without parental approval and participation.
- All users should immediately report all incidents of cyber-bullying, such as personal attacks or threats to the user, others or school property. Reports should be made to a teacher, ITC, guidance counselor or an appropriate administrator. Retain copies of any threatening content or messages to provide to school authorities and/or law enforcement, if appropriate.
- Use only the user name/account and password assigned to you and keep this information confidential. The use of others’ usernames/accounts and/or passwords is forbidden.
- Do not disable filtering software or other technologies. Do not access technology-based applications which have been blocked or filtered by the FCCPS filtering process.
- Do not send, receive, post, publish, download, install or display any obscene, profane, sexually explicit, offensive, threatening, discriminatory, illegal or prohibited material (including but not limited to unapproved executable video or audio files), via the Internet.

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Adopted: 1/8/97

Revised: 6/14/2010

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Do not engage in sexting.

- Report any pornographic or offensive materials on or accessible from school-owned equipment to a teacher, ITC, or administrator.

Filtering Process

Falls Church City Public Schools recognizes that users may encounter materials that could be viewed as inappropriate and non-educational. Therefore, provisions have been made to direct and monitor student and staff use through the use of filtering software. The Filtering committee, consisting of FCCPS technical and instructional staff determines which categories of Internet sites as delineated within the software are to be blocked based on input from school, library, and central office staff and compliance with the Children's Internet Protection Act (CIPA) and the Code of Virginia. The Technology Information Office manages the filtering software. The Filtering committee will meet regularly and as needed to respond to emerging technology issues.

Requests to block or un-block additional categories or specific sites are made by the requesting staff member through the building instructional technology coordinator (ITC). The ITC will suggest alternate Internet sites which will fulfill the same instructional purpose.

It continues to be the responsibility of the individual user not to initiate access to inappropriate material. If such material is encountered, the user is expected to exit immediately and notify the building ITC or the teacher of the inappropriate material and how it was accessed.

Consequences for Inappropriate or Illegal Use of Electronic Networked Resources

Anyone found to have engaged in illegal, unauthorized inappropriate or irresponsible practices in violation of the FCCPS Internet Safety and Acceptable Use of Electronic Media policy and regulation will be subject to disciplinary action that could include denial of system access, suspension, expulsion, termination of employment, and/or criminal prosecution.

Discipline in the event of infractions will be handled consistently, fairly and with due deliberation.

Liability

The School Board will not be responsible for any damages to the user from the use of the electronic media, including but not limited to the loss of data, non-delivery or missed delivery of

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Adopted: 1/8/97

Revised: 6/14/2010

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information, or service interruptions. The School Board denies any responsibility for the accuracy or quality of information obtained through the electronic media, except for information originally generated by the school division. Students and their parents or guardians agree to indemnify the School Board for any losses, costs or damages to the School Board relating to or arising out of any student's violation of these procedures. Students and their parents or guardians agree to hold harmless the School Board from liability for information accessed through the FCCPS electronic media.

The FCCPS assumes no responsibility for any unauthorized charges or fees as a result of using any technology assets or services, including telephone or long-distance charges.

Security

The security of the FCCPS electronic media is a high priority of the School Board. Data and network security will be consistent with the local Continuity of Operations Plan (COOP).

Electronic Mail

The FCCPS electronic mail system is owned and controlled by the school division. The school division may provide access to electronic mail to aid students and staff in fulfilling their duties and as an educational tool. Electronic mail is not private and may be monitored and accessed by the school division. Unauthorized access to an electronic mail account by a student or employee is prohibited. Users shall be held liable for the content of any electronic message they create. Downloading any file attached to an electronic message is prohibited unless the user is reasonably certain of the message's authenticity and the nature of the file.

Areas of Responsibility

- 1 All technology users are responsible for reviewing and abiding by the FCCPS Internet Safety and Acceptable Use of Electronic Media policy and regulation.
- 2 All administrators and ITCs are responsible for monitoring and/or evaluating emerging technologies and recommending relevant revisions to the Internet Safety program.
- 3 The assistant Superintendent of Finance and Operations is responsible for the system-wide implementation, review, and evaluation of these procedures. Principals and program managers are responsible for their implementation at the school or program level.
- 4 Administrators and ITCs are responsible for informing staff members of the FCCPS Internet Safety and Acceptable Use of Electronic Media policy and regulation, providing each staff member with a copy, and obtaining each staff member's signature on the Acceptable Use

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agreement.

5 School staffs are responsible for informing students and their parents of the FCCPS Internet Safety and Acceptable Use of Electronic Media policy and regulation and the consequences resulting from not adhering to both. School staff are responsible for obtaining students' and parents' signatures on the Acceptable Use agreement.

6 Teachers, library media specialists, instructional technology coordinators (ITCs) and building resource officers are responsible for providing Internet safety instruction, guidance, monitoring student use of FCCPS electronic media, and reporting all violations to school administrators.

7 Instructional staff members are responsible for identifying, reviewing and evaluating the most appropriate resources that comply with School Board policy on Internet safety as it applies to the content area.

8 Teachers are responsible for posting the rules for safe Internet use and reminding students that the rules were created for their protection.

9 Parents and community stakeholders are responsible for reviewing and recommending ongoing revisions to the FCCPS Internet Safety Program. FCCPS will assess the need for community outreach programs and when provided, evaluate the outreach programs' effectiveness.

10 FCCPS is responsible for providing teachers and other staff members with professional development about relevant technology issues including but not limited to Internet-related personal safety, cyber security, cyber bullying, malicious codes and viruses, and copyright compliance. FCCPS will assess the needs of staff for professional development and evaluate the professional development provided.

11 FCCPS will evaluate the Internet Safety and Acceptable Use of Electronic Media Programs as they operate, seeking and using feedback from users of the program and the community to address issues of concern. A schedule will be established to evaluate the roles of responsibilities for division personnel and students.

12 FCCPS is not responsible for student or staff use of electronic technology resources outside of school. However, staff or students may be disciplined for any technology use that substantially and materially disrupts the operations of FCCPS or that negatively affects the ability or fitness of any staff person to effectively serve the school division.

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Adopted: 1/8/97

Revised: 6/14/2010

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ACCEPTABLE USE OF ELECTRONIC MEDIA AGREEMENT FOR STUDENTS

The term “electronic media” includes the FCCPS network, networked and stand-alone computers, peripheral equipment (including but not limited to printers, scanners, modems, digital cameras and communication/network devices), databases and applications belonging to the school system or those used while participating in a school system sponsored activity such as a university course.

Each student and his or her parent/guardian must sign this Agreement before being permitted to use the FCCPS electronic media. Read this Agreement before signing.

Prior to signing this Agreement, read Policy and Regulation 9.40 (Student), Internet Safety and Acceptable Use of Electronic Media. If you have any questions about this policy or regulation, contact your student’s principal.

I understand and agree to abide by the School division’s Internet Safety and Acceptable use of Electronic Media policy and regulation. I understand that the school division may access and monitor my use of electronic media, including my use of the Internet, email and downloaded material, without prior notice to me. I further understand that should I violate the Acceptable use policy or regulation, my electronic media privileges may be revoked and disciplinary action and/or legal action may be taken against me.

Student Signature

Date

I have read this Agreement and Policy and Regulation 9.40. I understand that access to the FCCPS electronic media is intended for educational purposes and the Falls Church City Public School division has taken precautions to eliminate inappropriate material. I also recognize, however, that it is impossible for the school division to restrict access to all inappropriate material and I will not hold the school division responsible for information acquired on the FCCPS electronic media. I have discussed the terms of this agreement, policy and regulation with my student.

I grant permission for my student to use the FCCPS electronic media and for the school division to issue an account for my student.

Parent/ Guardian Signature

Date

Parent/ Guardian Name (please print)

Adopted: 1/8/97 Revised: 6/14/2010

Falls Church City Public Schools

Appendix 3

Internet Safety- FCCPS & i-Safe

As Falls Church City Public Schools (FCCPS) moved forward with the new Internet Safety requirement approached for three reasons; Reason 1: The 2006 legislation requires ... Students should learn about Internet safety from kindergarten through high school graduation, acquiring new skills each year while being reminded of previous lessons. **All instructors**, not just library media specialists or computer-lab teachers, should teach Internet safety and take every opportunity to warn of potential dangers and model safe and appropriate Internet use. Reason 2: FCCPS' Acceptable Usage Policy and five year Technology Plan includes Internet Safety requirements for teachers and students and Reason 3: Internet Safety and Digital Citizenship is a vital to helping our digital students remain safe while make the right choices to become good citizens on the web.

At FCCPS we plan to help teachers become more comfortable with their personal knowledge and with Internet Safety by providing professional development and curriculum resources to use with students. We were able to accomplish many of our goals with partnering with i-SAFE to provide E-Rate Compliant Internet safety education in all K-12 schools. i-SAFE Inc. is a non-profit foundation whose mission is to educate and empower youth to make their Internet experiences safe and responsible. The goal is to educate students on how to avoid dangerous, inappropriate, or unlawful online behavior. i-SAFE accomplishes this through dynamic K-12 curriculum and community outreach programs to parents, law enforcement, and community leaders. It is the only Internet safety foundation to combine these elements.

FCCPS has submitted a district wide E-Rate Implementation Plan to i-SAFE. This plan gives all FCCPS classroom teachers automatic access to the i-SAFE E-Rate student curriculum. Each educator will receive easy online access to **downloadable i-SAFE Internet safety curriculum: The Cyber Bullying Prevention Package, Social Networking Package and Personal Safety Package**. Each package covers topics mandated by the new E-Rate law. The interactive lessons plus entertaining and informative videos are standards-based and age-appropriate for K-12 students.

When teachers were polled on the effectiveness of i-Safe professional development and curriculum resources, they indicated the need for more resources to use for instruction. The resources most requested were the videos and web sites for kids to explore on their own. In response to the teacher feedback, FCCPS purchased the Gold Subscription of the i-Safe which includes more curriculum resources, including videos. In addition the ITRTs coordinated their efforts by collaborating on a web site that has served a dual purpose of providing a place to share links with teachers and a place for parent outreach. We continue to add to the Internet Safety video library.

2008-2010 Internet Safety Instructional Program

Students

- ❖ Elementary – each student received Internet Safety instruction delivered by the computer lab instructor, health instructor, guidance counselors, the library media specialist and/or classroom teachers
- ❖ Internet Safety for Elementary School: the purpose of NetSmartzKids is to introduce young children to the basic concepts of personal safety during the most impressionable time in their lives
- ❖ Instructors and specialists can use NetSmartz materials created specifically for elementary school students.
- ❖ Middle – High school students in the experiencing education program and/or health teachers will provide Internet Safety training to middle school students through their Health/PE classes. Students enrolled in technology resource classes receive Internet Safety instruction using various resources.
- ❖ Internet Safety for Middle School: NSTeens was created for tweens ages 8 to 12 on the Internet. The NSTeens always help each other make safer choices on- and offline.
- ❖ Health, PE, and Technology instructors can use NetSmartz and i-Safe materials created specifically for middle school students. The topics covered include cyberbullying, social networking, online predators, future consequences, posting personal information, etc.
- ❖ Internet Safety resources will be shared with our instructional staff throughout the year. We emphasize with our teachers to use “teachable moments” to address Internet Safety. Teachers will be reminded to model appropriate Internet use in their classrooms.
- ❖ High –video clips are made available to all teachers to be used in class and shared online via FCCPS’ learning management system. Video topics are on: online predators, identify theft and cyberbullying.
- ❖ High School instruction that focuses on cyberbullying is shared to all teachers (<http://livebinders.com/play/play/40089>)
- ❖ Internet Safety for High School: NetSmartz teen materials are more serious than our other resources, as they focus on real-life stories shared by actual teens that have experienced victimization firsthand. These compelling narratives teach teens to examine their behavior and encourage them to communicate with trusted adults.
- ❖ Real-Life Stories is especially effective in that it demonstrates the power of peer-to-peer education. The teens featured in this series have chosen to tell their stories in order to help youth in similar situations.

Staff and Administrators

- ❖ All Instructional Staff will complete i-Safe’s i-Learn training
- ❖ New Instructional Staff will complete i-Learn training within their first full year of employment.

- ❖ Up-to-date information and resources on Internet Safety video clips and web resources will be shared via email, on each of the ITRT's blogs and our K-12 EdTech website (<http://www.fccps.org/edtech/>) .
- ❖ Best practices on Internet Safety instruction will be identified and shared division wide.

Parents/Community

- ❖ Internet Safety materials and resources will be added to our EdTech website (<http://bit.ly/gdRHTT>)
- ❖ Parents can find tips about keeping kids and teens safer online when they are home at www.NetSmartz.org
- ❖ Age-appropriate Internet safety presentations are great to do in the community and can be downloaded at www.NetSmartz.org/Presentations.
- ❖ Free materials for parents about child safety can be distributed during Internet safety events.
- ❖ ITRTs provide Internet Safety/Digital Citizenship presentations at least once a year for each school's PTA.

Appendix 4

Guiding Research

Northern Virginia School Leadership Center Research Brief

Prepared for: S. David Brazer, Coordinator of the George Mason University Education Leadership Program

Written by: Brett Sparrgrove, Technology Coordinator, Mary Ellen Henderson Middle School

Date: June 14, 2010

Technology Integration to Enhance Teaching and Learning

Abstract

Over the past several decades, the rapid proliferation of a variety of inexpensive digital devices has been extraordinary. These technology tools have enabled significant transformation in the daily lives of so many and have permanently changed how people shop, communicate, interact and learn with the world around them. Unfortunately, the use of these tools has yet to make any sustained shift in school-based teaching and learning beliefs. By just about any measure, teachers are not adept at integrating technology into their classroom practices. If the computer and computer related devices are such revolutionary learning tools, why have integration efforts been mostly unsuccessful? Four variables theorized to play a critical role in the adoption and actual integration of instructional technology by classroom teachers are: perceived ease of use, perceived usefulness, computer self-efficacy and teacher learning beliefs. This research brief utilizes these variables to suggest eight recommendations school leaders should consider when attempting to create a technology-rich learning environment: define technology integration, define assessment metrics, facilitate pedagogical change, enhance technology literacy, leverage instructional technology “coaches”, continue to fund technology initiatives, review technology policies, and don’t mandate the use of technology. The final conclusion is that pedagogical innovation is ultimately what will define the effectiveness of technology integration in the modern classroom.

Introduction

Over the past several decades, the rapid proliferation of a variety of inexpensive digital devices has been extraordinary. For most Americans, computers and digital technologies have changed the way they receive news and information, how they consume media, take pictures, communicate with family members, pay bills and more. The list of industries that have been changed or created as a result of this growth is extensive and expanding. Embedded within this historic change is an enigma: technology tools have enabled significant transformation in the daily tasks of so many, but the use of these tools has yet to make any sustained shift in school-based teaching and learning beliefs. By just about any measure, teachers are not adept at integrating technology into their classroom practices. A number of studies have concluded that many computer-based technologies are infrequently used or unused in

most schools (Becker, 2001; NCES 2000; Ward & Parr, 2010; Zhao, Pugh, Sheldon, & Byers, 2002). If school leaders want teachers to use technology in ways likely to improve student academic performance, they need to focus on facilitating the changes in pedagogy that will allow teachers to take advantage of the powerful learning opportunities made possible through the use of technology tools. In other words, teachers require technology-fueled pedagogical professional development designed to move them away from traditional teaching practices while simultaneously illustrating how a variety of technology tools can immediately support changed classroom practices.

Definition of Technology Integration

Before discussing technology integration, school leaders need a working definition of the term that they can communicate to their school communities. This critical first step will allow leaders and decision makers to articulate a vision for technology integration and ultimately define the criteria for how to measure if integration efforts have been successful. One aspect that makes technology integration so elusive is that there is no commonly agreed upon definition of what it actually means; many definitions of technology integration can be found in the research and on the Internet (Bakia, Mitchell, & Yang, 2007; ISTE, 2000, 2008; George Lucas Educational Foundation, 2004; NCES, 2002; Earle, 2002; Mishra & Koehler, 2006). This is not surprising given the assortment of ways that technology tools can be incorporated into a school day. For the purposes of this brief, technology integration is:

- a combination of rich content and effective pedagogy that creates learning opportunities difficult or impossible to replicate without the use of the technology;
- a purposeful, definable, frequent and seamless infusion of technology tools intended to enhance student learning;
- routine and transparent, disappearing into the background; and
- opportunities for students to self-select technology tools that allow them to think critically, communicate effectively, produce artifacts, and take control of much of their own learning processes.

Technology integration not characterized by the amount of type of technology used, but by how and why it is used.

What should be clear from this definition is that simply using technology in conjunction with teaching is not enough to qualify as technology integration. For example, it would not be considered integration if a teacher simply substituted an interactive white board (ex. SmartBoard) for a plain whiteboard, a word processor for a pencil, or an Internet website for a bound encyclopedia; that would just be using technology to replicate existing tools. While this type of technology use may have benefits by making some teachers more efficient, the emphasis should be on moving toward higher degrees of pedagogical integration. For many, this high level of integration may require a change in pedagogy from a traditional, teacher-centered (behaviorist) model to a more transformative (constructivist) model that places the student squarely in the center of the learning equation. Unfortunately, when it comes to technology use in classrooms, the majority of teachers are either not using technology at all or using technology to maintain familiar traditional teaching practices.

Teachers & Technology

The adoption of computers and other technology initiatives by classroom teachers has been a slow and often unsuccessful process despite consistent predictions about how technology would change the

educational landscape. The first computers began to appear in American schools in the 1970s and by the 1980s they were already being promoted by some education experts as the catalyst for a new era in education (Bork, 1987). One prominent document stated that, "new technologies are making possible imaginative approaches to teaching traditional subjects and are motivating teachers and children to try new ways of information gathering and learning... educational technologies can be powerful tools for change" (U.S. Congress, Office of Technology Assessment, 1988, pp. 3,5). In the decades that have passed since the first computers appeared in schools, federal, state and local authorities have invested tens of billions of dollars outfitting classrooms with computers and computer-related devices hypothesized to enhance student learning. The outcome of all this spending? One common conclusion recurring in the literature is that there appears to be little evidence that all this expenditure has positively impacted either teaching or learning (Becker, 2001; Becker & Ravitz, 2001; Cuban, 2001; Hayes, 2007; Lai, Pratt, & Trewern, 2001) Apparently, it is far easier to spend money acquiring technology than it is to capture the elusive potential of integrating it to create meaningful learning outcomes.

This does not mean that all teachers are not using technology tools during their teaching. Many are frequent users of a variety of technology tools, they are just not integrating them into instruction in ways that will meaningfully improve student learning. What use there is tends to be peripheral and minimal with low pedagogic meaning. More concisely, use is frequently limited to traditional drill and practice exercises, basic word processing applications, direct presentation of facts, and research/information gathering activities (Sanchez & Salinas, 2008, Lim & Khine, 2006; Technology Counts, 2004; Vannatta & Fordham, 2004). These are not the types of applications that are dramatically enhancing the way in which a teacher teaches and it hardly justifies the enormous expense involved in outfitting and maintaining school-based technology.

How is it possible to spend tens of billions of dollars on technology equipment, support, and training only to find that it goes mostly underutilized by classroom teachers? If technology tools are reputed to be revolutionary and transformational learning devices, why are so many teachers not using them at all or utilizing them for the handful of mundane tasks mentioned above; tasks, incidentally, that can be accomplished without the technology (as they were for decades)? The bottom line is that education leaders and decision makers need to establish what factors effectively promote integrated uses of technology among classroom teachers and then actively move to create and develop an environment that will stimulate the acquisition of those traits in an effort to get more teachers to harness the potential of technology to enhance and transform the student learning process. The first place to look for answers that might lead to sustained, innovative and integrated uses of technology is with the small percentage of teachers that are already successfully doing it.

Factors Affecting Technology Integration

There are pockets of teachers who use technology tools to enhance and transform their teaching practices. The literature has some insight regarding which variables help explain and predict why those teachers will integrate technology while others do not. This brief focuses on four such variables that are theorized to play a critical role in the adoption and actual integration of instructional technology by classroom teachers. These variables are: perceived ease of use, perceived usefulness, computer self-efficacy and teacher learning beliefs.

Perceived ease of use. For many teachers, it is likely that instructional technology has become a *labor intensive* tool rather than an effective learning device. Perceived ease of use is tied to a teacher's

assessment of the overall effort required to use a given piece of technology. Perceived ease of use directly influences a person's intention to use a technology tool (Davis, Bagozzi, & Warshaw, 1989; Gelderman, 1998; Mahmood, Hall, & Swanberg, 2001). When making decisions regarding tool use, users gauge the perceived effort required to accomplish a given task (Russo & Doshier, 1983). Since effort is a finite resource that a person may allocate to various activities, it is conceivable that a person will select tools that are perceived as the easiest to use. When making technology purchasing decisions, school leaders need to consider how teachers will perceive the ease of use of a given tool and how to enhance ease of use. Selecting tools that appear complicated will impede technology integration efforts.

There are many possible factors that will influence a teacher's perceptions regarding technology ease of use. Specifically, lack of access to computers and computer-related technology, lack of technology integration training, insufficient time to create lesson plans that incorporate technology, inadequate technical support, unreliable technology, and weak technology leadership are among the most commonly cited barriers negatively impacting technology use (Duhaney, 2001; Faison, 1996; Langone, Wissick, Langone, & Ross, 1998; Siegel, 1995; U.S. Congress, Office of Technology Assessment, 1995). For example, if in the past a teacher received little or no technical support when attempting to integrate technology, he may decide that the frustration and aggravation (i.e. ease of use) are simply not worth the effort; it is too difficult, according to that teacher, to use technology. Coping with software and hardware issues can leave teachers drained and frustrated (Hammond, 1990).

Perceived usefulness. The idea of perceived usefulness is based on an assumption that people will use—or not use—a tool or application to the extent they believe it will help them perform their jobs better (Davis, 1989). Therefore, many teachers are using technology effectively because they believe it makes them better teachers. People will adopt an innovation if they believe it will yield some relative advantage to the idea it supersedes (Rogers, 1995). Conversely, many teachers are not using technology tools because they do not believe they make them more competent in their profession.

Unless a teacher believes that the technology is a useful teaching and/or learning aid, classroom management device or, similarly beneficial tool, it will not be effectively used—regardless of extrinsic variables such as access, support or training. This assumption is supported by the findings of Robey (1979) who concluded that an application that does not help people perform their jobs is not likely to be used despite thoughtful implementation efforts (such as access, training, support and leadership). Given the primacy of perceived usefulness, it is critical that school leaders focus on implementation efforts designed to enhance a teacher's beliefs regarding the usefulness of technology tools.

Computer self-efficacy. Perceiving that an instructional technology application is easy to use and recognizing its usefulness is one thing, but believing that you can be successful integrating that technology into teaching practice is another. Self-efficacy is a person's belief about his or her ability to produce a successful level of performance (Bandura, 1994). Building on this definition, computer self-efficacy represents a user's belief regarding his or her ability to use a computer (or computer-related tools) to accomplish a given task successfully (Compeau & Higgins, 1995). Computer self efficacy (CSE) has been shown to play an important role in affecting a teacher's beliefs and behavior in using computers and other technology tools in a variety of situations (Compeau and Higgins, 1995; Hill, Smith, & Mann, 1987; Martocchio and Webster, 1992; Igarria and Iivari, 1995; Deng, Doll, & Truong, 2004; Chu, 2003).

Users can judge their computer ability at a task-specific level or at a general level (Marakas, Yi, & Johnson, 1998). Task-specific CSE refers to an individual's perception of efficacy in performing

specific computer-related tasks within the domain of general computing (ex. formatting a word document). General CSE refers to an individual's overall judgment of efficacy. Teachers with high levels of general computer self-efficacy are considered to be technology literate and relatively comfortable with technology and are predicted to be much more likely to use technology during teaching. While having the potential to influence both concepts already discussed, computer self-efficacy appears to dominantly affect perceived ease of use. This makes sense because a person who doubts his or her abilities will tend to shy away from the difficult task (Bandura, 1994). The easier the task—or, more accurately, a perception of ease—the increased likelihood that a user will believe she can perform successfully, and vice versa. In any case, perceived self-efficacy with computers is hypothesized to be a critical predictor for the use of computer technology, which is why it is included here (Albion, 1999; Delcourt & Kinzie, 1993; Jorde-Bloom, 1988; Milbrath & Kinzie, 2000; Olivier & Shapoir, 1993).

Teacher learning beliefs. Teachers can be users of technology regardless of their beliefs about how children learn. However, a teacher's learning belief is theorized to be the most important influence on how a teacher actually uses technology for instructional purposes. Will technology be used to maintain familiar, traditional teaching practices (behaviorist) or integrated through a more transformational, student-centered model (constructivist)? Regardless of the answer, a teacher's learning beliefs will permeate all decisions and perceptions and therefore it is impossible to separate the influence of learning beliefs from the other three constructs mentioned above. For example, a teacher with constructivist tendencies is more likely to put forth the effort required to overcome ease of use issues because he is more inclined to select technology tools to accomplish a task than a traditional, behaviorist teacher (Becker, 1999). A teacher's perception of usefulness is also impacted by his or her learning beliefs and teachers in classrooms where student-centered, constructivist-oriented learning activities are happening are more likely to see increased benefits to using computers (Ward & Parr, 2010). This is not to imply that a constructivist teacher is somehow immune to the difficulties that potentially arise whenever a teacher attempts to integrate technology. Rather a teacher with constructivist tendencies is more likely to view those challenges as part of the overall learning process and is willing to put forth the effort required to overcome those challenges—especially when the usefulness of the technology is apparent. Most important for this brief, is the concept that teacher learning beliefs impact how technology is actually integrated by teachers. Will students learn from technology or will they learn with technology? If the goal is to have teachers integrate technology to transform their teaching, make innovative connections between the use of the tools and teaching goal attainment, and empower students with strategies that will allow them to become active participants in their own learning—learning that will last a lifetime—traditional learning beliefs will not suffice and education decision makers will need to facilitate a shift in teacher learning beliefs from the traditional to the transformational.

Recommendations for School Leaders

To increase the likelihood of effective and sustained technology integration, school leaders will need to use ample formal and informal professional development opportunities to create an environment designed to minimize ease of use issues, maximize perceptions of usefulness, increase computer self-efficacy beliefs, and inspire teachers toward a more student-centered model of teaching and learning.

While creating an environment fertile for the growth of technology integration, it is important to keep in mind that it is the advancement of teaching and learning that is the goal, the integration of technology simply becomes the conduit with which to reach this lofty ideal. This section contains

eight recommendations school leaders should consider when attempting to create a technology-rich learning environment.

1. **Define technology integration.** Before creating a technology integration plan, school leaders should establish a clear and concise definition for technology integration. This definition will assist in providing direction, bestowing common language, and will form the foundation for the assessment criteria. The definition does not have to be unique and this brief offers one possibility that could be utilized or modified to meet the vision of school leaders. The definition should also set a tone that technology integration is not centered around technology; rather, it should make clear that superior pedagogy is the focus. This understanding should help provide a strong base for increasing a teacher's perceived usefulness as they realize that the technology tools are intended to be integrated to support, enhance and transform their teaching and learning goals. In other words, technology tools are integrated to help them become more effective teachers.

2. **Define assessment metrics.** Once a definition has been established it becomes possible, and necessary, to develop assessment criteria that will determine if technology integration has been successful. There are many possible procedures that can be utilized to measure technology integration and school leaders should consider using a combination of rubrics, self-assessment instruments, surveys, direct observation, interviews, and teacher and student portfolios. Keeping the definition of technology integration in mind when creating technology assessment procedures is key since what is being assessed should be directly correlated to that definition. For example, the definition presented in this brief states in part that technology integration is, "a purposeful, definable, frequent and seamless infusion of technology tools intended to enhance student learning ". Direct observation is one technique that could be used to assess whether or not technology is being integrated in accordance with this aspect of the definition. While an evaluator is watching a teacher conduct a lesson he or she should be asking (and answering) these types of questions:
 - In what ways does the technology advance student learning?
 - Are students working toward a lesson-relevant goal?
 - Does the use of technology tools give students a deeper understanding of the content?
 - Are students using technology to solve a problem?
 - Is learning improved by the use of technology during the lesson?
 - Can the teacher easily explain the benefits the technology brings to the lesson?

Rich questions such as these can facilitate discussion between the observer and the teacher as well as enable teacher reflection regarding the pedagogical implications of the technology use.

3. **Facilitate pedagogical change.** Many teachers are using technology tools to maintain the traditional teaching model predicated by the assumption that that knowledge can be transmitted from teacher to student, or more specifically, that knowledge can be embedded in technology-based lessons and then transmitted to students. In this scenario, students are intended to learn from technology in the same passive way that they are learning from their teachers. Worksheets are furnished electronically, lectures are augmented by PowerPoint presentations, or replaced altogether by web-based videos and students respond to pre-programmed technology-based activities and assessments. In order for technology integration to make a difference in meaningful student learning and achievement, teachers need to shift from having students learn from technology to having them learn with technology. Technologies can foster and support learning

when they are applied as tools that help to promote student thinking and knowledge construction (Jonassen, Peck, & Wilson, 1999).

In an environment that stresses learning with technology, students are shifted away from passive consumption and are engaged in constructing their own knowledge and understanding of the world through active engagement and meaning making. In this type of learning environment students are frequently presented with problems and inquisitive questions, challenged to create their own content, collaborate with others, and share what they have learned, tasks which are all easily facilitated and enhanced through technology; tasks which technology tools actually excel at conducting. Therefore, creating an environment where teachers are shifting from traditional learning methods where knowledge gets transmitted to students to a more transformational learning method where knowledge gets constructed by students is a key requisite for getting teachers to integrate technology meaningfully (Fabry & Higgs, 1997).

Getting teachers to change their practice is very difficult (Richardson, 1990; Tyack & Cuban, 1995; Tyack & Tobin, 1994) and this complication will certainly have an impact on the types of professional development opportunities needed, as well as the frequency and duration of the opportunities. Attempting to change the pedagogy of a teacher who instructs a subject-specific course (e.g. math, science, etc.) will be especially difficult in the age of standardized testing (Ward & Parr, 2010). In these types of courses, where what students are expected to learn is clearly defined through standards, the perceived match between traditional teaching pedagogies and the desired outcomes (i.e. high scores on high-stakes tests) is likely very strong and as was stated earlier, this lessens the need for teachers to change directed teaching practices. Failure to facilitate pedagogical change among teachers will substantially hinder the integration (but not necessarily the use) of technology tools in the classroom.

Getting teachers to change will require pedagogical professional development fueled in part by illustrating how a variety of technology tools can be integrated to facilitate student construction of knowledge. Once teachers realize the importance of students' involvement in their own meaning making, the usefulness of the plethora of viable, creative and flexible technology tools that will facilitate the attainment of this outcome should be apparent. The goal of this multifaceted professional development approach is to provide ample opportunity for teachers to learn, practice, reflect and refine pedagogical best practices and to show teachers how technology can be smoothly and seamlessly integrated in support of those practices. Conducting professional development in this fashion should greatly increase teacher perceptions regarding the usefulness of technology while simultaneously increasing their sense of computer self-efficacy and reducing their anxieties regarding the ease with which technology can be used. Essentially, teachers will become better pedagogues and, almost as a bonus, gain the valuable technology skills that will allow them to implement and integrate technology successfully into their classrooms; classrooms full of students who are likely already interacting with a tremendous amount of technology on a regular basis outside of school. However, not all professional development is equal and school leaders should focus on implementing professional development opportunities designed to bring teachers to an understanding regarding the inadequacies of their current beliefs about teaching, learning and instructional practices (Spillane, 1999). Naturally, this should be conducted in a positive manner, with an emphasis on the goals surrounding making good teachers better teachers.

- 4. Enhance technology literacy.** It should be a goal of every school to ensure that every classroom contains a highly effective teacher. Effective teachers, in a modern, digital era should possess the

skills necessary to use, and keep current with, modern technology tools. Since a teacher's level of technology literacy will impact any type of technology use (or non-use), school leaders should ensure that teachers have sufficient technology skills to utilize a variety of technology tools.

However, this does not mean that teachers simply need to have access to stand-alone, one-size fits all, technology courses designed to provide them with a standardized set of technology skills.

Emphasis on improving teacher technology skills alone will not impact directly on practices in the classroom and, more specifically, student use of computers (Ward & Parr, 2010). Being technology literate is not only being able to use a technology tool but it is knowing when to apply the tool to achieve a given task and realizing what's possible once new technology skills are attained. This is why it is important that technology skills be acquired through context specific professional development opportunities (both formal and informal) designed to bring teachers to the intersection between technology tools and pedagogical ideals. It is the connections that teachers make between technology and teaching that ultimately defines technology literacy. Naturally, the types of connections a teacher will create are contingent upon his or her teaching beliefs, which is why it is also important to facilitate pedagogical changes at the same time as enhancing teacher technology literacy. Essentially, technology skills provide the "how", but pedagogical beliefs will provide the "why". For example, teachers could gain PowerPoint presentation skills while learning how the addition of relevant visual elements can help facilitate student understanding. Learning technology and pedagogy together, teachers gain technology literacy, mitigate ease of use issues, enhance computer self-efficacy levels and make connections to contemporary pedagogical strategies.

Although many students today have grown up with technology and they may already be able to create, edit, upload and participate in a variety of digital media, they should not be assumed to be fully technology literate. As with teachers, simply knowing how to use the tools is not enough. Students need to be able to apply those tools in a relevant and meaningful context to be considered truly literate. A technology literate, pedagogically innovative teacher will likely be a tremendous influence in helping students to make the connections between knowledge and practice.

- 5. Leverage instructional technology "coaches".** Many schools already employ technology integration specialists or classroom teachers who already contain the essential blend of pedagogy and technical skills. As technology "coaches", these teachers should become the core foundation for technology integration efforts at the school level. Many teachers have not embraced blogs, wikis, social networks, iPads, or digital cameras as teaching tools because they don't understand their application or usefulness (Baker, 2010). The use of an on-site technology coach who provides on-going development and embedded support will result in teachers being better able to integrate student use of technology as a tool to enhance learning (McKenzie, 2003). The assumption is that with a technology coach, teachers can learn how to use new technology tools from a trusted colleague within a meaningful, often individualized, context. In this setting, the coach can demonstrate and model technology skills, assist in planning and provide a great amount of informal, highly customized technology support. A good technology coach will anticipate and mitigate technology ease of use issues, increase teacher computer self-efficacy levels through encouragement, enhance perceptions of usefulness by suggesting relevant tools, and model the pedagogical changes required to bring about a shift in teacher beliefs.
- 6. Continue to fund technology initiatives.** Technology is always shifting and changing. Consequently, school leaders need to ensure that teachers have consistent access to new technologies that they perceive as useful to their teaching. As more teachers begin to successfully

integrate technology at a high level it is very possible that their desire to have current technology tools at their disposal will increase. In support of the definition of technology integration presented in this brief, technology purchases should be driven by pedagogy and in support of the school learning goals; technology should not be purchased just because it is new, highly touted, or popular. For example, interactive whiteboards (e.g. SmartBoards) are becoming increasingly commonplace in school classrooms yet recent research has shown that they are more closely aligned with a teacher-centered pedagogy and are seen by some technology integration specialists as a backward step, at least in a pedagogical sense (Kennewell, Tanner, Jones, & Beauchamp, 2008; Smith, Hardman, & Higgins, 2006; Burns & Myhill, 2004; Wood & Ashfield, 2008). This does not mean that such technology devices should be shunned; it simply illustrates the importance of facilitating pedagogical discussions about the desired impact of the selected technology on the teaching and learning process before purchasing the tools. For this reason, instructional technology purchasing decisions should ultimately be driven in large part by what the end-users (likely classroom teachers) think are useful and easy to use, not solely by what a central office administrator or technology department perceive as useful.

- 7. Review technology policies.** The need to maintain control of the traditional classroom has led many school districts to enact policies that ban a wide range of powerful tools that could be used for learning (November, 2010). Tools that include mobile phones, iPods, Internet-enabled tablets, blogging sites, wikis, student email, and other global communication tools. The basis for many of the restrictions comes from federal guidelines—most notably the Children’s Internet Protection Act (CIPA) and E-rate provisions that provide schools with federal funding to purchase technology initiatives. However, schools can be creative with how they enforce the provisions and should actively pursue ways to provide students with access to tools that can enhance the learning process.

Security concerns and paranoia about what students might do with the technology is a barrier to technology integration. Rather than being concerned about the consequences of providing students with increased access to digital tools and websites, schools need to be concerned with the repercussions of NOT providing students with a wide spectrum of access. Schools need to take these tools and provide purpose and appropriate modeling of how they can be used creatively, productively and responsibly to help students take ownership of their own learning. If our children are to exit school with the ability to make important contributions to society, it is important that we provide them with powerful tools and experiences (November, 2010).

- 8. Don't mandate the use of technology.** It may be tempting for school leaders to create a technology policy that mandates the use of certain technologies by classroom teachers. However, there are reasons why it is strongly suggested that leaders avoid moving in this direction. First, research has shown that it is not a viable strategy to foster technology adoption among classroom teachers. Teacher compliance with school policy may lead to increased use of technology in the short term, but once the mandates are removed, sustained use of the technology also disappears (Dutton, Cheong, & Park, 2004a; 2004b). Additional research has shown that it is hard for technology use to be sustained where its adoption and use are enforced in a top down fashion (Park, Lee, & Cheong, 2008). Second, as this brief has established, if teachers don’t think a technology tool is beneficial, reliable and easy to use they will not use the tool. Therefore, school leaders need to focus on creating an environment where teachers can articulate how the use of technology tools, any technology tools, have made them more effective teachers. By creating a positive learning environment that scaffolds teachers to the conclusion that they are better teachers

when they are appropriately integrating technology, school leaders will not have to worry about teacher technology use.

Conclusion

Ironically, the key to successful technology integration is to de-emphasize the role that technology may serve in the modern classroom. Instead, school leaders need to focus efforts on evolving the pedagogical practices of the teacher to take advantage of what is possible when transformational pedagogy and technology intersect. Ultimately, it is pedagogical innovation that will define technology integration effectiveness. Creating the environment that promotes, supports, and facilitates pedagogical change will require heavy doses of formal and informal professional development; deliberate technology-fueled professional development aimed at more than just increasing basic technology literacy skills. School leaders need to act with a sense of urgency. Integrating technology into teaching and learning, and all of the problem solving, critical thinking and creativity that goes along with it is a critical component in preparing students to be successful in the real world, a world that contains complex problems that do not have multiple choice answers.

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